S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Saturday, 07-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory should be solved in first 30 minutes in answer book.

ENGINEERING MATHEMATICS – III

- 2) Use of non programmable calculator is allowed.
- 3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

5)

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No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

d) $\frac{1}{s(s+2)}$

b) $\frac{1}{\sqrt{\pi t}}$

d) $\frac{t}{\sqrt{\pi}}$

b) $L^{-1}{\phi'(s)} = -tL^{-1}{\phi(s)}$

d) $L^{-1}\{\phi'(s)\} = \frac{1}{t}L^{-1}\{\phi(s)\}$

- 1) For $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 3e^{2x}$, The particular integral is _____. a) $c_1e^{-x} + c_2e^{-3x}$ b) $\frac{1}{2}e^{2x}$
- a) $c_1 e^{-x} + c_2 e^{-3x}$ b) $\frac{1}{15} e^{2x}$ c) $\frac{1}{5} e^{2x}$ d) $3 e^{2x}$ 2) $\frac{1}{D+m} X = \underline{\qquad}$ a) $e^{-mx} \int X e^{mx} dx$ b) $e^{mx} \int X e^{-mx} dx$ c) $e^{-mx} \int X dx$ d) $e^{mx} \int X dx$ 3) $L\{e^{-t} \sinh t\} = \underline{\qquad}$ a) $\frac{1}{s(s-2)}$ b) $\frac{1}{s^2+2s+2}$

c)
$$\frac{1}{s^2-2s+2}$$

4) Which of the following is true?
a) $L^{-1}\{\phi'(s)\} = tL^{-1}\{\phi(s)\}$

c)
$$L^{-1}\{\phi'(s)\} = \frac{-1}{t}L^{-1}\{\phi(s)\}$$

$$L^{-1}\left\{\frac{1}{\sqrt{s}}\right\} = \underline{\qquad}.$$
a) $\sqrt{\frac{\pi}{t}}$
c) $\sqrt{\frac{t}{\pi}}$

6) If
$$U(K) = \begin{cases} 1, & K \ge 0\\ 0, & K < 0 \end{cases}$$
 then $Z\{U(K)\} =$ _____.
a) $\frac{1}{z-1}$
b) $\frac{1}{1-z}$
c) $\frac{z}{z-1}$ d) $\frac{z}{1-z}$

Marks: 14

SLR-FM-174



Max. Marks: 70

			Set P
7)	If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} = \frac{1}{a}$ a) $F\left(\frac{z}{a}\right)$		$\frac{1}{1-(z)}$
	,		
			$\frac{1}{z}F\left(\frac{a}{z}\right)$
8)	In half range cosine series for $f(x)$ term is	= (x	$(-1)^2$, $0 \le x \le 1$ the constant
	a) $\frac{1}{3}$	b)	$^{-1}/_{3}$
	c) 0	d)	1
9)	The equations of lines of regression mean \bar{x} and \bar{y} are	are	x + 2y = 5 and $2x + 3y = 8$ then
	a) 1 and 3		2 and 3
4.0)	c) 2 and 5	d)	1 and 2
10)	A continuous random variable has the $f(x) = kx, 0 \le x \le 2$. Then k=		blowing density function
	a) $\frac{1}{2}$	b)	$\frac{1}{1}_{4}$
	c) $\frac{3}{2}$	d)	3/4
11)	•		n in Fourier series are known as
	a) Harmonicc) Riemann's conditions	р) d)	Cauchy Dirichlet's conditions
12)	The value of coefficient of correlatio		
	a) -2 and 1 c) 1 and 2	,	-1 and 1 2 and 3
13)	Which of the following method is us		
	eigen value and corresponding eige a) Gauss Seidal method		Gauss Elimination
	c) Power method	d)	Newton's method
14)	The Newton Raphson method fails $f'(x)$ is negative	whei	f'(x) is positive
	a) $f'(x)$ is negative	d)	j (x) is positive

- c) f'(x) is zero
- d) never fails

rm of	
$(z-3)^{2}$, $2 < z < 3$	

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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ENGINEERING MATHEMATICS – III**

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Use of non programmable calculator is allowed.
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Section – I

Q.2 Attempt any three of the following questions.

- a) Solve $(D^3 + 2D^2 + D)y = x^2 + x$
- **b)** Solve $(D^2 2D + 4)y = e^x \cos^2 x$
- **c)** Find $L\{(t + \sin t)^2\}$
- **d)** Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$
- e) Find $Z\left\{\frac{3^{K}}{\kappa}\right\}, k \ge 1$

Attempt any three of the following questions. Q.3

- a) Solve $(D^2 2D + 1)y = x \sin x$
- b) Find Laplace transform of

$$\begin{array}{ll} f(t) = t, & 0 < t < 1 \\ = 0, & 1 < t < 2 \end{array}$$

$$||f f(t) = f(t+2)||$$

- **c)** Find L^{-1} {tan⁻¹(s + 1)}
- d) Find $Z\{ka^k\}, k \ge 0$ e) Find $Z^{-1}\left\{\frac{1}{(z-3)^2}\right\}, |z| > 3$

Attempt any two of the following questions. Q.4

a) An uncharged condenser of capacity C is charged by applying an e.m.f of value *E* sin *nt* through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation.

$$\frac{d^2 Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$$

Prove that charge at any time is given by

$$Q = \frac{E}{2n^2L} [\sin nt - nt \cos nt] \text{ where } n^2 = \frac{1}{LC}$$

- **b)** Solve $\frac{d^2y}{dt^2} 3\frac{dy}{dx} + 2y = 12e$ y(0) = 2, y'(0) = 6
- by using Laplace transform
- c) Find inverse z-transform $F(z) = \frac{z}{(z-2)(z)}$

Set

Max. Marks: 56

09

09

Section – II

Q.5 Attempt any three of the following questions.

a) The lines of regression are -4x + 5y = 3 and 7x + 6y = -9

Find

- 1) Means of x and y
- 2) Coefficient of correlation
- **b)** Solve for a positive root of $x^3 4x + 1 = 0$ by Regula falsi method correct to two decimal places.
- c) Solve the following set of equations by Gauss Elimination method.

x + y + z = 6 $\frac{1}{2}$ $\frac{1}$

$$x - y + z = z$$
$$2x - y + 3z = 9$$

d) In an experiment with 500 seeds in groups of 5 the following results were obtained.

x:	0	1	2	3	4	5	Total
f:	10	70	150	160	80	30	500

Where f denotes the number of groups in which x seeds germinated fit a binomial distribution.

e) Find the Fourier series for

$$f(x) = x^3 \text{ in } (-\pi, \pi)$$

Q.6 Attempt any three of the following questions.

- a) A manufacturer finds that average demand. Per day for the mechanic to repair his new production is 1.5 over a period of one year the demand per day is distributed as Poisson distribution. He employs two mechanics on how many days in one year.
 - 1) Both mechanics would be free
 - 2) Some demand is refused
- **b)** Find the coefficient of correlation for the following data.

 $N = 25, \Sigma x = 120, \Sigma x^2 = 650, \Sigma y = 100, \Sigma y^2 = 450, \Sigma xy = 500$

- c) Find the positive real root of $4x e^x = 0$ that lies between 2 and 3 by Newton's method correct to 3 decimal places.
- d) Find the Fourier cosine expansion of

$$f(x) = c - x \qquad 0 < x < c$$

e) Find the numerically largest eigen value of $A = \begin{bmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{bmatrix}$

And the corresponding eigen vector.

Taking $\begin{bmatrix} 1\\0\\0 \end{bmatrix}$ as initial eigen vector.

(perform 3 iterations)

Q.7 Attempt ant two of the following questions.

a) Solve by Jacobis iteration method, the equations

$$20x + y - 2z = 173x + 20y - z = -182x - 3y + 20z = 25$$

(perform 4 iterations)

b) Find the Fourier series expansion of
$$f(x) = 2 - \frac{x^2}{2}$$
, $0 \le x \le 2$

10

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Set



- c) The customer accounts of a certain departmental store have an average balance of Rs.120 and a standard deviation of Rs.40 Assuming that the distribution of account balances is normal. Find the proportion of accounts.
 - 1) over Rs. 150
 - 2) between Rs. 100 and Rs. 150
 - 3) between Rs. 60 and Rs. 90
 - (Given: for a SNV Z area from
 - $\dot{z} = 0$ to z = 0.75 is 0.2734, that from
 - z = 0 to z =0.5 is 0.1915
 - z = 0 to z = 1.5 is 0.4332)

Set S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

ENGINEERING MATHEMATICS – III

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MCQ/Objective Type Questions

Duration: 30 Minutes

c)

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No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

In half range cosine series for $f(x) = (x - 1)^2$, $0 \le x \le 1$ the constant 1) term is

a)	$^{1}/_{3}$	b)	$^{-1}/_{3}$
c)	0	d)	1

- 2) The equations of lines of regression are x + 2y = 5 and 2x + 3y = 8 then mean \bar{x} and \bar{y} are _____.
 - a) 1 and 3 b) 2 and 3 c) 2 and 5 d) 1 and 2

3) A continuous random variable has the following density function $f(x) = kx \quad 0 < x < 2$ Then k

J	$x = \kappa x, 0 \le x \le 2$, then $\kappa = _$		
a)	1/2	b)	$^{1}/_{4}$
c)	$^{3}/_{2}$	d)	3/4

- 4) The conditions of expansions of function in Fourier series are known as .
 - a) Harmonic b) Cauchy Riemann's conditions d) Dirichlet's conditions
- The value of coefficient of correlation r lies between 5)
 - a) -2 and 1 b) -1 and 1
 - c) 1 and 2 d) 2 and 3
- Which of the following method is used to determine numerically largest 6) eigen value and corresponding eigen vector of given matrix?
 - a) Gauss Seidal method
- b) Gauss Elimination d) Newton's method
- c) Power method
- 7) The Newton Raphson method fails when _
 - a) f'(x) is negative
- b) f'(x) is positive
- c) f'(x) is zero
- d) never fails



Max. Marks: 70

Marks: 14

Q

For $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 3e^{2x}$, The particular integral is _____. a) $c_1e^{-x} + c_2e^{-3x}$ b) $\frac{1}{15}e^{2x}$ 8) c) $\frac{1}{5}e^{2x}$ d) $3 e^{2x}$ $\frac{1}{D+m}X = \underline{\qquad}.$ a) $e^{-mx} \int X e^{mx} dx$ 9) b) $e^{mx} \int X e^{-mx} dx$ c) $e^{-mx} \int X \, dx$ d) $e^{mx} \int X dx$ 10) $L\{e^{-t} \sinh t\} =$ _____. a) $\frac{1}{s(s-2)}$ b) $\frac{1}{s^2+2s+2}$ c) $\frac{1}{s^2 - 2s + 2}$ d) $\frac{1}{s(s+2)}$ Which of the following is true? 11) a) $L^{-1}\{\phi'(s)\} = tL^{-1}\{\phi(s)\}$ b) $L^{-1}\{\phi'(s)\} = -tL^{-1}\{\phi(s)\}$ c) $L^{-1}\{\phi'(s)\} = \frac{-1}{t}L^{-1}\{\phi(s)\}$ d) $L^{-1}\{\phi'(s)\} = \frac{1}{t}L^{-1}\{\phi(s)\}$ 12) $L^{-1}\left\{\frac{1}{\sqrt{s}}\right\} =$ _____. b) $\frac{1}{\sqrt{\pi t}}$ a) $\sqrt{\frac{\pi}{t}}$ d) $\frac{t}{\sqrt{\pi}}$ c) $\sqrt{\frac{t}{\pi}}$ If $U(K) = \begin{cases} 1, & K \ge 0\\ 0, & K < 0 \end{cases}$ then $Z\{U(K)\} =$ _____. a) $\frac{1}{1}$ b) $\frac{1}{1-z}$ 13) d) $\frac{z}{1-z}$ C) $\frac{z}{z-1}$ 14) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$ _____. b) $\frac{1}{a}F(\frac{z}{a})$ c) $F\left(\frac{a}{z}\right)$ d) $\frac{1}{a}F\left(\frac{a}{a}\right)$

SLR-FM-174

Set Q

of		
$(-3)^{-3}$, $2 < z < 3$		

Seat No.

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Section – I

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- **b)** Solve $(D^2 2D + 4)y = e^x \cos^2 x$
- **c)** Find $L\{(t + \sin t)^2\}$
- **d)** Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$
- e) Find $Z\left\{\frac{3^{K}}{K}\right\}$, $k \ge 1$

Q.3 Attempt any three of the following questions.

- a) Solve $(D^2 2D + 1)y = x \sin x$
- **b)** Find Laplace transform of

$$f(t) = t, \quad 0 < t < 1 \\ = 0, \quad 1 < t < 2$$

$$If f(t) = f(t+2)$$

- **c)** Find $L^{-1}{\tan^{-1}(s+1)}$
- **d)** Find $Z\{ka^k\}, k \ge 0$
- e) Find $Z^{-1}\left\{\frac{1}{(z-3)^2}\right\}, |z| > 3$

Q.4 Attempt any two of the following questions.

a) An uncharged condenser of capacity C is charged by applying an e.m.f of value $E \sin nt$ through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation.

$$\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$$

Prove that charge at any time is given by

$$Q = \frac{E}{2n^2L} [\sin nt - nt \cos nt] \text{ where } n^2 = \frac{1}{LC}$$

- **b)** Solve $\frac{d^2y}{dt^2} 3\frac{dy}{dx} + 2y = 12e^{-2t}$ y(0) = 2, y'(0) = 6
- by using Laplace transform
- c) Find inverse z-transform of $F(z) = \frac{z}{(z-2)(z-3)}$

$$\begin{array}{l} a_{x} + 2y = 120 \\ 2, y'(0) = 6 \\ a_{x} = transform \end{array}$$

Set

Max. Marks: 56

09

09

Section – II

Q.5 Attempt any three of the following questions.

a) The lines of regression are -4x + 5y = 3 and 7x + 6y = -9

Find

- 1) Means of x and y
- 2) Coefficient of correlation
- **b)** Solve for a positive root of $x^3 4x + 1 = 0$ by Regula falsi method correct to two decimal places.
- c) Solve the following set of equations by Gauss Elimination method.

x + y + z = 6x - v + z = 2

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d) In an experiment with 500 seeds in groups of 5 the following results were obtained.

x:	0	1	2	3	4	5	Total
f:	10	70	150	160	80	30	500

Where f denotes the number of groups in which x seeds germinated fit a binomial distribution.

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- c) Find the positive real root of $4x e^x = 0$ that lies between 2 and 3 by Newton's method correct to 3 decimal places.
- d) Find the Fourier cosine expansion of

$$f(x) = c - x \qquad 0 < x < c$$

e) Find the numerically largest eigen value of $A = \begin{bmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{bmatrix}$

And the corresponding eigen vector. Taking $\begin{bmatrix} 1\\0\\0 \end{bmatrix}$ as initial eigen vector.

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(perform 4 iterations)

b) Find the Fourier series expansion of
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, $0 \le x \le 2$

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c) The customer accounts of a certain departmental store have an average balance of Rs.120 and a standard deviation of Rs.40 Assuming that the distribution of account balances is normal. Find the proportion of accounts.

- 1) over Rs. 150
- 2) between Rs. 100 and Rs. 150
- 3) between Rs. 60 and Rs. 90

(Given: for a SNV Z area from

- $\dot{z} = 0$ to z = 0.75 is 0.2734, that from
- z = 0 to z =0.5 is 0.1915
- z = 0 to z = 1.5 is 0.4332)

SLR-FM-174

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MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1)	$L^{-1}\left\{\frac{1}{\sqrt{s}}\right\} = \underline{\qquad}.$			
	a) $\sqrt{\frac{\pi}{t}}$	b)	$\frac{1}{\sqrt{\pi t}}$	
	C) $\sqrt{\frac{t}{\pi}}$	d)	$\frac{t}{\sqrt{\pi}}$	
2)	If $U(K) = \begin{cases} 1, & K \ge 0\\ 0, & K < 0 \end{cases}$ then $Z\{U(K)\}$	=		
	a) $\frac{1}{z-1}$	b)	$\frac{1}{1-z}$	
	c) $\frac{z}{z-1}$	d)	$\frac{z}{1-z}$	
3)	If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$			

3)	lf z{	${f(k)} = F(z)$, then $z{a^k f(k)} = $		
	a)	$F\left(\frac{z}{a}\right)$	b)	$\frac{1}{a}F\left(\frac{z}{a}\right)$
	c)	$F\left(\frac{a}{z}\right)$	d)	$\frac{1}{z}F\left(\frac{a}{z}\right)$

4) In half range cosine series for $f(x) = (x - 1)^2$, $0 \le x \le 1$ the constant term is _____.

a)	$\frac{1}{3}$	b)	$^{-1}/_{3}$
C)	0	d)	1

5) The equations of lines of regression are x + 2y = 5 and 2x + 3y = 8 then mean \overline{x} and \overline{y} are _____.

a)	1 and 3	b)	2 and 3
\sim	2 and 5	(P	1 and 2

- c) 2 and 5 d) 1 and 2
- 6) A continuous random variable has the following density function $f(x) = kx, 0 \le x \le 2$, Then k= _____. a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{3}{2}$ d) $\frac{3}{4}$

7) The conditions of expansions of function in Fourier series are known as _____.
 a) Harmonic b) Cauchy

c) Riemann's conditions d) Dirichlet's conditions

Max. Marks: 70

Marks: 14

Set R

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Set
$$\mathbb{R}$$

8) The value of coefficient of correlation r lies between ______.
a) -2 and 1 b) -1 and 1
c) 1 and 2 d) 2 and 3
9) Which of the following method is used to determine numerically largest
eigen value and corresponding eigen vector of given matrix?
a) Gauss Seidal method b) Gauss Elimination
c) Power method d) Newton's method
10) The Newton Raphson method fails when
a) $f'(x)$ is negative b) $f'(x)$ is positive
c) $f'(x)$ is zero d) never fails
11) For $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 3e^{2x}$, The particular integral is ______.
a) $c_1e^{-x} + c_2e^{-3x}$ b) $\frac{1}{15}e^{2x}$
c) $\frac{1}{5}e^{2x}$ d) $3e^{2x}$
12) $\frac{1}{p+m}X = _____.
a) $e^{-mx} \int X e^{mx} dx$ b) $e^{mx} \int X e^{-mx} dx$
c) $e^{-mx} \int X e^{mx} dx$ d) $e^{mx} \int X dx$
13) $L\{e^{-t} \sinh t\} = _____.$
a) $\frac{1}{s(s-2)}$ b) $\frac{1}{s^{2}+2s+2}$
c) $\frac{1}{s^{2}-2s+2}$ d) $\frac{1}{s(s+2)}$
14) Which of the following is true?
a) $L^{-1}\{\phi'(s)\} = tL^{-1}\{\phi(s)\}$ b) $L^{-1}\{\phi'(s)\} = -tL^{-1}\{\phi(s)\}$$

	by using Laplace transform
c)	Find inverse z-transform of
-	$F(z) = \frac{z}{(z-2)(z-3)}, 2 < z < 3$

Q.4 Attempt any two of the following questions.

An uncharged condenser of capacity C is charged by applying an e.m.f of a) value *E* sin *nt* through the leads of an inductance L and negligible resistance.

$$\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$$

Pro

by
$$dt^2 = LC = L$$

 $Q = \frac{E}{2n^2L} [\sin nt - nt \cos nt]$ where $n^2 = \frac{1}{LC}$

 $\frac{1}{1} = \frac{1}{7} \sin \theta$

b) Solve $\frac{d^2y}{dt^2} - 3\frac{dy}{dx} + 2y = 12e^{-2t}$

y(0) = 2, y'(0) = 6

a) Solve $(D^2 - 2D + 1)w$ b) Fi

c) Find $L\{(t + \sin t)^2\}$ **d)** Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$

e) Find $Z\left\{\frac{3^{K}}{\kappa}\right\}$, $k \ge 1$

Day & Date: Saturday, 07-12-2019

Instructions: 1) All questions are compulsory.

a) Solve $(D^3 + 2D^2 + D)y = x^2 + x$ **b)** Solve $(D^2 - 2D + 4)y = e^x \cos^2 x$

Time: 10:00 AM To 01:00 PM

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No.

Q.2

Q.3

$$(D^2 - 2D + 1)y = x \sin x$$

Laplace transform of

$$f(t) = t, \quad 0 < t < 1$$

$$f(t) = t, \quad 0 < t < 0$$

$$f(t) = t, \quad 0 < = 0, \quad 1 < 0$$

$$f(t) = t, \quad (t) = 0, \quad (t) = 0,$$

$$=0, 1$$

$$f(t) = t, 0$$

= 0, 1

$$f(t) = t, 0 = 0, 1$$

$$=0, 1$$

If $f(t) = f(t+2)$

If
$$f(t) = f(t+2)$$

Find $t^{-1}(t+1)$

c) Find
$$L^{-1}{\tan^{-1}(s+1)}$$

d) Find
$$Z\{ka^k\}, k \ge 0$$

a) Find
$$Z\{ka^{k}\}, k \ge 0$$

e) Find $Z^{-1}\{\frac{1}{2}, |z| > 1$

e) Find
$$Z^{-1}\left\{\frac{1}{(-\infty)^2}\right\}, |z| > 3$$

c) Find
$$L^{-1}\{\tan^{-1}(s+1)\}$$

d) Find $Z\{ka^k\} k \ge 0$

c) Find
$$L^{-1}\{\tan^{-1}(s + 1)\}$$

d) Find $Z\{ka^k\}, k \ge 0$

d) Find
$$Z\{ka^k\}, k \ge 0$$

e) Find $Z^{-1}\{1, k \ge 0$

$$=0, \quad 1 < t < 2$$

If $f(t) = f(t+2)$

$$f(t) = t, \quad 0 < t$$

ind Laplace transfor
$$f(t) = t$$

aplace transform of
$$f(t) = t$$
, $0 < t < 2$

$$f(t) = t, \quad 0 < t$$

= 0, 1 < t

If
$$f(t) = f(t+2)$$

c) Find
$$L^{-1}\{\tan^{-1}(s+1)\}$$

c) Find
$$L^{-1}\{\tan^{-1}(s+1)\}$$

d) Find
$$Z\{ka^k\}, k \ge 0$$

d) Find
$$Z\{ka^k\}, k \ge 0$$

e) Find
$$Z\{Ra^{k}\}, k \ge 0$$

Find $Z^{-1}\left\{\frac{1}{(-2)^{2}}\right\}, |z| > 3$

e) Find
$$Z^{-1}\left\{\frac{1}{(z-3)^2}\right\}$$
, $|z| > 3$

The charge Q on the plate of the condenser satisfies the differential equation.

Electronics Engineering ENGINEERING MATHEMATICS – III

Section – I

2) Use of non programmable calculator is allowed.

3) Figures to the right indicates full marks.

Attempt any three of the following questions.

Attempt any three of the following questions.

SLR-FM-174

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019

Max. Marks: 56

09

09

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Set R

Section – II

Q.5 Attempt any three of the following questions.

a) The lines of regression are -4x + 5y = 3 and 7x + 6y = -9

Find

- 1) Means of x and y
- 2) Coefficient of correlation
- **b)** Solve for a positive root of $x^3 4x + 1 = 0$ by Regula falsi method correct to two decimal places.
- c) Solve the following set of equations by Gauss Elimination method.

x + y + z = 6 $\frac{1}{2}$ $\frac{1}$

$$x - y + z = z$$
$$2x - y + 3z = 9$$

d) In an experiment with 500 seeds in groups of 5 the following results were obtained.

x:	0	1	2	3	4	5	Total
f:	10	70	150	160	80	30	500

Where f denotes the number of groups in which x seeds germinated fit a binomial distribution.

e) Find the Fourier series for

$$f(x) = x^3 \text{ in } (-\pi, \pi)$$

Q.6 Attempt any three of the following questions.

- a) A manufacturer finds that average demand. Per day for the mechanic to repair his new production is 1.5 over a period of one year the demand per day is distributed as Poisson distribution. He employs two mechanics on how many days in one year.
 - 1) Both mechanics would be free
 - 2) Some demand is refused
- **b)** Find the coefficient of correlation for the following data.

 $N = 25, \Sigma x = 120, \Sigma x^2 = 650, \Sigma y = 100, \Sigma y^2 = 450, \Sigma xy = 500$

- c) Find the positive real root of $4x e^x = 0$ that lies between 2 and 3 by Newton's method correct to 3 decimal places.
- d) Find the Fourier cosine expansion of

$$f(x) = c - x \qquad 0 < x < c$$

e) Find the numerically largest eigen value of $A = \begin{bmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{bmatrix}$

And the corresponding eigen vector.

Taking $\begin{bmatrix} 1\\0\\0 \end{bmatrix}$ as initial eigen vector.

(perform 3 iterations)

Q.7 Attempt ant two of the following questions.

a) Solve by Jacobis iteration method, the equations

$$20x + y - 2z = 173x + 20y - z = -182x - 3y + 20z = 25$$

(perform 4 iterations)

b) Find the Fourier series expansion of
$$f(x) = 2 - \frac{x^2}{2}$$
, $0 \le x \le 2$

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SLR-FM-174

Set

SLR-FM-174 Set R

- c) The customer accounts of a certain departmental store have an average balance of Rs.120 and a standard deviation of Rs.40 Assuming that the distribution of account balances is normal. Find the proportion of accounts.
 - 1) over Rs. 150
 - 2) between Rs. 100 and Rs. 150
 - 3) between Rs. 60 and Rs. 90
 - (Given: for a SNV Z area from
 - $\dot{z} = 0$ to z = 0.75 is 0.2734, that from
 - z = 0 to z =0.5 is 0.1915
 - z = 0 to z = 1.5 is 0.4332)

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ENGINEERING MATHEMATICS – III**

Day & Date: Saturday, 07-12-2019

a) Harmonic

a) -2 and 1

c) 1 and 2

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory should be solved in first 30 minutes in answer book.

- Use of non programmable calculator is allowed.
- Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

3)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) A continuous random variable has the following density function

$f(x) = kx, 0 \le x \le 2$, Then k=		
a) $\frac{1}{2}$	b)	$^{1}/_{4}$
c) $\frac{3}{2}$	d)	³ / ₄

Set

Max. Marks: 70

Marks: 14

The value of coefficient of correlation r lies between

d) Dirichlet's conditions

b) -1 and 1 d) 2 and 3

b) $\frac{1}{s^2+2s+2}$

The conditions of expansions of function in Fourier series are known as _____.

b) Cauchy

4) Which of the following method is used to determine numerically largest eigen value and corresponding eigen vector of given matrix?

a) Gauss Seidal method

c) Riemann's conditions

- b) Gauss Elimination
- c) Power method d) Newton's method
- The Newton Raphson method fails when _ 5)
 - a) f'(x) is negative b) f'(x) is positive c) f'(x) is zero d) never fails
- For $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 3e^{2x}$, The particular integral is _____. 6) a) $c_1 e^{-x} + c_2 e^{-3x}$ b) $\frac{1}{15}e^{2x}$ c) $\frac{1}{5}e^{2x}$ d) $3e^{2x}$ 7)
 - $\frac{1}{D+m}X = \underline{\qquad}$ a) $e^{-mx} \int X e^{mx} dx$ b) $e^{mx} \int X e^{-mx} dx$ c) $e^{-mx} \int X \, dx$ d) $e^{mx} \int X dx$

L{ $e^{-t} \sinh t$ } = _____. a) $\frac{1}{s(s-2)}$ 8)

c) $\frac{1}{s^2 - 2s + 2}$ d)

Set S

9) Which of the following is true?
a)
$$L^{-1}\{\phi'(s)\} = tL^{-1}\{\phi(s)\}$$

b) $L^{-1}\{\phi'(s)\} = -tL^{-1}\{\phi(s)\}$
c) $L^{-1}\{\phi'(s)\} = \frac{-1}{t}L^{-1}\{\phi(s)\}$
d) $L^{-1}\{\phi'(s)\} = \frac{1}{t}L^{-1}\{\phi(s)\}$
10) $L^{-1}\{\frac{1}{\sqrt{s}}\} = \underline{\qquad}$

a)
$$\sqrt{\frac{\pi}{t}}$$

b) $\frac{1}{\sqrt{\pi t}}$
c) $\sqrt{\frac{t}{\pi}}$
d) $\frac{t}{\sqrt{\pi}}$

$$L^{-1}\{\phi(s)\} = \frac{1}{t}L^{-1}\{\phi(s)\}$$

11) If
$$U(K) = \begin{cases} 1, & K \ge 0\\ 0, & K < 0 \end{cases}$$
 then $Z\{U(K)\} =$ ______.
a) $\frac{1}{z-1}$ b) $\frac{1}{1-z}$
c) $\frac{z}{z-1}$ d) $\frac{z}{1-z}$
12) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\} =$

12) If
$$z\{f(k)\} = F(z)$$
, then $z\{a^k f(k)\} =$ _____.
a) $F\left(\frac{z}{a}\right)$ b) $\frac{1}{a}F\left(\frac{z}{a}\right)$
c) $F\left(\frac{a}{z}\right)$ d) $\frac{1}{z}F\left(\frac{a}{z}\right)$

In half range cosine series for $f(x) = (x - 1)^2$, $0 \le x \le 1$ the constant 13) term is _____.

a)
$$\frac{1}{3}$$
 b) $\frac{-1}{3}$ c) 0 d) 1

14) The equations of lines of regression are x + 2y = 5 and 2x + 3y = 8 then mean \overline{x} and \overline{y} are _____.

a)	1 and 3	b)	2 and 3
c)	2 and 5	d)	1 and 2

$\frac{1}{2}, 2 < z < 3$		

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ENGINEERING MATHEMATICS – III**

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Use of non programmable calculator is allowed.
- 3) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three of the following questions.

- a) Solve $(D^3 + 2D^2 + D)y = x^2 + x$
- **b)** Solve $(D^2 2D + 4)y = e^x \cos^2 x$
- **c)** Find $L\{(t + \sin t)^2\}$
- **d)** Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$
- **e)** Find $Z\left\{\frac{3^{K}}{\kappa}\right\}, k \geq 1$

Attempt any three of the following questions. Q.3

- a) Solve $(D^2 2D + 1)v = x \sin x$
- b) Find Laplace transform of

$$f(t) = t, \quad 0 < t < 1 \\ = 0, \quad 1 < t < 2$$

$$If f(t) = f(t+2)$$

- **c)** Find L^{-1} {tan⁻¹(s + 1)}
- **d)** Find $Z\{ka^k\}, k \ge 0$
- e) Find $Z^{-1}\left\{\frac{1}{(z-3)^2}\right\}, |z| > 3$

Attempt any two of the following questions. Q.4

a) An uncharged condenser of capacity C is charged by applying an e.m.f of value *E* sin *nt* through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation.

$$\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$$

Prove that charge at any time is given by

- $Q = \frac{E}{2n^2 L} [\sin nt nt \cos nt]$ where $n^2 = \frac{1}{LC}$
- **b)** Solve $\frac{d^2y}{dt^2} 3\frac{dy}{dt} + 2y = 12e^{-2t}$
- by usir
- c) Find inverse z-transform of

$$y(0) = 2, y'(0) = 6$$

ng Laplace transform

$$F(z) = \frac{z}{(z-2)(z-3)}, 2 < |z|$$

Max. Marks: 56

09

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10

SLR-FM-174

Set

Section – II

Q.5 Attempt any three of the following questions.

a) The lines of regression are -4x + 5y = 3 and 7x + 6y = -9

Find

- 1) Means of x and y
- 2) Coefficient of correlation
- **b)** Solve for a positive root of $x^3 4x + 1 = 0$ by Regula falsi method correct to two decimal places.
- c) Solve the following set of equations by Gauss Elimination method.

x + y + z = 6 $\frac{1}{2}$ $\frac{1}$

$$x - y + z = z$$
$$2x - y + 3z = 9$$

d) In an experiment with 500 seeds in groups of 5 the following results were obtained.

x:	0	1	2	3	4	5	Total
f:	10	70	150	160	80	30	500

Where f denotes the number of groups in which x seeds germinated fit a binomial distribution.

e) Find the Fourier series for

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Q.6 Attempt any three of the following questions.

- a) A manufacturer finds that average demand. Per day for the mechanic to repair his new production is 1.5 over a period of one year the demand per day is distributed as Poisson distribution. He employs two mechanics on how many days in one year.
 - 1) Both mechanics would be free
 - 2) Some demand is refused
- **b)** Find the coefficient of correlation for the following data.

 $N = 25, \Sigma x = 120, \Sigma x^2 = 650, \Sigma y = 100, \Sigma y^2 = 450, \Sigma xy = 500$

- c) Find the positive real root of $4x e^x = 0$ that lies between 2 and 3 by Newton's method correct to 3 decimal places.
- d) Find the Fourier cosine expansion of

$$f(x) = c - x \qquad 0 < x < c$$

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And the corresponding eigen vector.

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(perform 3 iterations)

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$$20x + y - 2z = 173x + 20y - z = -182x - 3y + 20z = 25$$

(perform 4 iterations)

b) Find the Fourier series expansion of
$$f(x) = 2 - \frac{x^2}{2}$$
, $0 \le x \le 2$

10

09

09

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Set



- c) The customer accounts of a certain departmental store have an average balance of Rs.120 and a standard deviation of Rs.40 Assuming that the distribution of account balances is normal. Find the proportion of accounts.
 - 1) over Rs. 150
 - 2) between Rs. 100 and Rs. 150
 - 3) between Rs. 60 and Rs. 90
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 - $\dot{z} = 0$ to z = 0.75 is 0.2734, that from
 - z = 0 to z =0.5 is 0.1915
 - z = 0 to z = 1.5 is 0.4332)

Set S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The load and line regulation of ideal power supply must be . 1)
 - Zero a)

c)

c)

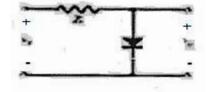
c)

- Large d) None
- 2) If the load resistance of a capacitor filter is increases then ripple factor
 - Increases a)

- 3) The ripple frequency for half wave voltage doubler circuit is
 - Same as input frequency a)

Remains constant

- Half of supply frequency d)
- 4) The function of bleeder resistor in power supply is.
 - to provide discharging path for capacitor a)
 - it improves regulation characteristics b)
 - both a & b c)
 - d) is same as load resistor
- 5) The circuit shown below is _____.



- Positive clipper a)
- Half wave rectifier c)
- d) Clamper
- Forward drop across diode will 6)
 - a)
 - Remains same c)
- 7) The PIV for bridge rectifier is _____
 - a)
 - vmc) 2

- Negative clipper b)
- with increase in temperature.
- b) Decreases

b) Vm

d) $vm/\sqrt{2}$

d) Becomes zero



Marks: 14

- b) Infinite
- Decreases b)
 - d) Exponentionally increases
 - Twice the input frequency b)
 - Nearly equal to zero

- Increases
- 2Vm

			SLR-FM-175
			Set P
a) Couplin c) Junctior	nplifier fall at high frec g capacitor n capacitance	b) d)	Bypass capacitor Both a & b
a) Biasing c) Early ef Input resistar		b) d)	in transistor is called as Thermal runaway Compensation
a) hfe c) hie		b) d)	Hoe Hre
For amplifier the voltage ga a) 2000.00 c) 1768.86	ain is	e hfe b)	e=200, RL=10KΩ, hie=1KΩ,Rs=0, 1666.66 None of these
b) Current c) Voltage	controlled device with controlled device with controlled device with controlled device with controlled device with	n Iow n hig	/ input resistance h input resistance
a) Monosta b) Astable	tatement is able converts sine wa converts sine wave to converts sine wave to these	o squ	uare wave
a) Astable	se can be stretched to multivibrator able multivibrator	b)	Schmitt Trigger

8)

9)

10)

11)

12)

13)

14)

No. S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

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Section – I

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

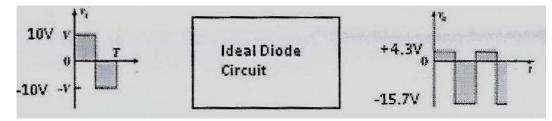
Q.2 Attempt any four

Seat

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- d) What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- b) Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

16

12

16

Max. Marks: 56

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Set

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
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- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

1)

3)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Gain of an amplifier fall at high frequency due to _____
 - Coupling capacitor a)
 - Junction capacitance d) Both a & b c)
- The process of base width modulation in transistor is called as _____. 2)

b) Bypass capacitor

d) Compensation

- a) Biasing b) Thermal runaway
- Early effect c)
- Input resistance CE amplifier is _
 - hfe b) Hoe a)
 - c) hie d) Hre
- For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω , Rs=0, 4) the voltage gain is .
 - 1666.66 2000.00 b) a)
 - c) 1768.86 d) None of these
- The JFET is a 5)
 - a) Current controlled device with high input resistance
 - Current controlled device with low input resistance b)
 - Voltage controlled device with high input resistance c)
 - d) Voltage controlled device with low input resistance
- 6) The correct statement is
 - Monostable converts sine wave to square wave a)
 - b) Astable converts sine wave to square wave
 - Schmitt converts sine wave to square wave c)
 - None of these d)
- 7) A 1 msec pulse can be stretched to 1 sec using
 - Astable multivibrator b) Schmitt Trigger a) c)
 - Monostable multivibrator d) None of these
- 8) The load and line regulation of ideal power supply must be _____.
 - Zero a)
 - c) Large

- b) Infinite
- d) None

SLR-FM-175



Max. Marks: 70

Marks: 14

9) If the load resistance of a capacitor filter is increases then ripple factor

a) Increases

- b) Decreases
- c) Remains constant
- d) Exponentionally increases

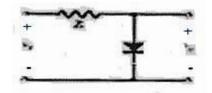
SLR-FM-175

Set Q

- 10) The ripple frequency for half wave voltage doubler circuit is _
 - a) Same as input frequencyc) Half of supply frequency
- b) Twice the input frequencyd) Nearly equal to zero

11) The function of bleeder resistor in power supply is.

- a) to provide discharging path for capacitor
- b) it improves regulation characteristics
- c) both a & b
- d) is same as load resistor
- 12) The circuit shown below is _____.



- a) Positive clipper
- c) Half wave rectifier
- 13) Forward drop across diode will ____
 - a) Increases
 - c) Remains same
- d) Becomes zero

d)

- The PIV for bridge rectifier is _____ a) 2Vm
- c) $\frac{vm}{2}$

14)

- b) Vm
 - d) $vm/\sqrt{2}$

b) Negative clipper

____ with increase in temperature.

Clamper

b) Decreases

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
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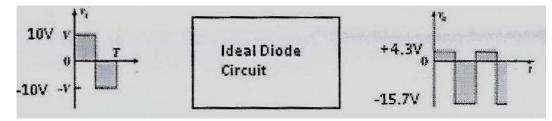
Section – I

Q.2 Attempt any four

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- d) What is Early effect? How it affects the BJT characteristics in CB configuration.
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Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- b) Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

16

SLR-FM-175

Set

Max. Marks: 56

Seat No.

16

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019

Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
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- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - 1) The circuit shown below is _____.
 - Positive clipper b) Negative clipper a) Half wave rectifier c) d) Clamper 2) Forward drop across diode will _ with increase in temperature. Increases b) Decreases a) Remains same d) Becomes zero c) 3) The PIV for bridge rectifier is 2Vm b) Vm a) vm c) d) $vm/\sqrt{2}$ 2 4) Gain of an amplifier fall at high frequency due to _____. Coupling capacitor b) Bypass capacitor a) Junction capacitance d) Both a & b c) The process of base width modulation in transistor is called as . 5) Biasing Thermal runaway a) b) Early effect c) d) Compensation Input resistance CE amplifier is ____ 6) b) Hoe hfe a) c) hie d) Hre For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω , Rs=0, 7) the voltage gain is _____. 2000.00 b) 1666.66 a) 1768.86 d) None of these c)

SLR-FM-175

Set

Seat No.

Max. Marks: 70

Marks: 14



8) The JFET is a _____.

a)

c)

a)

- a) Current controlled device with high input resistance
- b) Current controlled device with low input resistance
- c) Voltage controlled device with high input resistance
- d) Voltage controlled device with low input resistance
- 9) The correct statement is _____
 - a) Monostable converts sine wave to square wave
 - b) Astable converts sine wave to square wave
 - c) Schmitt converts sine wave to square wave
 - d) None of these
- 10) A 1 msec pulse can be stretched to 1 sec using _____
 - Astable multivibrator b) Schmitt Trigger
 - Monostable multivibrator d) None of these
- 11) The load and line regulation of ideal power supply must be _____.
 - Zero b) Infinite
 - c) Large d) None
- 12) If the load resistance of a capacitor filter is increases then ripple factor
 - a) Increases

- b) Decreases
- c) Remains constant d) Exponentionally increases
- 13) The ripple frequency for half wave voltage doubler circuit is _____
 - a) Same as input frequency
- b) Twice the input frequency
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- d) Nearly equal to zero
- 14) The function of bleeder resistor in power supply is.
 - a) to provide discharging path for capacitor
 - b) it improves regulation characteristics
 - c) both a & b
 - d) is same as load resistor

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

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Section – I

Q.2 Attempt any four

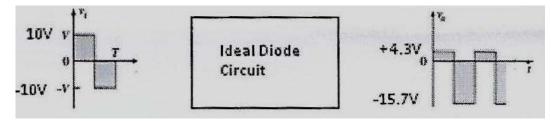
Seat

No.

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- **d)** What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- b) Design a single stage CE amplifier for voltage gain of 200, stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

16

12

16

SLR-FM-175

Set R

Max. Marks: 56

Set

S.E. (Part – I) (I	New/Old) (CBCS) Examination Nov/Dec-2019
	Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

1)

Seat No.

Marks: 14

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - Input resistance CE amplifier is _____
 - a) hfe b) Hoe c) hie d) Hre
 - 2) For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω ,Rs=0, the voltage gain is _____.
 - a) 2000.00 b) 1666.66
 - d) None of these
 - 3) The JFET is a ____

c)

a)

1768.86

- a) Current controlled device with high input resistance
- b) Current controlled device with low input resistance
- c) Voltage controlled device with high input resistance
- d) Voltage controlled device with low input resistance
- 4) The correct statement is _____
 - a) Monostable converts sine wave to square wave
 - b) Astable converts sine wave to square wave
 - c) Schmitt converts sine wave to square wave
 - d) None of these

5) A 1 msec pulse can be stretched to 1 sec using _____

- Astable multivibrator b) Schmitt Trigger
- c) Monostable multivibrator d) None of these
- 6) The load and line regulation of ideal power supply must be _____.
 - a) Zero b) Infinite
 - c) Large d) None
- 7) If the load resistance of a capacitor filter is increases then ripple factor
 - a) Increases
- b) Decreases
- c) Remains constant
- d) Exponentionally increases
- 8) The ripple frequency for half wave voltage doubler circuit is _
 - a) Same as input frequencyc) Half of supply frequency
- b) Twice the input frequency
- Half of supply frequency d) Nearly equal to zero

Set S

Max. Marks: 70

SLR-FM-175

it improves regulation characteristics b) c) both a & b d) is same as load resistor 10) The circuit shown below is _____. Positive clipper b) Negative clipper a) Half wave rectifier d) Clamper c) 11) Forward drop across diode will ____ ____ with increase in temperature. Increases b) Decreases a) d) Becomes zero **Remains same** c) 12) The PIV for bridge rectifier is ____ b) Vm 2Vm a) vmd) $vm/\sqrt{2}$ c) 2 Gain of an amplifier fall at high frequency due to ____ 13) b) Bypass capacitor Coupling capacitor a) C) Junction capacitance d) Both a & b The process of base width modulation in transistor is called as _____. 14) Biasing Thermal runaway a) b)

The function of bleeder resistor in power supply is. to provide discharging path for capacitor

Early effect c)

9)

a)

d) Compensation

SLR-FM-175

Set S

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

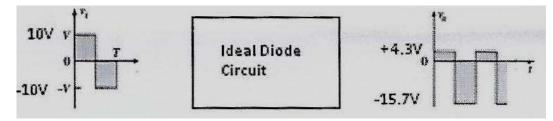
Section – I

Q.2 Attempt any four

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- **d)** What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- **b)** Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

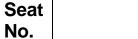
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16

– I Max. Marks: 56

SLR-FM-175

Set



Set S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

NETWORK THEORY & ANALYSIS

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book

- 2) All questions are compulsory.
- 3) Assume the suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

b)

- 1) The time constant of a series RC circuit is С
 - a) *RC*
 - R e^{-RLC} $\frac{R}{C}$ d) c)
- 2) The function is said to be having simple poles and zeros only if _____.
 - The poles are not repeated a)
 - The zeros are not repeated b)
 - The poles and zeros are not repeated c)
 - d) none of the above
- 3) Cascade connection of LPF with cutoff frequency f1 and HPF with cutoff frequency f₂ gives band pass filter if b)
 - a) $f_1 < f_2$
 - c) $f_1 = f_2$ d) none of the above
- The Z parameters Z_{11} and Z_{21} are obtained by _ 4)
 - a) by shorting input terminals b) by opening input terminals by shorting output terminals by opening output terminals d) C)
- If the degree of the node is two, then it indicates that two branches are 5) incident at node and these are in
 - Parallel a) Series b) c) Both a) & b) d) None
- Maximum power is transferred when the load impedance is equal to _____. 6)
 - a) Source impedance Zero b)
 - Half of Source Impedance None d) C)
- 7) If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 2800 Hz. what is the bandwidth?
 - a) 400Hz 2400Hz b)
 - c) 2800Hz d) 5200Hz
- 8) The s-domain equivalent of the inductor reduces to an inductor with impedance?
 - a) L b) SL S³L c) S^2L d)

SLR-FM-176

Ρ

Max. Marks: 70

Marks: 14



			SLR-FM-176
			Set P
9)	Mesh Analysis is based on a) Kirchhoff's Voltage Law c) None	b)	Kirchhoff's Current Law
10)	For an R-L-C circuit, we get [D - (K1 positive, then the curve will be? a) Damped c) under damped	b)	 [D - (K1 - K2)] i = 0. If K2 is over damped critically damped
11)	The two port network is said to be sy a) $Y_{11}=Y_{22}$ c) $A = C$	b)	etrical if $Z_{12} = Z_{21}$ None
12)	Inductor has a property that it doesn a) Current c) L		-
13)	lf a series circuit RLC circuit, the qua a) C c) ωC	alitý fa b) d)	actor is defined as ωRC 1/ωRC
14)	The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is a) $Z_{0T} = \frac{Z1Z1}{Z0\pi}$ c) $Z_0\pi = \frac{Z1Z2}{Z0T}$	is giv b) d)	en as $Z_{0T} = \frac{Z2Z2}{Z0\pi}$. None

Seat No.

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

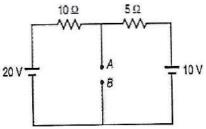
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- **c)** The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

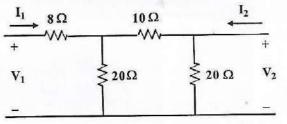
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown



b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

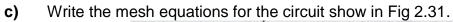
Max. Marks: 56

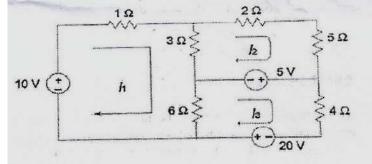
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16

SLR-FM-176

Set

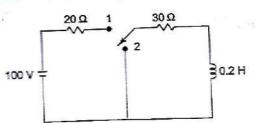




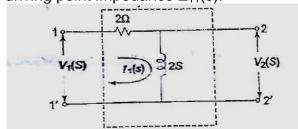


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering NETWORK THEORY & ANALYSIS** Day & Date: Thursday, 12-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book 2) All questions are compulsory. 3) Assume the suitable data whenever necessary. MCQ/Objective Type Questions

Duration: 30 Minutes

6)

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The s-domain equivalent of the inductor reduces to an inductor with 1) impedance?
 - a) L b) SL c) S^2L d) S³L
- Mesh Analysis is based on _ 2) a) Kirchhoff's Voltage Law b) Kirchhoff's Current Law c) None
- For an R-L-C circuit, we get [D (K1 + K2)][D (K1 K2)] i = 0. If K2 is 3) positive, then the curve will be?
 - a) Damped over damped b) c) under damped d) critically damped
- The two port network is said to be symmetrical if _____ 4)
 - a) $Y_{11}=Y_{22}$ b) $Z_{12} = Z_{21}$ c) A = Cd) None
- Inductor has a property that it doesn't allow sudden changes in _____. 5) Current b) Voltages a)
 - c) L d) None If a series circuit RLC circuit, the quality factor is defined as _____. a) C ωRC b)
 - c) ωC d) $1/\omega RC$

7) The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is given as Z1Z1a) 7 h) 77

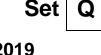
a)	$Z_{0T} = \frac{Z1Z1}{Z0\pi}$	0117	1,	2,	01	b)	$Z_{0T} = \frac{Z2Z2}{Z0\pi}$
c)	$Z_0 \pi = \frac{Z_1 Z_2}{Z_0 T}$					d)	None

- The time constant of a series RC circuit is 8)
 - С a) RC b) R $\frac{R}{C}$ e^{-RLC} d) C)

9) The function is said to be having simple poles and zeros only if _____.

- a) The poles are not repeated
- b) The zeros are not repeated
- c) The poles and zeros are not repeated
- d) none of the above

SLR-FM-176



Marks: 14

Seat No.

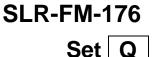
- 10) Cascade connection of LPF with cutoff frequency f₁ and HPF with cutoff frequency f₂ gives band pass filter if a) $f_1 < f_2$
 - $f_1 > f_2$ b)
 - c) $f_1 = f_2$

- none of the above d)
- The Z parameters Z_{11} and Z_{21} are obtained by _ 11)
 - a) by shorting input terminals
 - c) by shorting output terminals
- by opening input terminals b) d) by opening output terminals
- If the degree of the node is two, then it indicates that two branches are 12) incident at node and these are in b) Parallel
 - a) Series
 - None c) Both a) & b) d)

13) Maximum power is transferred when the load impedance is equal to ____. Zero b)

- Source impedance a)
- Half of Source Impedance C) d) None
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 14) 2800 Hz, what is the bandwidth?
 - a) 400Hz
 - c) 2800Hz

- b) 2400Hz
- d) 5200Hz



Set

Q

Seat No.

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

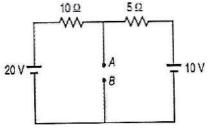
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- **c)** The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

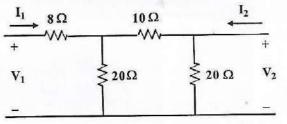
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown



b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

Max. Marks: 56

16

SLR-FM-176

Set Q



20

12

13

5 V

20 V

50

4Ω

Q.4 Attempt any four:

c)

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0

3 \

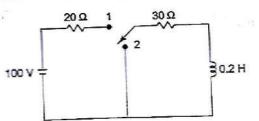
6Ω

Write the mesh equations for the circuit show in Fig 2.31.

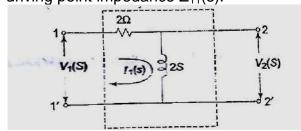
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h

10 V (



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

Set S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

NETWORK THEORY & ANALYSIS

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book

- 2) All questions are compulsory.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) If the degree of the node is two, then it indicates that two branches are incident at node and these are in
 - a) Series
 - c) Both a) & b) d)
- 2) Maximum power is transferred when the load impedance is equal to _____.
 - a) Source impedance Half of Source Impedance c)
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 3) 2800 Hz, what is the bandwidth?
 - a) 400Hz b) 2400Hz
 - 5200Hz c) 2800Hz d)
- 4) The s-domain equivalent of the inductor reduces to an inductor with impedance? a) L b) SL
 - c) S^2L d) Mesh Analysis is based on
 - a) Kirchhoff's Voltage Law b) Kirchhoff's Current Law
 - c) None

c)

5)

- For an R-L-C circuit, we get [D (K1 + K2)][D (K1 K2)] i = 0. If K2 is 6) positive, then the curve will be?
 - a) Damped b) over damped c) under damped d) critically damped
- 7) The two port network is said to be symmetrical if _
 - a) $Y_{11}=Y_{22}$ b) $Z_{12} = Z_{21}$ None c) A = Cd)
- Inductor has a property that it doesn't allow sudden changes in . 8)
 - a) Current Voltages b) c) L
 - d) None
- If a series circuit RLC circuit, the quality factor is defined as 9) a)
 - С ωRC b) 1/ωRC ωC d)

SLR-FM-176

Marks: 14

R

Max. Marks: 70

- Parallel
- None
- b)

S³I

- - b) Zero
- d) None

SLR-FM-176 Set

The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is given as _____ a) $Z_{0\pi} = \frac{Z_1Z_1}{D}$ b) $Z_{0\pi} = \frac{Z_2Z_2}{D}$ 10)

c)
$$Z_{0T} = \frac{1}{Z_{0T}}$$

c) $Z_{0}\pi = \frac{Z_{1}Z_{2}}{Z_{0T}}$
d) None

- 11)
- c) $Z_0 \pi = \frac{Z1Z2}{Z0T}$ The time constant of a series RC circuit is b) $\frac{C}{R}$ d) e^{-RLC} $\frac{R}{C}$
- 12) The function is said to be having simple poles and zeros only if _____.
 - a) The poles are not repeated
 - b) The zeros are not repeated
 - c) The poles and zeros are not repeated
 - d) none of the above
- Cascade connection of LPF with cutoff frequency f1 and HPF with cutoff 13) frequency f2 gives band pass filter if _
 - a) $f_1 < f_2$

- $f_1 > f_2$ b)
- c) $f_1 = f_2$ d) none of the above
- 14) The Z parameters Z_{11} and Z_{21} are obtained by ____
 - a) by shorting input terminals
- b) by opening input terminals
- c) by shorting output terminals
- d) by opening output terminals

Set

R

Seat No.

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

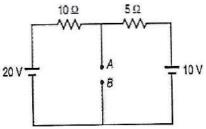
Section - I

Q.2 Attempt any Four:

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- **c)** The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

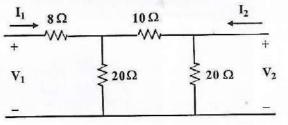
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown



b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

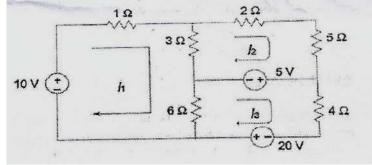
Max. Marks: 56

16

SLR-FM-176

Set

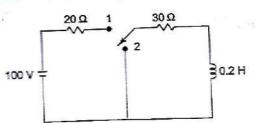




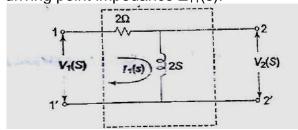


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500 Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

		00 AM To 01:00 PM					
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book							
	2) All questions are compulsory.3) Assume the suitable data whenever necessary.						
		MCQ/Objective Type Questions					
Dura	ition: 3	30 Minutes Marks: 14					
Q.1	Cho 1)	ose the correct alternatives from the options and rewrite the sentence. 14 For an R-L-C circuit, we get [D - (K1 + K2)][D - (K1 - K2)] i = 0. If K2 is positive, then the curve will be?					
		a) Dampedb) over dampedc) under dampedd) critically damped					
	2)	The two port network is said to be symmetrical if a) $Y_{11}=Y_{22}$ b) $Z_{12}=Z_{21}$ c) $A = C$ d) None					
	3)	Inductor has a property that it doesn't allow sudden changes in a) Current b) Voltages c) L d) None					
	4)	If a series circuit RLC circuit, the quality factor is defined as a) C b) ωRC c) ωC d) 1/ωRC					
	5)	The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is given as a) $Z_{0T} = \frac{Z1Z1}{Z0\pi}$ b) $Z_{0T} = \frac{Z2Z2}{Z0\pi}$.					
		c) $Z_0 \pi = \frac{Z1Z2}{Z0T}$ d) None					
	6)	The time constant of a series RC circuit is a) RC b) $\frac{C}{R}$					
		c) $\frac{R}{C}$ d) e^{-RLC}					
	7)	 The function is said to be having simple poles and zeros only if a) The poles are not repeated b) The zeros are not repeated c) The poles and zeros are not repeated d) none of the above 					
	8)	Cascade connection of LPF with cutoff frequency f_1 and HPF with cutoff frequency f_2 gives band pass filter if a) $f_1 < f_2$ b) $f_1 > f_2$ c) $f_1 = f_2$ d) none of the above					
	9)	The Z parameters Z_{11} and Z_{21} are obtained by a) by shorting input terminals b) by opening input terminals					

d)

Electronics Engineering NETWORK THEORY & ANALYSIS

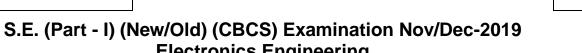
Seat No.

Day & Date: Thursday, 12-12-2019

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by opening output terminals

c) by shorting output terminals



Set

Max. Marks: 70

S

10) If the degree of the node is two, then it indicates that two branches are incident at node and these are in _

- a) Series Parallel b)
- c) Both a) & b) d) None
- 11) Maximum power is transferred when the load impedance is equal to . Zero
 - Source impedance a) b) c)
 - None Half of Source Impedance d)
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 12) 2800 Hz, what is the bandwidth?
 - a) 400Hz b) 2400Hz
 - c) 2800Hz d) 5200Hz
- 13) The s-domain equivalent of the inductor reduces to an inductor with impedance?
 - a) L b) SL c) S^2L S³L d)
- Mesh Analysis is based on _____. 14)
 - a) Kirchhoff's Voltage Law
- Kirchhoff's Current Law b)

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Set S

c) None

Set

Seat No.

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

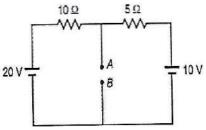
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- c) The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

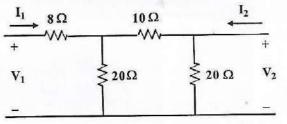
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

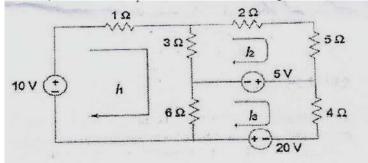
a) Find the Z parameters for the circuit shown



b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

Max. Marks: 56

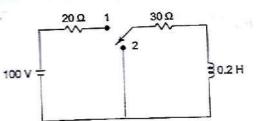
c) Write the mesh equations for the circuit show in Fig 2.31.



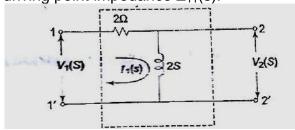


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

16

	а) с)	non weighted code	d)	alphanumeric code			
	The following code is not a BCD code						
	a)	Gray code	b)	XS-3 code			
	c)	8421 code	d)	all of the above			
	ΑT	TL circuit acts as a current sourc	e in tl	ne			
	a)	low state	b)	high state			
	c)	high impedance state	d)	none of these			
	A fl	ip flop has states.					
	a)	Four	b)	One			
	c)	Two	d)	Three			
	The functional difference between S-R flip-flop and J-K flip flop is that						
 a) J-K flip-flop is faster than S-R flip-flop b) J-K flip-flop has feedback path c) J-K flip-flop accepts both inputs 1 d) J-K flip flop does not require external clock 							

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

A Four Variable K map has a ____

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks.

Electronics Engineering DIGITAL LOGIC DESIGN

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

3)

5)

a) A

c) AB

a) 8 min-terms

c) 32 min-terms

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14 According to Boolean algebra (A+AB) equals _____. 1)

b)

d)

b)

d)

В

A+B

16 min-terms

None of these

.

Maxterm Minterm b) a) d) c) Don't care Literals

Each term in standard POS form is called as _____

4) The NAND-NAND realization is equivalent to _

- a) AND-NOT realization b) **AND-OR** realization
- c) OR-AND realization d) **NOT-OR** realization
- 8421 code is
 - a) self complimenting code b) weighted code
- 6)

7)

- 8)
- 9)

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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019

Set

Max. Marks: 70

Marks: 14

c) Combination circuit

- a) PLD b) c) PAL d)
- The output of the Moore machine is the function of _____. 13)
 - a) next state
 - b) present inputs
 - c) present state and present inputs
 - d) present state
- 14 A demultiplexer can be used to realize a _
 - a) Counter
- Shift register b) d) **Display system**

PROM

PLA

a MSI device

a discrete Device



Set P

SLR-FM-177

- 10) The digital circuit that can count clock pulse is called as _____. Counter
 - a) Latch c) Shift register

A PLA is _____. a) a LSI device

c) a SSI Device

is called _____.

11)

12)

- b)
 - d) Trigger

b)

d)

A combinational PLD with a fixed AND array and programmable OR array

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN

Day & Date: Saturday,14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four.

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 2) $(DBCA.B)_{16}$ to base 10
- **b)** Design and implement full subtractor using a 4:1 multiplexer.
- c) Define the following terms with examples.
 - 1) Minterm, Maxterm 2) Canonical SOP, Canonical POS
- d) Derive a code table for BCD code 5421 which satisfies self complementary property.
- d) Write both SOP and POS expressions for a two-input EXNOR gate and a two-input OR gate.

Q.3 Attempt any two.

a) Implement the following Boolean function F, using the two-level forms of logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR:

 $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

- b) Design and implement 1:8 de-multiplexer using NAND gates only.
- c) Design and implement an odd parity generator for 3 bit information using an 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- a) Design a 2 bit gray to binary code converter using a PAL.
- b) Design a 3-bit ripple counter. What is the modulus of the counter?
- c) Design a D flip-flop using T flip-flop.
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- e) What is a shift register? Explain SISO shift register in detail.

Max. Marks: 56

12

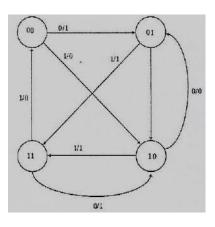
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16

Set

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



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Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) A flip flop has _____ states.
 - a) Four b) One c) Two d) Three
- 2) The functional difference between S-R flip-flop and J-K flip flop is that
 - a) J-K flip-flop is faster than S-R flip-flop
 - b) J-K flip-flop has feedback path
 - c) J-K flip-flop accepts both inputs 1
 - d) J-K flip flop does not require external clock
- 3) The digital circuit that can count clock pulse is called as . b) Counter
 - a) Latch
 - c) Shift register
- A PLA is 4)
 - a) a LSI device

- a MSI device b)
- c) a SSI Device
- d) a discrete Device
- A combinational PLD with a fixed AND array and programmable OR array 5) is called .

d)

- a) PLD b) PROM c) PAL d) PLA
- The output of the Moore machine is the function of . 6)
 - a) next state
 - b) present inputs
 - c) present state and present inputs
 - d) present state

7) A demultiplexer can be used to realize a

- Counter Shift register a) b)
- Combination circuit d) Display system C)
- According to Boolean algebra (A+AB) equals . 8)
 - a) A b) В c) AB A+B
 - d)
- A Four Variable K map has a ____ 9) a) 8 min-terms b) 16 min-terms
 - c) 32 min-terms d) None of these

Max. Marks: 70

Trigger

Each term in standard POS form is called as _____. 10) a) Minterm b) Maxterm c) Don't care d) Literals 11) The NAND-NAND realization is equivalent to _____ _-a) AND-NOT realization b) **AND-OR realization** c) OR-AND realization **NOT-OR realization** d) 12) 8421 code is a) self complimenting code weighted code b) c) non weighted code alphanumeric code d) The following code is not a BCD code 13) a) Gray code XS-3 code b) c) 8421 code all of the above d) 14) A TTL circuit acts as a current source in the high state a) low state b) c) high impedance state d) none of these

Page **6** of **16**

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Set Q

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Attempt any four. Q.2

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 (DBCA.B)₁₆ to base 10 2)
- Design and implement full subtractor using a 4:1 multiplexer. b)
- C) Define the following terms with examples.
 - Minterm, Maxterm 1) 2) Canonical SOP, Canonical POS
- Derive a code table for BCD code 5421 which satisfies self complementary d) property.
- Write both SOP and POS expressions for a two-input EXNOR gate and a d) two-input OR gate.

Q.3 Attempt any two.

Implement the following Boolean function F, using the two-level forms of a) logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR:

 $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

- Design and implement 1:8 de-multiplexer using NAND gates only. b)
- Design and implement an odd parity generator for 3 bit information using an C) 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- Design a 2 bit gray to binary code converter using a PAL. a)
- Design a 3-bit ripple counter. What is the modulus of the counter? b)
- Design a D flip-flop using T flip-flop. c)
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- What is a shift register? Explain SISO shift register in detail. e)

Max. Marks: 56

12

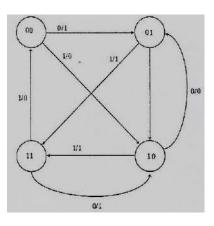
16





Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



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Seat No.	Set R				
	S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN				
	ate: Saturday,14-12-2019 Max. Marks: 70 0:00 AM To 01:00 PM				
Instrue	 ions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. 				
	MCQ/Objective Type Questions				
Duratio	: 30 Minutes Marks: 14				
Q.1	14 8421 code is				
	 a) self complimenting code b) weighted code c) non weighted code d) alphanumeric code 				
2	The following code is not a BCD code a) Gray code b) XS-3 code c) 8421 code d) all of the above				
3	A TTL circuit acts as a current source in the a) low state b) high state c) high impedance state d) none of these				
2	A flip flop has states. a) Four b) One c) Two d) Three				
5	The functional difference between S-R flip-flop and J-K flip flop is that				
	 a) J-K flip-flop is faster than S-R flip-flop b) J-K flip-flop has feedback path c) J-K flip-flop accepts both inputs 1 d) J-K flip flop does not require external clock 				
6	The digital circuit that can count clock pulse is called as a) Latch b) Counter c) Shift register d) Trigger				
7	A PLA is a) a LSI device b) a MSI device c) a SSI Device d) a discrete Device				
8	A combinational PLD with a fixed AND array and programmable OR array is called a) PLD				
ç	 c) PAL d) PLA The output of the Moore machine is the function of a) next state b) present inputs c) present state and present inputs d) present state 				

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10)	A demultiplexer can be used to re a) Counter c) Combination circuit	ealize a b) d)	Shift register Display system
11)	According to Boolean algebra (A- a) A c) AB	⊦AB) eq b) d)	uals B A+B
12)	A Four Variable K map has a a) 8 min-terms c) 32 min-terms	 b) d)	16 min-terms None of these
13)	Each term in standard POS form a) Minterm c) Don't care	is callec b) d)	l as Maxterm Literals
14)	The NAND-NAND realization is e a) AND-NOT realization	quivaler b)	nt to AND-OR realization

c) OR-AND realization d) NOT-OR realization

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Set R

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Attempt any four. Q.2

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 (DBCA.B)₁₆ to base 10 2)
- Design and implement full subtractor using a 4:1 multiplexer. b)
- C) Define the following terms with examples.
 - Minterm, Maxterm 1) 2) Canonical SOP, Canonical POS
- Derive a code table for BCD code 5421 which satisfies self complementary d) property.
- Write both SOP and POS expressions for a two-input EXNOR gate and a d) two-input OR gate.

Q.3 Attempt any two.

Implement the following Boolean function F, using the two-level forms of a) logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR: $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

Design and implement 1:8 de-multiplexer using NAND gates only.

b) Design and implement an odd parity generator for 3 bit information using an C) 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- Design a 2 bit gray to binary code converter using a PAL. a)
- Design a 3-bit ripple counter. What is the modulus of the counter? b)
- Design a D flip-flop using T flip-flop. c)
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- What is a shift register? Explain SISO shift register in detail. e)

Max. Marks: 56

12

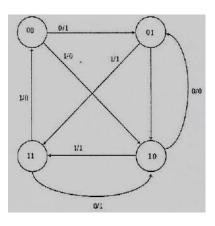
16

16

Set R

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN					
		e: Saturday,14-12-2019 0 AM To 01:00 PM		Max. Marks: 70	
Instr	uctio	book.		be solved in first 30 minutes in answer	
		2) Figures to the right indicate ful			
Dura	tion: ?	MCQ/Objective T 0 Minutes	уре	Questions Marks: 14	
Q.1		ose the correct alternatives from the			
Q .1	1)	The digital circuit that can count clo a) Latch c) Shift register	-	lse is called as	
	2)	A PLA is a) a LSI device c) a SSI Device	b) d)	a MSI device a discrete Device	
	3)	A combinational PLD with a fixed Al is called a) PLD c) PAL	ND aı b) d)	rray and programmable OR array PROM PLA	
	4)	 The output of the Moore machine is a) next state b) present inputs c) present state and present input d) present state 		unction of	
	5)	A demultiplexer can be used to reala) Counterc) Combination circuit	ize a b) d)	 Shift register Display system	
	6)	According to Boolean algebra (A+A a) A c) AB	B) eq b) d)	uals B A+B	
	7)	A Four Variable K map has a a) 8 min-terms c) 32 min-terms	 b) d)	16 min-terms None of these	
	8)	Each term in standard POS form is a) Minterm c) Don't care	calleo b) d)	d as Maxterm Literals	
	9)	The NAND-NAND realization is equal a) AND-NOT realization c) OR-AND realization	ivaleı b) d)	AND-OR realization	
	10)	8421 code is a) self complimenting code c) non weighted code	b) d)	weighted code alphanumeric code	

Seat No.

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Set S

- 11) The following code is not a BCD code
 - a) Gray code

- XS-3 code b)
- c) 8421 code d) all of the above
- A TTL circuit acts as a current source in the _ 12)
 - a) low state
 - c) high impedance state
- A flip flop has _____ states. 13)
 - a) Four c) Two Three
 - d)
- The functional difference between S-R flip-flop and J-K flip flop is that 14)
 - J-K flip-flop is faster than S-R flip-flop a)
 - b) J-K flip-flop has feedback path
 - c) J-K flip-flop accepts both inputs 1
 - d) J-K flip flop does not require external clock

Set S

SLR-FM-177

- b) high state
- none of these d)
- b) One

Set

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN

Day & Date: Saturday,14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four.

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 2) $(DBCA.B)_{16}$ to base 10
- **b)** Design and implement full subtractor using a 4:1 multiplexer.
- c) Define the following terms with examples.
 - 1) Minterm, Maxterm 2) Canonical SOP, Canonical POS
- d) Derive a code table for BCD code 5421 which satisfies self complementary property.
- d) Write both SOP and POS expressions for a two-input EXNOR gate and a two-input OR gate.

Q.3 Attempt any two.

a) Implement the following Boolean function F, using the two-level forms of logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR:

 $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

- **b)** Design and implement 1:8 de-multiplexer using NAND gates only.
- c) Design and implement an odd parity generator for 3 bit information using an 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- a) Design a 2 bit gray to binary code converter using a PAL.
- b) Design a 3-bit ripple counter. What is the modulus of the counter?
- c) Design a D flip-flop using T flip-flop.
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- e) What is a shift register? Explain SISO shift register in detail.

Max. Marks: 56

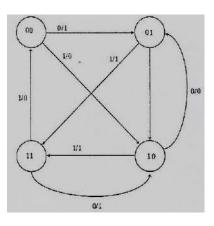
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16

Set S

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



)	The	wavelength λ , frequency f and the relation,		
	a)	$\lambda = f/c$ $\lambda f = c$	'	$\begin{array}{l} \lambda fc = 1 \\ \lambda c = f \end{array}$
2)	a)	st of the power in an AM signal is Carrier Lower sideband	b)	e Upper sideband Modulating signal
8)	a)	amic filters upper limit frequency 20hz 200Khz		 20Khz 20Mhz
!)	tran a)	e modulation index of an AM WAV smitted power is, Unchanged Double	/E is b) d)	changed from 0 to 1. The Half Increases by 50 Percent
5)	be, a)	ow level AM systems amplifiers fo Linear Devices Class C amplifiers	b)	ing the modulated stages must Harmonic devices Nonlinear devices
5)	a)	Modulation Index is given by, M= Em/Ec M= 2Ec/Em		M= Ec/Em M=Em/2
7)	the a)	00W carrier is modulated with a r DSBSC power, 113.6W 121.5W		Ilation Index of 75%. Calculate 112.5 W 122.5W
3)	dev	odulation signal frequency is dou iation is Double Remains same		, then maximum frequency Halved None of the above

Book. 2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

2)

- 3)
- 4)
- 5)
- 6)
- 7)
- 8)

Set S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

ANALOG COMMUNICATION

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

SLR-FM-178

Ρ

Max. Marks: 70

Marks: 14 14

- 9) In a FM system, if the modulation index is doubled by having the modulating frequency, what will be the effect on maximum deviation?
 - a) no effect
 - c) increases by 0.25
- A pre-emphasis circuit is a _____. 10)
 - a) Low pass filter
 - c) High pass filter Band pass filter d)
- 11) All broadcast radio signals received in daytime propagate by means of

b)

- a) tropospheric waves
- b) Troposcatter
- c) surface waves d) none of above
- 12) The voice frequency in the telephone system is
 - a) 20 Hz-20 kHz c) 8kHz-80kHz

a) 800 Hz

c) 133 Hz

- b) 1kHz-10kHz
- d) 300Hz-3400Hz
- The frequency of busy tone in automatic exchanges _____. 13)
 - 400 Hz b)
 - None of the above d)
- The ionosphere plays a significant role in radio wave propagation at _____. 14)
 - a) high frequency
 - c) microwaves frequencies
- ultra high frequency
- b) d) optical frequencies

Phase-shifter

- b) maximum deviation doubles d) decreases by 0.5
- **SLR-FM-178** Set P

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any four)

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal.
- **b)** Explain the problems occurring in the TRF receivers.
- c) With suitable diagram and waveforms explain a diode demodulator.
- d) A carrier of 1000 kHz is simulataneously modulated by signals of 2 KHz 6 KHz & 2 KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power?
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Answer the following. (Any two)

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's.
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier.
- c) With suitable block diagram explain Superhetrodyne communication receiver.

Section – II

Q.4 Answer the following. (Any four)

- a) Compare narrowband and wideband FM.
- b) Explain in brief pulsed dialling and DTMF.
- c) Explain Sky wave propagation and its effects on various layers of ionosphere.
- d) Explain different types of noises and its effects.
- e) When the modulating frequency in an FM system is 400 Hz and the modulating voltage is 2.4 V, the modulation index is 60. Calculate the maximum deviation. What is the modulating index when the frequency is reduced to 250 Hz and the modulating voltage is simultaneously raised to 3.2 V?

Max. Marks: 56

16

12



Set P 12

Q.5 Answer the following. (Any Two)

- a) Draw and explain the block diagram of Armstrong method of FM generation. Also draw the pharsor diagram.
- **b)** Explain the following:
 - 1) LOS propagation
 - 2) Basic antenna system
- c) How crossbar switching is efficient then Strowger switching? Explain crossbar switching in detail.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** ANALOG COMMUNICATION Day & Date: Tuesday, 17-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- If modulation signal frequency is doubled, then maximum frequency 1) deviation is . b) Halved
 - a) Double
 - c) Remains same d) None of the above
- 2) In a FM system, if the modulation index is doubled by having the modulating frequency, what will be the effect on maximum deviation?
 - a) no effect
 - c) increases by 0.25
- 3) A pre-emphasis circuit is a
 - a) Low pass filter b) Phase-shifter
 - c) High pass filter d) Band pass filter
- All broadcast radio signals received in daytime propagate by means of 4)
 - a) tropospheric waves
 - Troposcatter b) c) surface waves d) none of above
- 5) The voice frequency in the telephone system is _ b) 1kHz-10kHz
 - a) 20 Hz-20 kHz
 - c) 8kHz-80kHz
- The frequency of busy tone in automatic exchanges _____ 6)
 - a) 800 Hz b)
 - c) 133 Hz d) None of the above

The ionosphere plays a significant role in radio wave propagation at _____. 7)

d)

- a) high frequency b) ultra high frequency c) microwaves frequencies d) optical frequencies
- 8) The wavelength λ , frequency f and the velocity of light are related to each other by the relation,
 - a) $\lambda = f/c$ b) $\lambda fc = 1$ d) $\lambda c = f$ c) $\lambda f = c$
- 9) Most of the power in an AM signal is in the _____
 - a) Carrier Upper sideband b)
 - c) Lower sideband d) Modulating signal

- decreases by 0.5
- maximum deviation doubles b)
- d)

300Hz-3400Hz

400 Hz

Set Q



Marks: 14 14

- Ceramic filters upper limit frequency is, _____. a) 20hz b) 20Khz
- c) 200Khz d) 20Mhz
- 11) The modulation index of an AM WAVE is changed from 0 to 1. The transmitted power is, _____.
 - a) Unchanged b) Half c) Double d) Incre
 - d) Increases by 50 Percent

Set Q

- 12) In low level AM systems amplifiers following the modulated stages must be, _____.
 - a) Linear Devices
- b) Harmonic devices
- c) Class C amplifiers d) Nonlinear devices
- 13) The Modulation Index is given by, ____
 - a) M= Em/Ec b) M= Ec/Em
 - c) M=2Ec/Em d) M=Em/2
- 14) A 400W carrier is modulated with a modulation Index of 75%. Calculate the DSBSC power, _____.
 - a) 113.6W
 - c) 121.5W

10)

- b) 112.5 W
- d) 122.5W

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any four)

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal.
- **b)** Explain the problems occurring in the TRF receivers.
- c) With suitable diagram and waveforms explain a diode demodulator.
- d) A carrier of 1000 kHz is simulataneously modulated by signals of 2 KHz 6 KHz & 2 KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power?
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Answer the following. (Any two)

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's.
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier.
- c) With suitable block diagram explain Superhetrodyne communication receiver.

Section – II

Q.4 Answer the following. (Any four)

- a) Compare narrowband and wideband FM.
- b) Explain in brief pulsed dialling and DTMF.
- c) Explain Sky wave propagation and its effects on various layers of ionosphere.
- d) Explain different types of noises and its effects.
- e) When the modulating frequency in an FM system is 400 Hz and the modulating voltage is 2.4 V, the modulation index is 60. Calculate the maximum deviation. What is the modulating index when the frequency is reduced to 250 Hz and the modulating voltage is simultaneously raised to 3.2 V?

Max. Marks: 56

16

12



Set Q

12

Q.5 Answer the following. (Any Two)

- a) Draw and explain the block diagram of Armstrong method of FM generation. Also draw the pharsor diagram.
- **b)** Explain the following:
 - 1) LOS propagation
 - 2) Basic antenna system
- c) How crossbar switching is efficient then Strowger switching? Explain crossbar switching in detail.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** ANALOG COMMUNICATION Day & Date: Tuesday, 17-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. Figures to the right indicate full marks. 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options.

In low level AM systems amplifiers following the modulated stages must 1) be, ____.

b)

b)

b)

d)

d)

Harmonic devices

- a) Linear Devices
- c) Class C amplifiers d) Nonlinear devices
- The Modulation Index is given by, _ 2)
 - M = Ec/EmM= Em/Ec b) a)
 - c) M = 2Ec/Emd) M=Em/2
- 3) A 400W carrier is modulated with a modulation Index of 75%. Calculate the DSBSC power, _____.
 - a) 113.6W b) 112.5 W
 - c) 121.5W d) 122.5W
- 4) If modulation signal frequency is doubled, then maximum frequency deviation is . Halved
 - a) Double
 - c) Remains same d) None of the above
- 5) In a FM system, if the modulation index is doubled by having the modulating frequency, what will be the effect on maximum deviation?
 - a) no effect
 - c) increases by 0.25
- A pre-emphasis circuit is a _____. 6)
 - b) a) Low pass filter Phase-shifter c) High pass filter
- 7) All broadcast radio signals received in daytime propagate by means of
 - a) tropospheric waves
 - c) surface waves d) none of above
- The voice frequency in the telephone system is _____ 8)
 - a) 20 Hz-20 kHz b)
 - c) 8kHz-80kHz
- 9) The frequency of busy tone in automatic exchanges _____. b) 400 Hz
 - a) 800 Hz
 - c) 133 Hz

1kHz-10kHz

None of the above

- d) 300Hz-3400Hz

decreases by 0.5

Troposcatter b)

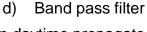
maximum deviation doubles



14



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The ionosphere plays a significant role in radio wave propagation at _____. 10)

a) high frequency

- b) ultra high frequency
- c) microwaves frequencies
- optical frequencies d)
- 11) The wavelength λ , frequency f and the velocity of light are related to each other by the relation, _____.
 - b) a) $\lambda = f/c$ $\lambda fc = 1$
 - c) $\lambda f = c$ $\lambda c = f$ d)
- 12) Most of the power in an AM signal is in the _____.
 - a) Carrier Upper sideband b)
 - c) Lower sideband Modulating signal d)
- 13) Ceramic filters upper limit frequency is, a) 20hz b)
 - c) 200Khz d) 20Mhz
- The modulation index of an AM WAVE is changed from 0 to 1. The 14) transmitted power is, _____.
 - a) Unchanged
 - c) Double

- b) Half
- d) Increases by 50 Percent



- 20Khz

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any four)

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal.
- **b)** Explain the problems occurring in the TRF receivers.
- c) With suitable diagram and waveforms explain a diode demodulator.
- d) A carrier of 1000 kHz is simulataneously modulated by signals of 2 KHz 6 KHz & 2 KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power?
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Q.3 Answer the following. (Any two)

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's.
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier.
- c) With suitable block diagram explain Superhetrodyne communication receiver.

Section – II

Q.4 Answer the following. (Any four)

- a) Compare narrowband and wideband FM.
- b) Explain in brief pulsed dialling and DTMF.
- c) Explain Sky wave propagation and its effects on various layers of ionosphere.
- d) Explain different types of noises and its effects.
- e) When the modulating frequency in an FM system is 400 Hz and the modulating voltage is 2.4 V, the modulation index is 60. Calculate the maximum deviation. What is the modulating index when the frequency is reduced to 250 Hz and the modulating voltage is simultaneously raised to 3.2 V?

Max. Marks: 56

R

16

16

Set R

Q.5 Answer the following. (Any Two)

- a) Draw and explain the block diagram of Armstrong method of FM generation. Also draw the pharsor diagram.
- **b)** Explain the following:
 - 1) LOS propagation
 - 2) Basic antenna system
- c) How crossbar switching is efficient then Strowger switching? Explain crossbar switching in detail.

		e: Tuesday,17-12-2019 0 AM To 01:00 PM		Max. Marks: 70
Instr	uction	ns: 1) Q. No. 1 is compulsory and sh Book.	ould	be solved in first 30 minutes in answer
		2) Figures to the right indicate ful3) Assume suitable data if neces		
		MCQ/Objective T	vpe	Questions
Dura	tion: 3	30 Minutes		Marks: 14
Q.1	Choo	ose the correct alternatives from t	he oj	otions. 14
	1)	A pre-emphasis circuit is a	-	
		a) Low pass filter	b)	Phase-shifter
		c) High pass filter	d)	Band pass filter
	2)	All broadcast radio signals received	l in da	aytime propagate by means of
		a) tropospheric waves	b)	Troposcatter
		c) surface waves	d)	none of above
	3)	The voice frequency in the telephor	ne sy	stem is
	·	a) 20 Hz-20 kHz		1kHz-10kHz
		c) 8kHz-80kHz	d)	300Hz-3400Hz
	4)	The frequency of busy tone in autor		0
		a) 800 Hz c) 133 Hz	b) d)	400 Hz None of the above
	E)	,	,	
	5)	The ionosphere plays a significant i a) high frequency	b)	
		c) microwaves frequencies	d)	optical frequencies
6) The wavelength λ , frequency f and the velocity of light are related to eac			elocity of light are related to each	
	,	other by the relation,		
		a) $\lambda = f/c$		$\lambda fc = 1$
		c) $\lambda f = c$	d)	$\lambda c = f$
	7)	Most of the power in an AM signal i		
		a) Carrier c) Lower sideband	(d (b	Upper sideband Modulating signal
	8)	Ceramic filters upper limit frequence	,	0 0
	0)	a) 20hz	b)	
		c) 200Khz	d)	20Mhz
	9)	The modulation index of an AM WA	VE is	s changed from 0 to 1. The
		transmitted power is,	۲	Holf
		a) Unchanged c) Double	b) d)	Half Increases by 50 Percent
		o, 20000	ч,	

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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ANALOG COMMUNICATION

C

SLR-FM-178

Set

S

10) In low level AM systems amplifiers following the modulated stages must be, _____.

a) Linear Devices

b) Harmonic devices

112.5 W

SLR-FM-178

Set S

- c) Class C amplifiers d) Nonlinear devices
- 11) The Modulation Index is given by, ____
 - a) M= Em/Ec b) M= Ec/Em
 - c) M= 2Ec/Em d) M=Em/2
- 12) A 400W carrier is modulated with a modulation Index of 75%. Calculate the DSBSC power, _____.
 - a) 113.6W b)
 - c) 121.5W d) 122.5W
- 13) If modulation signal frequency is doubled, then maximum frequency deviation is _____.
 - a) Double b) Halved
 - c) Remains same d) None of the above
- 14) In a FM system, if the modulation index is doubled by having the modulating frequency, what will be the effect on maximum deviation?
 - a) no effect

- b) maximum deviation doubles
- c) increases by 0.25
- d) decreases by 0.5

Seat No.

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

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- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any four)

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal.
- **b)** Explain the problems occurring in the TRF receivers.
- c) With suitable diagram and waveforms explain a diode demodulator.
- d) A carrier of 1000 kHz is simulataneously modulated by signals of 2 KHz 6 KHz & 2 KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power?
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Answer the following. (Any two)

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's.
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier.
- c) With suitable block diagram explain Superhetrodyne communication receiver.

Section – II

Q.4 Answer the following. (Any four)

- a) Compare narrowband and wideband FM.
- b) Explain in brief pulsed dialling and DTMF.
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- d) Explain different types of noises and its effects.
- e) When the modulating frequency in an FM system is 400 Hz and the modulating voltage is 2.4 V, the modulation index is 60. Calculate the maximum deviation. What is the modulating index when the frequency is reduced to 250 Hz and the modulating voltage is simultaneously raised to 3.2 V?

Max. Marks: 56

16

16

Set S 12

Q.5 Answer the following. (Any Two)

- a) Draw and explain the block diagram of Armstrong method of FM generation. Also draw the pharsor diagram.
- **b)** Explain the following:
 - 1) LOS propagation
 - 2) Basic antenna system
- c) How crossbar switching is efficient then Strowger switching? Explain crossbar switching in detail.

Electronics Engineering						
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II						
Day & Date: Friday,22-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM						
Instruc	ions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.					
	2) Figures to the right indicates full marks.3) Assume suitable data if necessary.					
	MCQ/Objective Type Questions					
Duratio	a: 30 Minutes Marks: 14					
	noose the correct alternatives from the options and rewrite the 14 entence.					
1						
2	Direct coupled amplifier is especially used for amplifying a) high frequency signal b) very low frequency signal c) dc signal d) both b & c					
3	Noice with feedback is a) $N_f = \frac{N}{(1 + KAv)}$ b) $N_f = \frac{(1 + KAv)}{N}$ c) $N_f = N(1 + KAv)$ d) $N_f = \frac{N}{(1 + KAvf)}$					
4	The product of voltage gain & bandwidth of an amplifier with feedback & without feedback a) Greater than one b) Less than one c) remains same d) none of the above					
5	When current series feedback is applied to an amplifier, its output resistance isa) is decreasedb) is increasedc) remains samed) None of the above					
6	In CLASS A Power amplifier collector current in the output circuit flows for a) 180° b) 360° c) less than 180° d) Greater than 180° & less than 360°					
7	In CLASS B Power amplifier position of Q point is a) On X axis. b) Exactly on center of the load line. c) below X axis.					

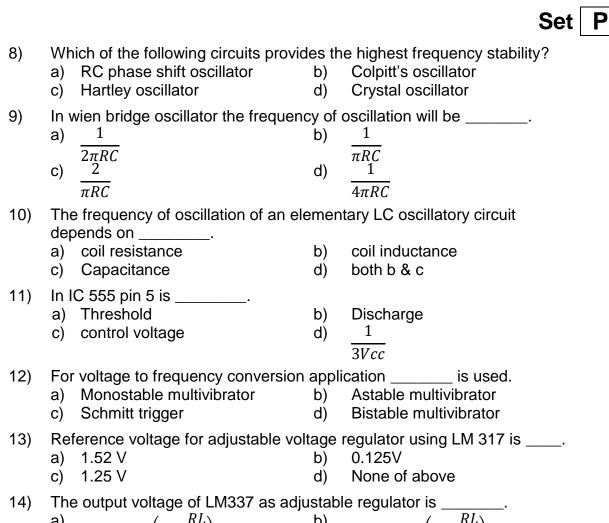
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

- elow X axis. U)
- d) above X and below midpoint.

SLR-FM-179

Set P



a)
$$V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) + I_{adj} \times R_L$$
 b) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) + I_{adj} \times R_L$
c) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) - I_{adj} \times R_L$ d) $V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) - I_{adj} \times R_L$

Set

Seat	
No.	

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.
- 4) Use of electronic component data sheet is allowed.

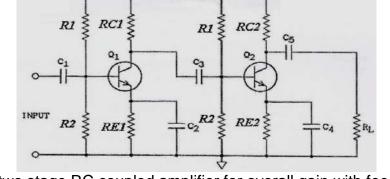
Section – I

Q.2 Attempt any four.

- a) What is multistage amplifier circuit? Show that the overall gain is the product of the gains of different stages.
- b) Derive an expression for voltage gain for direct coupled amplifier using AC equivalent circuit. Draw its frequency response characteristics.
- c) An amplifier with $2K\Omega$ input resistance and $60K\Omega$ output resistance has voltage gain of 40. The amplifier is modified to provide a 5% negative feedback in series with input. Calculate A_{vf} , R_{if} , R_{of}
- d) Derive the expression for voltage gain and bandwidth for voltage series feedback circuit.
- e) Explain working of complementary symmetry Class B power amplifier. Sketch suitable waveforms.

Q.3 Attempt any two.

A radio receiver uses a two stage RC coupled amplifier. Calculate value of voltage gain of each stage and overall voltage gain. If R₁=33K, R₂=8.2K, R_{c1}=3.3K, R_{E1}=1K, β1= β2=100, RL=10K, Vcc = 20V use same value for second stage.



Vcc

- b) Design a two stage RC coupled amplifier for overall gain with feedback 100 to meet the following specification $R_L(load) = 2k\Omega$, $Rs = 100\Omega$, output peak voltage = 5V, Vcc = 12V, lower 3db frequency = 50Hz, use BC147B.hfe = 240, hie = 4.5K\Omega.
- c) With graphical representation Compare different power amplifiers based on following factors:
 - i) Conduction angle
 - iii) Efficiency
 - v) Application

- ii) Position of Q point
- iv) Distortion

Max. Marks: 56

16

Section – II

Q.4 Attempt any four.

- a) Sketch Schmitt trigger circuit using IC555 and briefly explain its operation giving input output waveform.
- **b)** Design a Astable multivibrator using IC555 for maximum output frequency of 1KHz with duty cycle of 60%.Use Vcc =12V.
- c) Design adjustable voltage regulator for output voltage 9V to 25V and output current 1.0A. Assume I_{adj} = 100µA
- **d)** With suitable circuit diagram illustrate operation of short circuit protection circuit for IC voltage regulators.
- e) With suitable circuit diagram derive an expression of frequency of oscillations for Hartley oscillator.

Q.5 Attempt any two.

- a) Design Wien Bridge Oscillator for output frequency variations in range of 30Hz to 50KHz. The output voltage is better than 5V peak.
- **b)** Draw internal circuit diagram of 555 based Monostable Multivibrator explain its operation and prove that pulse width = 1.1 RC
- c) Explain working of transistorized series voltage regulator circuit and derive an expression for Stability Factor.

16

12

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ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II					
Day & Date: Friday,22-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Max. Marks: 70					
 Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicates full marks. 3) Assume suitable data if necessary. 					
		MCQ/Objective Type Questions			
Dura	tion: 3	0 Minutes Marks:	14		
Q.1	2.1 Choose the correct alternatives from the options and rewrite the 14 sentence.				
	1)	Which of the following circuits provides the highest frequency stability?a) RC phase shift oscillatorb) Colpitt's oscillatorc) Hartley oscillatord) Crystal oscillator			
	2)	In wien bridge oscillator the frequency of oscillation will be a) $\frac{1}{2\pi RC}$ b) $\frac{1}{\pi RC}$ c) $\frac{2}{\pi RC}$ d) $\frac{1}{4\pi RC}$			
	3)	The frequency of oscillation of an elementary LC oscillatory circuitdepends ona) coil resistanceb) coil inductancec) Capacitanced) both b & c			
	4)	In IC 555 pin 5 is a) Threshold b) Discharge c) control voltage d) $\frac{1}{3Vcc}$			
	5)	For voltage to frequency conversion application is used.a) Monostable multivibratorb) Astable multivibratorc) Schmitt triggerd) Bistable multivibrator			
	6)	Reference voltage for adjustable voltage regulator using LM 317 isa) 1.52 Vb) 0.125Vc) 1.25 Vd) None of above			
	7)	The output voltage of LM337 as adjustable regulator is a) $V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) + I_{adj} \times R_L$ b) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) + I_{adj} \times R_L$ c) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) - I_{adj} \times R_L$ d) $V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) - I_{adj} \times R_L$			

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Seat

No.

SLR-FM-179

Set Q

Set Q A multistage amplifier employs four stages each of which has voltage 1281.6dB 1.28dB

SLR-FM-179

Direct coupled amplifier is especially used for amplifying _____ 9)

gain of 40, then overall gain of amplifier is ____

- a) high frequency signal very low frequency signal b)
- c) dc signal
- d) both b & c

b)

d)

Noice with feedback is _____. 10)

a) 128.16dB

c) 12.81dB

8)

a)	N N	b)	$N_f = \frac{(1 + KAv)}{N}$
	$N_f = \frac{N}{(1 + KAv)}$		$N_f =N$
	$N_f = N(1 + KAv)$	d)	N N
			$N_f = \frac{N}{(1 + KA\nu f)}$

- 11) The product of voltage gain & bandwidth of an amplifier with feedback & without feedback _____.
 - a) Greater than one b) Less than one
 - d) none of the above c) remains same
- When current series feedback is applied to an amplifier, its output 12) resistance is
 - a) is decreased b) is increased
 - c) remains same d) None of the above
- In CLASS A Power amplifier collector current in the output circuit flows 13) for ____
 - a) 180°
 - b) 360°
 - c) less than 180°
 - d) Greater than 180° & less than 360°
- 14) In CLASS B Power amplifier position of Q point is _____.
 - a) On X axis.
 - b) Exactly on center of the load line.
 - c) below X axis.
 - d) above X and below midpoint.

Seat	
No.	

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.
- 4) Use of electronic component data sheet is allowed.

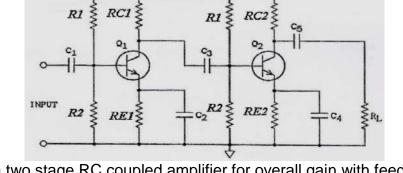
Section – I

Q.2 Attempt any four.

- What is multistage amplifier circuit? Show that the overall gain is the a) product of the gains of different stages.
- Derive an expression for voltage gain for direct coupled amplifier using AC b) equivalent circuit. Draw its frequency response characteristics.
- c) An amplifier with $2K\Omega$ input resistance and $60K\Omega$ output resistance has voltage gain of 40. The amplifier is modified to provide a 5% negative feedback in series with input. Calculate Avf, Rif, Rof
- d) Derive the expression for voltage gain and bandwidth for voltage series feedback circuit.
- Explain working of complementary symmetry Class B power amplifier. e) Sketch suitable waveforms.

Attempt any two. Q.3

A radio receiver uses a two stage RC coupled amplifier. Calculate value of a) voltage gain of each stage and overall voltage gain. If R₁=33K, R₂=8.2K, R_{c1} =3.3K, R_{F1} =1K, β 1= β 2=100, R_{L} =10K, Vcc = 20V use same value for second stage.



Vcc

- Design a two stage RC coupled amplifier for overall gain with feedback b) 100 to meet the following specification R_1 (load) = 2k Ω , Rs = 100 Ω , output peak voltage = 5V, Vcc = 12V, lower 3db frequency = 50Hz, use BC147B.hfe = 240, hie = 4.5K Ω .
- With graphical representation Compare different power amplifiers based C) on following factors: Position of Q point

ii)

iv)

Distortion

- Conduction angle i)
- iii) Efficiency
- Application V)

Max. Marks: 56

12

Section – II

Q.4 Attempt any four.

- a) Sketch Schmitt trigger circuit using IC555 and briefly explain its operation giving input output waveform.
- **b)** Design a Astable multivibrator using IC555 for maximum output frequency of 1KHz with duty cycle of 60%.Use Vcc =12V.
- c) Design adjustable voltage regulator for output voltage 9V to 25V and output current 1.0A. Assume I_{adj} = 100µA
- **d)** With suitable circuit diagram illustrate operation of short circuit protection circuit for IC voltage regulators.
- e) With suitable circuit diagram derive an expression of frequency of oscillations for Hartley oscillator.

Q.5 Attempt any two.

- a) Design Wien Bridge Oscillator for output frequency variations in range of 30Hz to 50KHz. The output voltage is better than 5V peak.
- **b)** Draw internal circuit diagram of 555 based Monostable Multivibrator explain its operation and prove that pulse width = 1.1 RC
- c) Explain working of transistorized series voltage regulator circuit and derive an expression for Stability Factor.

16

12

SLR-FM-179 Set Q

Set

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Marks: 14

14

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1)
 - When current series feedback is applied to an amplifier, its output resistance is
 - a) is decreased is increased b)
 - c) remains same d) None of the above
 - In CLASS A Power amplifier collector current in the output circuit flows 2)
 - for a) 180°
 - b) 360°
 - c) less than 180°
 - d) Greater than 180° & less than 360°
 - 3) In CLASS B Power amplifier position of Q point is _____.
 - a) On X axis.
 - b) Exactly on center of the load line.
 - c) below X axis.
 - d) above X and below midpoint.
 - Which of the following circuits provides the highest frequency stability? 4)
 - RC phase shift oscillator Colpitt's oscillator b) a)
 - Hartley oscillator Crystal oscillator c) d)

In wien bridge oscillator the frequency of oscillation will be _____. 5)

- 1 1 b) a) $2\pi RC$ πRC d) c) 2 1 πRC $4\pi RC$
- 6) The frequency of oscillation of an elementary LC oscillatory circuit depends on
 - coil resistance b) coil inductance a) Capacitance both b & c c)
 - d)

Max. Marks: 70

			Set R
7)	In IC 555 pin 5 is a) Threshold c) control voltage	b) d)	Discharge $\frac{1}{3Vcc}$
8)	For voltage to frequency conversiona) Monostable multivibratorc) Schmitt trigger		cation is used. Astable multivibrator Bistable multivibrator
9)	Reference voltage for adjustable vol a) 1.52 V c) 1.25 V	tage b) d)	regulator using LM 317 is 0.125V None of above
10)	The output voltage of LM337 as adjust a) $V_0 = V_{ref} \left(1 + \frac{RL}{R1}\right) + I_{adj} \times R_L$ c) $V_0 = V_{ref} \left(1 - \frac{RL}{R1}\right) - I_{adj} \times R_L$	ustabl b) d)	e regulator is $V_0 = V_{ref} \left(1 - \frac{RL}{R1}\right) + I_{adj} \times R_L$ $V_0 = V_{ref} \left(1 + \frac{RL}{R1}\right) - I_{adj} \times R_L$
11)	A multistage amplifier employs four gain of 40, then overall gain of ampl a) 128.16dB c) 12.81dB	stage	s each of which has voltage
12)	Direct coupled amplifier is especially a) high frequency signal c) dc signal	/ used b) d)	d for amplifying very low frequency signal both b & c
13)	Noice with feedback is a) $N_f = \frac{N}{(1 + KAv)}$ c) $N_f = N(1 + KAv)$	b) d)	$N_f = \frac{(1 + KAv)}{N}$ $N_f = \frac{N}{(1 + KAvf)}$
14)	The product of voltage gain & bandw without feedback a) Greater than one		of an amplifier with feedback &

- a) Greater than one
- c) remains same

- b) Less than oned) none of the above

Seat	
No.	

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.
- 4) Use of electronic component data sheet is allowed.

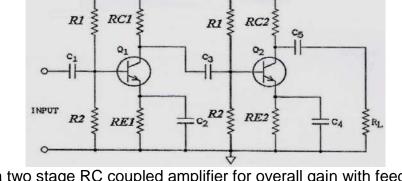
Section – I

Q.2 Attempt any four.

- a) What is multistage amplifier circuit? Show that the overall gain is the product of the gains of different stages.
- b) Derive an expression for voltage gain for direct coupled amplifier using AC equivalent circuit. Draw its frequency response characteristics.
- c) An amplifier with $2K\Omega$ input resistance and $60K\Omega$ output resistance has voltage gain of 40. The amplifier is modified to provide a 5% negative feedback in series with input. Calculate A_{vf} , R_{if} , R_{of}
- d) Derive the expression for voltage gain and bandwidth for voltage series feedback circuit.
- e) Explain working of complementary symmetry Class B power amplifier. Sketch suitable waveforms.

Q.3 Attempt any two.

a) A radio receiver uses a two stage RC coupled amplifier. Calculate value of voltage gain of each stage and overall voltage gain. If R₁=33K, R₂=8.2K, R_{c1}=3.3K, R_{E1}=1K, β 1= β 2=100, RL=10K, Vcc = 20V use same value for second stage.



Vcc

- b) Design a two stage RC coupled amplifier for overall gain with feedback 100 to meet the following specification $R_L(load) = 2k\Omega$, Rs = 100 Ω , output peak voltage = 5V, Vcc = 12V, lower 3db frequency = 50Hz, use BC147B.hfe = 240, hie = 4.5K Ω .
- c) With graphical representation Compare different power amplifiers based on following factors:
 - i) Conduction angle
 - iii) Efficiency
 - v) Application

- ii) Position of Q point
- iv) Distortion



Max. Marks: 56

Section – II

Q.4 Attempt any four.

- a) Sketch Schmitt trigger circuit using IC555 and briefly explain its operation giving input output waveform.
- **b)** Design a Astable multivibrator using IC555 for maximum output frequency of 1KHz with duty cycle of 60%.Use Vcc =12V.
- c) Design adjustable voltage regulator for output voltage 9V to 25V and output current 1.0A. Assume I_{adj} = 100µA
- d) With suitable circuit diagram illustrate operation of short circuit protection circuit for IC voltage regulators.
- e) With suitable circuit diagram derive an expression of frequency of oscillations for Hartley oscillator.

Q.5 Attempt any two.

- a) Design Wien Bridge Oscillator for output frequency variations in range of 30Hz to 50KHz. The output voltage is better than 5V peak.
- **b)** Draw internal circuit diagram of 555 based Monostable Multivibrator explain its operation and prove that pulse width = 1.1 RC
- c) Explain working of transistorized series voltage regulator circuit and derive an expression for Stability Factor.

16

12

SLR-FM-179 Set R

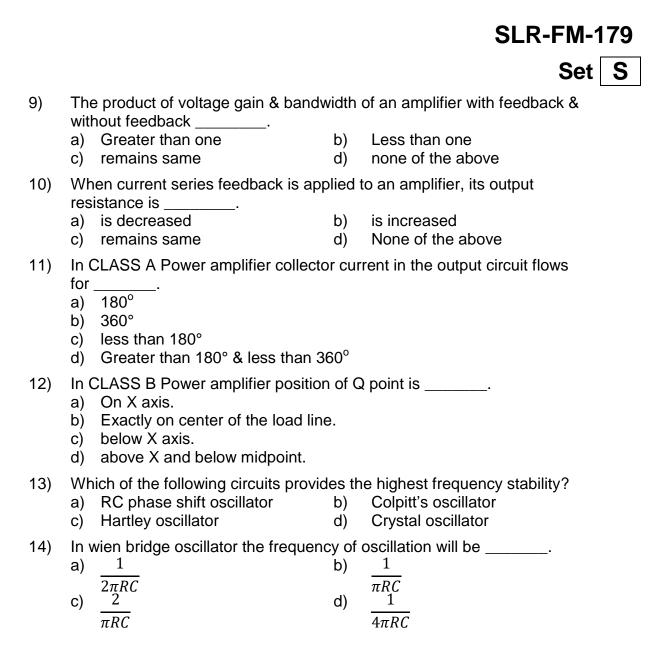
S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II Day & Date: Friday,22-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicates full marks. 3) Assume suitable data if necessary. MCQ/Objective Type Questions Duration: 30 Minutes Marks: 14 Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1) The frequency of oscillation of an elementary LC oscillatory circuit depends on a) coil resistance b) coil inductance
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 The frequency of oscillation of an elementary LC oscillatory circuit depends on
, , , , , , , , , , , , , , , , , , , ,
c) Capacitance d) both b & c
2) In IC 555 pin 5 is
a) Threshold b) Discharge c) control voltage d) 1
$\frac{3Vcc}{3}$
3) For voltage to frequency conversion application is used.
a) Monostable multivibrator b) Astable multivibrator
 c) Schmitt trigger d) Bistable multivibrator 4) Deference veltege for adjustable veltage regulator using LM 247 in
 4) Reference voltage for adjustable voltage regulator using LM 317 is a) 1.52 V b) 0.125V
c) 1.25 V d) None of above
5) The output voltage of LM337 as adjustable regulator is
a) $V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) + I_{adj} \times R_L$ b) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) + I_{adj} \times R_L$
c) $V_0 = V_{ref} \left(1 - \frac{RL}{R1} \right) - I_{adj} \times R_L$ d) $V_0 = V_{ref} \left(1 + \frac{RL}{R1} \right) - I_{adj} \times R_L$
6) A multistage amplifier employs four stages each of which has voltage
gain of 40, then overall gain of amplifier is
a) 128.16dB b) 1281.6dB c) 12.81dB d) 1.28dB
7) Direct coupled amplifier is especially used for amplifying
a) high frequency signal b) very low frequency signal
c) dc signal d) both b & c
8) Noice with feedback is
a) $N_f = \frac{N}{(1 + KAv)}$ b) $N_f = \frac{(1 + KAv)}{N}$
a) $N_f = \frac{N}{(1 + KAv)}$ b) $N_f = \frac{(1 + KAv)}{N}$ c) $N_f = N(1 + KAv)$ d) $N_f = \frac{N}{(1 + KAvf)}$
$N_f = \frac{1}{(1 + KAvf)}$

Set S

SLR-FM-179

Seat No

- 4



Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.
- 4) Use of electronic component data sheet is allowed.

Section – I

Q.2 Attempt any four.

- What is multistage amplifier circuit? Show that the overall gain is the a) product of the gains of different stages.
- Derive an expression for voltage gain for direct coupled amplifier using AC b) equivalent circuit. Draw its frequency response characteristics.
- c) An amplifier with $2K\Omega$ input resistance and $60K\Omega$ output resistance has voltage gain of 40. The amplifier is modified to provide a 5% negative feedback in series with input. Calculate Avf, Rif, Rof
- d) Derive the expression for voltage gain and bandwidth for voltage series feedback circuit.
- Explain working of complementary symmetry Class B power amplifier. e) Sketch suitable waveforms.

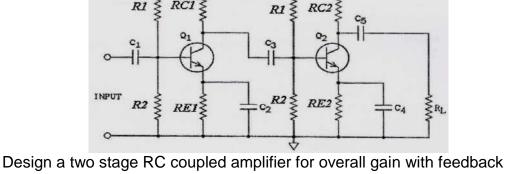
RC1

R1

Attempt any two. Q.3

A radio receiver uses a two stage RC coupled amplifier. Calculate value of a) voltage gain of each stage and overall voltage gain. If R₁=33K, R₂=8.2K, R_{c1} =3.3K, R_{F1} =1K, β 1= β 2=100, R_{L} =10K, Vcc = 20V use same value for second stage.

Vcc



- b) 100 to meet the following specification R_1 (load) = 2k Ω , Rs = 100 Ω , output peak voltage = 5V, Vcc = 12V, lower 3db frequency = 50Hz, use BC147B.hfe = 240, hie = 4.5K Ω .
- With graphical representation Compare different power amplifiers based C) on following factors: Position of Q point

ii)

iv)

Distortion

- Conduction angle i)
- iii) Efficiency
- Application V)

Max. Marks: 56

12

16

Set

Section – II

Q.4 Attempt any four.

- a) Sketch Schmitt trigger circuit using IC555 and briefly explain its operation giving input output waveform.
- **b)** Design a Astable multivibrator using IC555 for maximum output frequency of 1KHz with duty cycle of 60%.Use Vcc =12V.
- c) Design adjustable voltage regulator for output voltage 9V to 25V and output current 1.0A. Assume I_{adj} = 100µA
- d) With suitable circuit diagram illustrate operation of short circuit protection circuit for IC voltage regulators.
- e) With suitable circuit diagram derive an expression of frequency of oscillations for Hartley oscillator.

Q.5 Attempt any two.

- a) Design Wien Bridge Oscillator for output frequency variations in range of 30Hz to 50KHz. The output voltage is better than 5V peak.
- **b)** Draw internal circuit diagram of 555 based Monostable Multivibrator explain its operation and prove that pulse width = 1.1 RC
- c) Explain working of transistorized series voltage regulator circuit and derive an expression for Stability Factor.

16

12

SLR-FM-179 Set S

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- 1) When we delete an element in queue, which pointer is incremented?
 - a) Front b) Rear
 - c) Both front and near d) None of the above
- 2) The node of singly linked list contains
 - a) Prev, info, next b) Info, next
 - c) Both a and b d) None of these
- 3) A normal queue, if implemented using an array of size MAX_SIZE, gets full when
 - a) Rear = MAX_SIZE 1
 - b) Front = (rear + 1)mod MAX_SIZE
 - c) Front = rear + 1
 - d) Rear = front
- 4) Consider the usual algorithm for determining whether a sequence of parentheses is balanced. The maximum number of parentheses that appear on the stack AT ANY ONE TIME when the algorithm analyzes: (()(())(())) are: _____.

2

- a) 1 b)
- c) 3 d) 4 or more
- 5) In the worst case, the number of comparisons needed to search a singly linked list of length n for a given element is _____.
 - a) $\log 2n$ b) n/2c) $\log 2n - 1$ d) n
- 6) To implement recursion _____ data structure is used
 - a) Queue b) Stack
 - c) Linked List d) Graph
- 7) Entries in a stack are "ordered". What is the meaning of this statement?
 - a) A collection of stacks is sortable
 - b) Stack entries may be compared with the '<' operation
 - c) The entries are stored in a linked list
 - d) There is a Sequential entry that is one by one

SLR-FM-180

Set

Max. Marks: 70

Marks: 14

14

Ρ

			Set P
8)	The complexity of linear search alg a) 0(n)	b)	$O(\log n)$
	c) 0(n2)	d)	0(n log n)
9)	Quick sort is also known as a) merge sort c) shell sort	b) d)	tree sort partition and exchange sort
10)	The goal of hashing is to produce a	searc	ch that takes
	a) 0(1)	b)	$O(\log n)$
	c) 0(n2)	d)	$O(n \log n)$
11)	Which of the following traversal out BST?	puts tl	ne data in sorted order in a
	a) In-order	b)	Pre-order
	c) Post-order	d)	None of these
12)	If a node having two children is to b replaced by its	e dele	eted from binary search tree, it is
	a) In-order predecessor	,	In-order successor
	c) Pre-order predecessor	d)	None of these
13)	An undirected graph contains the e a) $n/2$	-	equal to n(n - 1)
	c) $n(n-1)/2$	-	n(n + 1)/2

- 14) Breadth first traversal uses _____.a) Stack

 - b) Queue c) Both a and b d) None of these

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering DATA STRUCTURES

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) Write a 'C' program to find the GCD of two numbers with recursive functions.
- **b)** What is stack? Explain the push operation with a 'C'routine.
- c) Elaborate the different operations performed on a queue with neat diagrams.
- **d)** What is avail list? Explain avail list in terms of getnode and freenode operations with algorithm and diagram.
- e) Convert the following infix expression to postfix expression using stack:

$$(A + B)/(C - D) + E$$

Q.3 Attempt any two.

- a) Write a C program for the implementation of stack using array containing push, pop and display functions.
- b) Write short notes on:
 - 1) Priority Queue
 - 2) Deque
- c) Write an algorithm for addition of two polynomials using linked list and illustrate the addition of two polynomials $4x^2 + 3x + 2$ and $6x^2 + 7x + 5$ using linked list.

Section – II

Q.4 Attempt any four

- a) Compare linear search and binary search.
- **b)** Sort the following using selection sort method 30, 20, 35, 14, 90, 25, 32
- c) Define graph. Represent graph using adjacency matrix.
- d) Sort the given sequence in ascending order using quick sort. 48, 44, 32, 22, 62, 95, 12, 56, 89
- e) Explain threaded binary tree with example.

Q.5 Attempt any two.

- a) Construct a binary search tree from the following keys and find it's in-order, pre-order and post-order traversal.
 70, 60, 55, 80, 85, 10, 3, 90, 82, 65, 79, 83, 52, 12, 17
- b) Explain graph traversal methods with example.
- c) What is hash collision? Explain open addressing technique in detail.

12

16

12



Max. Marks: 56

Electronics Engineering DATA STRUCTURES						
Day & Date: Saturday, 23-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM						
Instr	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer					
	Book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary.					
		MCQ/Objective T	ype	Questions		
Dura	tion: 3	30 Minutes		Marks: 14		
Q.1		ose the correct alternatives from the tence.	ne op	tions and rewrite the 14		
	1)	The complexity of linear search algo	orithm	is .		
	,	a) 0(n)	b)	$O(\log n)$		
		c) 0(n2)	d)	$O(n \log n)$		
	2)	Quick sort is also known as				
	,	a) merge sort	b)	tree sort		
		c) shell sort	d)	partition and exchange sort		
	3)	The goal of hashing is to produce a	seard	ch that takes		
		a) 0(1)	b)	0(log n)		
		c) 0(n2)	d)	$O(n \log n)$		
	4)	Which of the following traversal outp BST?	outs t	he data in sorted order in a		
		a) In-order	b)	Pre-order		
		c) Post-order	d)	None of these		
 If a node having two children is to be deleted from binary search tree, it is replaced by its 			eted from binary search tree, it is			
		a) In-order predecessor	b)	In-order successor		
		c) Pre-order predecessor	d)	None of these		
	6)	An undirected graph contains the ec	dges	equal to		
		a) n/2	b)	n(n-1)		
		c) $n(n-1)/2$	d)	n(n + 1)/2		
	7)	Breadth first traversal uses				
		a) Stack	b)	Queue		
		c) Both a and b	d)	None of these		
	8)	When we delete an element in queu	ie, wł	nich pointer is incremented?		
		a) Front	b)	Rear		
		c) Both front and near	d)	None of the above		
	9)	The node of singly linked list contain				
		a) Prev, info, next	b)	Info, next		
		c) Both a and b	d)	None of these		

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Seat No.

Page **4** of **12**

Set Q

Set | Q

- 10) A normal queue, if implemented using an array of size MAX SIZE, gets full when
 - a) Rear = MAX_SIZE -1
 - b) Front = (rear + 1)mod MAX_SIZE
 - c) Front = rear + 1
 - d) Rear = front
- Consider the usual algorithm for determining whether a sequence of 11) parentheses is balanced. The maximum number of parentheses that appear on the stack AT ANY ONE TIME when the algorithm analyzes: (()(())(())) are: _____.

a) 1

c) 3

- b) 2
 - d) 4 or more
- 12) In the worst case, the number of comparisons needed to search a singly linked list of length n for a given element is _
 - a) log 2n b) n/2
 - c) $\log 2n 1$ d) n
- To implement recursion _____ data structure is used 13)
 - a) Queue b) Stack c) Linked List
 - d) Graph
- 14) Entries in a stack are "ordered". What is the meaning of this statement?
 - a) A collection of stacks is sortable
 - b) Stack entries may be compared with the '<' operation
 - c) The entries are stored in a linked list
 - d) There is a Sequential entry that is one by one

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering DATA STRUCTURES

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) Write a 'C' program to find the GCD of two numbers with recursive functions.
- **b)** What is stack? Explain the push operation with a 'C'routine.
- c) Elaborate the different operations performed on a queue with neat diagrams.
- **d)** What is avail list? Explain avail list in terms of getnode and freenode operations with algorithm and diagram.
- e) Convert the following infix expression to postfix expression using stack:

$$(A + B)/(C - D) + E$$

Q.3 Attempt any two.

- a) Write a C program for the implementation of stack using array containing push, pop and display functions.
- b) Write short notes on:
 - 1) Priority Queue
 - 2) Deque
- c) Write an algorithm for addition of two polynomials using linked list and illustrate the addition of two polynomials $4x^2 + 3x + 2$ and $6x^2 + 7x + 5$ using linked list.

Section – II

Q.4 Attempt any four

- a) Compare linear search and binary search.
- **b)** Sort the following using selection sort method 30, 20, 35, 14, 90, 25, 32
- c) Define graph. Represent graph using adjacency matrix.
- d) Sort the given sequence in ascending order using quick sort. 48, 44, 32, 22, 62, 95, 12, 56, 89
- e) Explain threaded binary tree with example.

Q.5 Attempt any two.

- a) Construct a binary search tree from the following keys and find it's in-order, pre-order and post-order traversal.
 70, 60, 55, 80, 85, 10, 3, 90, 82, 65, 79, 83, 52, 12, 17
- b) Explain graph traversal methods with example.
- c) What is hash collision? Explain open addressing technique in detail.

Set Q

Max. Marks: 56

16

16

12

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DATA STRUCTURES Day & Date: Saturday, 23-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. MCQ/Objective Type Questions **Duration: 30 Minutes** Choose the correct alternatives from the options and rewrite the In the worst case, the number of comparisons needed to search a singly

- 1) linked list of length n for a given element is
 - n/2 a) log 2n b) c) $\log 2n - 1$ d) n
- 2) To implement recursion _____ data structure is used
 - a) Queue b) Stack
 - c) Linked List d) Graph
- 3) Entries in a stack are "ordered". What is the meaning of this statement?
 - a) A collection of stacks is sortable
 - b) Stack entries may be compared with the '<' operation
 - The entries are stored in a linked list c)
 - d) There is a Sequential entry that is one by one
- 4) The complexity of linear search algorithm is
 - a) O(n) $O(\log n)$ b) c) O(n2) $O(n \log n)$ d)
- 5) Quick sort is also known as _____.
 - a) merge sort b) tree sort c) shell sort partition and exchange sort d)

The goal of hashing is to produce a search that takes _____. 6)

- a) 0(1)b)
- c) 0(n2)d) $O(n \log n)$
- 7) Which of the following traversal outputs the data in sorted order in a BST?
 - a) In-order b) Pre-order
 - None of these c) Post-order d)
- If a node having two children is to be deleted from binary search tree, it is 8) replaced by its .
 - a) In-order predecessor In-order successor b)
 - Pre-order predecessor d) None of these c)

SLR-FM-180



Seat No.

Q.1

sentence.

Marks: 14

- $O(\log n)$

An undirected graph contains the edges equal to _____. 9)

- n(n 1)a) n/2 b)
- c) n(n-1)/2d) n(n + 1)/2
- Breadth first traversal uses _____ 10) __.
 - a) Stack b) Queue
 - c) Both a and b d) None of these
- 11) When we delete an element in queue, which pointer is incremented?
 - a) Front Rear b) c) Both front and near
 - d) None of the above

SLR-FM-180

Set R

- 12) The node of singly linked list contains
 - a) Prev, info, next Info, next b)
 - c) Both a and b None of these d)
- 13) A normal queue, if implemented using an array of size MAX_SIZE, gets full when
 - a) Rear = MAX SIZE -1
 - b) Front = (rear + 1)mod MAX_SIZE
 - c) Front = rear + 1
 - d) Rear = front
- 14) Consider the usual algorithm for determining whether a sequence of parentheses is balanced. The maximum number of parentheses that appear on the stack AT ANY ONE TIME when the algorithm analyzes: (()(())(())) are: _____.
 - a) 1

- b) 2
- c) 3 d) 4 or more

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering DATA STRUCTURES

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) Write a 'C' program to find the GCD of two numbers with recursive functions.
- **b)** What is stack? Explain the push operation with a 'C'routine.
- c) Elaborate the different operations performed on a queue with neat diagrams.
- **d)** What is avail list? Explain avail list in terms of getnode and freenode operations with algorithm and diagram.
- e) Convert the following infix expression to postfix expression using stack:

$$(A + B)/(C - D) + E$$

Q.3 Attempt any two.

- a) Write a C program for the implementation of stack using array containing push, pop and display functions.
- b) Write short notes on:
 - 1) Priority Queue
 - 2) Deque
- c) Write an algorithm for addition of two polynomials using linked list and illustrate the addition of two polynomials $4x^2 + 3x + 2$ and $6x^2 + 7x + 5$ using linked list.

Section – II

Q.4 Attempt any four

- a) Compare linear search and binary search.
- **b)** Sort the following using selection sort method 30, 20, 35, 14, 90, 25, 32
- c) Define graph. Represent graph using adjacency matrix.
- d) Sort the given sequence in ascending order using quick sort. 48, 44, 32, 22, 62, 95, 12, 56, 89
- e) Explain threaded binary tree with example.

Q.5 Attempt any two.

- a) Construct a binary search tree from the following keys and find it's in-order, pre-order and post-order traversal.
 70, 60, 55, 80, 85, 10, 3, 90, 82, 65, 79, 83, 52, 12, 17
- b) Explain graph traversal methods with example.
- c) What is hash collision? Explain open addressing technique in detail.

Set R

Max. Marks: 56

16

12

12

Choo sente		the correct alternatives from th	e opt	ions and rewrite the	1
1)	The	e goal of hashing is to produce a s			
	a) C)	0(1) 0(n2)	b) d)	O(log n) O(n log n)	
2)	Wh BS ⁻	ich of the following traversal outp T?	uts th	e data in sorted order in a	
		In-order Post-order	b) d)	Pre-order None of these	
3)	rep	node having two children is to be laced by its		•	
	a) c)	In-order predecessor Pre-order predecessor	b) d)	In-order successor None of these	
4)		undirected graph contains the ed $n/2$ $n(n-1)/2$	ges e b) d)	qual to n(n - 1) n(n + 1)/2	
5)	Bre a) c)	adth first traversal uses Stack Both a and b	b) d)	Queue None of these	
6)	Wh a) c)	en we delete an element in queu Front Both front and near	e, whi b) d)	ch pointer is incremented? Rear None of the above	
7)	The a) c)	e node of singly linked list contain Prev, info, next Both a and b	s b) d)	Info, next None of these	
8)	full a)	ormal queue, if implemented usin when Rear = MAX_SIZE – 1 Front = (rear + 1)mod MAX_SIZ Front = rear + 1 Rear = front	•	array of size MAX_SIZE, gets	

Q.1 С

- S 1
- 2

Electronics Engineering DATA STRUCTURES

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

- 3
- 4
- 5

- 7
- 8

SLR-FM-180

Set

Max. Marks: 70

S

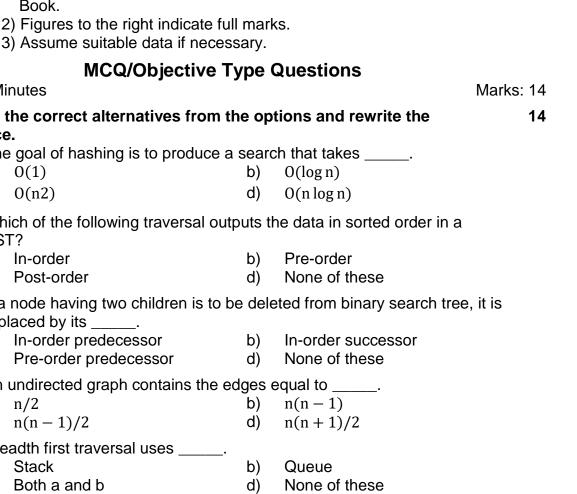
S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Saturday, 23-11-2019

Book.

Time: 02:30 PM To 05:30 PM

Duration: 30 Minutes



- 9) Consider the usual algorithm for determining whether a sequence of parentheses is balanced. The maximum number of parentheses that appear on the stack AT ANY ONE TIME when the algorithm analyzes:
 (()(())(())) are: _____.
 a) 1 b) 2
 - c) 3 d) 4 or more
- 10) In the worst case, the number of comparisons needed to search a singly linked list of length n for a given element is _____.
 - a) $\log 2n$ b) n/2
 - c) $\log 2n 1$ d) n
- 11) To implement recursion _____ data structure is used
 - a) Queue b) Stack
 - c) Linked List d) Graph
- 12) Entries in a stack are "ordered". What is the meaning of this statement?
 - a) A collection of stacks is sortable
 - b) Stack entries may be compared with the '<' operation
 - c) The entries are stored in a linked list
 - d) There is a Sequential entry that is one by one
- 13) The complexity of linear search algorithm is _____.
 - a) O(n) b) $O(\log n)$
 - c) O(n2) d) $O(n \log n)$
- 14) Quick sort is also known as _____.
 - a) merge sort
 - c) shell sort d) p
- b) tree sort
 - b) partition and exchange sort

Set S

Max. Marks: 56

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering DATA STRUCTURES

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

Seat No.

- a) Write a 'C' program to find the GCD of two numbers with recursive functions.
- **b)** What is stack? Explain the push operation with a 'C'routine.
- c) Elaborate the different operations performed on a queue with neat diagrams.
- d) What is avail list? Explain avail list in terms of getnode and freenode operations with algorithm and diagram.
- e) Convert the following infix expression to postfix expression using stack:

$$(A + B)/(C - D) + E$$

Q.3 Attempt any two.

a) Write a C program for the implementation of stack using array containing push, pop and display functions.

b) Write short notes on:

- 1) Priority Queue
- 2) Deque
- c) Write an algorithm for addition of two polynomials using linked list and illustrate the addition of two polynomials $4x^2 + 3x + 2$ and $6x^2 + 7x + 5$ using linked list.

Section – II

Q.4 Attempt any four

- a) Compare linear search and binary search.
- **b)** Sort the following using selection sort method 30, 20, 35, 14, 90, 25, 32
- c) Define graph. Represent graph using adjacency matrix.
- d) Sort the given sequence in ascending order using quick sort. 48, 44, 32, 22, 62, 95, 12, 56, 89
- e) Explain threaded binary tree with example.

Q.5 Attempt any two.

- a) Construct a binary search tree from the following keys and find it's in-order, pre-order and post-order traversal.
 70, 60, 55, 80, 85, 10, 3, 90, 82, 65, 79, 83, 52, 12, 17
- **b)** Explain graph traversal methods with example.
- c) What is hash collision? Explain open addressing technique in detail.

12

16

16

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 3 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- In a DC machine, rectification process is carried out in order to get 1) unidirectional output (DC). This rectification process is carried out by
 - Half wave rectifier a)
 - Mechanical rectification d) Centre tapped rectifier
- 2) In normal dc machines operating at full-load conditions, the most powerful electromagnet is _
 - Field winding a)
 - Interpole Winding b)
 - C) Interpole and compensating winding together
 - Armature winding d)
- 3) When the supply frequency of a three phase induction motor is increased, then its synchronous speed is
 - a) Decreases b) Increases
 - C) remain same d) none of the above
- 4) In induction motor the unit of slip is
 - a) Rpm b) Metre per second C)
 - Radian d) Unit less
- 5) With the increase in supply voltage, the starting torque of a 3 phase induction motor .
 - Increases b) Decrease a)
 - d) None of the above c) Remains same
- 6) A capacitor start, capacitor run single phase induction motor is basically a
 - Ac series motor a)
 - 2 phase induction motor c)
- 7) A universal motor is one
 - Which can run on any value of supply voltage a)
 - Which has infinitely varying speed b)
 - Which can operate on ac as well as dc voltage C)
 - d) Which can work as single phase or three phase motor
- 8) Open delta transformers can be obtained from _ b) Star-delta
 - a) Delta-delta
 - Delta-star d) Any of the mentioned c)

Max. Marks: 70



b) Full wave rectifier

b) Dc series motor

d) 3 phase induction motor

Set



Duration: 30 Minutes

C)

Marks: 14

				Set	Ρ
9)	For	a 3-phase load balanced condition	on, e	ach phase has the same value of	
	a) c)	 Impedance Power factor	b) d)	Resistance All of these	
10)	The a) c)	e electric motor generally used in Reluctance motor Universal motor	b)	puter printer driver is Hysteresis motor Stepper motor	
11)	In a a) c)	shaded pole motor, the rotating f Split phase Inter-pole capacitor	b)	is developed by using Shading coil A capacitor	
12)		Case of three phase transformer 3 sible in connection. Star-star Delta-Delta		ise to 2 phase transformation is V-V T-T	
13)	For a) c)	dc shunt motor T α la because _ The supply voltage is constant The speed is constant	b)	Field winding current is constant The no load current is constant	
14)		ording to Fleming's left-hand rule oction of the field or flux, the middl		e ,	
	a)	 Current in the conductor	b)	Flux	

- a) Current in the conductor
- c) Resultant force on conductor d) None of the above

12

Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Discuss Characteristics of DC generator
- b) Calculate the speed of lap wound shunt motor which has 6 poles and 600 conductors. It draws a load current of 100 A from 120 V dc supply. Armature and shunt field resistances are 0.06 ohm and 30 ohm respectively. Flux per pole is 30 mwb.
- c) A shunt motor runs at 1000rpm, its armature taking 40A from 250V dc power supply. Calculate the resistance required in series with the armature circuit to decrease the speed to 600 rpm and to reduce armature current to 30A. Armature resistance is 0.5ohm.
- d) Why single phase induction motor is not self starting?
- e) Draw and explain the three point starter.
- Explain with diagram speed control methods for DC series motor. f)

Attempt Following Q.3

- a) Explain characteristics of DC motors.
- b) Discuss about the working, types, characteristics and applications of universal motor.
- c) Derive the emf equation for generator.

Section – II

Q.4 Attempt any four.

- a) Explain concept of electric drive with block diagram.
- b) Draw neat diagram of star delta starter and explain its operation.
- c) A 12 pole 3 phase alternator is driven at speed of 600 rpm. It supplies power to a 6 pole 3 phase induction motor. Calculate the full load speed of the motor when the slip of the motor is 2.5%.
- **d)** Write the types of three phase transformer connections and explain any one in detail with diagram
- The watt meters in line R and Y a 120 volts, RYB system read 1500 watts e) and 500 watts respectively. Find the impedance and power factor of the balanced delta connected load.
- Discuss the power factor and causes of low power factor. **f**)

Q.5 Attempt Following

- a) Write needs and methods of power factor improvement.
- **b)** Explain two wattmeter method for three phase power measurement
- A 11 KV 12 pole 50 Hz 3 phase star connected induction motor has a rotor C) resistance of 0.2 ohm respectively. Full load speed of the motor is 480rpm. Calculate
 - Slip at maximum torque 1)
 - Ratio between maximum and full load torque 2)
 - 3) Find the ratio of T_{max} and T_{sart}

Max. Marks: 56

Set

SLR-FM-181

12

16

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 3 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - Open delta transformers can be obtained from _ 1)
 - a) Delta-delta b) Star-delta Delta-star c)
 - d) Any of the mentioned

b) Resistance

- For a 3-phase load balanced condition, each phase has the same value of 2)
 - Impedance a)
 - Power factor d) All of these c)
- 3) The electric motor generally used in computer printer driver is . b) Hysteresis motor
 - Reluctance motor a)
 - c) Universal motor d) Stepper motor
- 4) In a shaded pole motor, the rotating field is developed by using _____.
 - Split phase Shading coil a) b) d) A capacitor
 - Inter-pole capacitor c)
- In Case of three phase transformer 3 phase to 2 phase transformation is 5) possible in _____ connection.
 - Star-star V-V a) b)
 - T-T c) Delta-Delta d)
- For dc shunt motor T α la because 6)
 - The supply voltage is constant b) Field winding current is constant a)
 - The speed is constant d) The no load current is constant c)
- 7) According to Fleming's left-hand rule, when the forefinger points in the direction of the field or flux, the middle finger will point the direction of
 - Current in the conductor Flux a) b)
 - Resultant force on conductor d) None of the above c)
- In a DC machine, rectification process is carried out in order to get 8) unidirectional output (DC). This rectification process is carried out by
 - Half wave rectifier a) b) Full wave rectifier C)
 - Mechanical rectification d) Centre tapped rectifier

Seat No.

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Set

Max. Marks: 70

Marks: 14

9) In normal dc machines operating at full-load conditions, the most powerful electromagnet is _____.

- a) Field winding
- b) Interpole Winding
- c) Interpole and compensating winding together
- d) Armature winding

10) When the supply frequency of a three phase induction motor is increased, then its synchronous speed is _____.

- a) Decreases b) Increases
- c) remain same d) none of the above
- 11) In induction motor the unit of slip is _
 - a) Rpm b) Metre per second
 - c) Radian d) Unit less
- 12) With the increase in supply voltage, the starting torque of a 3 phase induction motor _____.
 - a) Increases

- b) Decrease
- c) Remains same
- d) None of the above
- 13) A capacitor start, capacitor run single phase induction motor is basically a
 - a) Ac series motor
 - c) 2 phase induction motor
- b) Dc series motor
- d) 3 phase induction motor

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Set O

- 14) A universal motor is one _____
 - a) Which can run on any value of supply voltage
 - b) Which has infinitely varying speed
 - c) Which can operate on ac as well as dc voltage
 - d) Which can work as single phase or three phase motor

Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Discuss Characteristics of DC generator
- b) Calculate the speed of lap wound shunt motor which has 6 poles and 600 conductors. It draws a load current of 100 A from 120 V dc supply. Armature and shunt field resistances are 0.06 ohm and 30 ohm respectively. Flux per pole is 30 mwb.
- c) A shunt motor runs at 1000rpm, its armature taking 40A from 250V dc power supply. Calculate the resistance required in series with the armature circuit to decrease the speed to 600 rpm and to reduce armature current to 30A. Armature resistance is 0.5ohm.
- d) Why single phase induction motor is not self starting?
- e) Draw and explain the three point starter.
- f) Explain with diagram speed control methods for DC series motor.

Q.3 Attempt Following

- a) Explain characteristics of DC motors.
- **b)** Discuss about the working, types, characteristics and applications of universal motor.
- c) Derive the emf equation for generator.

Section – II

Q.4 Attempt any four.

- a) Explain concept of electric drive with block diagram.
- **b)** Draw neat diagram of star delta starter and explain its operation.
- c) A 12 pole 3 phase alternator is driven at speed of 600 rpm. It supplies power to a 6 pole 3 phase induction motor. Calculate the full load speed of the motor when the slip of the motor is 2.5%.
- d) Write the types of three phase transformer connections and explain any one in detail with diagram
- e) The watt meters in line R and Y a 120 volts, RYB system read 1500 watts and 500 watts respectively. Find the impedance and power factor of the balanced delta connected load.
- f) Discuss the power factor and causes of low power factor.

Q.5 Attempt Following

- a) Write needs and methods of power factor improvement.
- b) Explain two wattmeter method for three phase power measurement
- c) A 11 KV 12 pole 50 Hz 3 phase star connected induction motor has a rotor resistance of 0.2 ohm respectively. Full load speed of the motor is 480rpm. Calculate
 - 1) Slip at maximum torque
 - 2) Ratio between maximum and full load torque
 - 3) Find the ratio of T_{max} and T_{sart}

Max. Marks: 56

12

16

16

12



S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 3 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

3)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- With the increase in supply voltage, the starting torque of a 3 phase 1)
 - induction motor .
 - a) Increases
 - Remains same C)
- 2) A capacitor start, capacitor run single phase induction motor is basically a
 - Ac series motor a)
 - C) 2 phase induction motor
 - A universal motor is one _____
 - Which can run on any value of supply voltage a)
 - Which has infinitely varying speed b)
 - Which can operate on ac as well as dc voltage C)
 - Which can work as single phase or three phase motor d)
- Open delta transformers can be obtained from 4) b) Star-delta
 - a) Delta-delta
 - Delta-star d) Any of the mentioned C)
- 5) For a 3-phase load balanced condition, each phase has the same value of
 - Impedance a)

c)

c)

- Power factor
- The electric motor generally used in computer printer driver is _____. 6)
 - a) Reluctance motor
 - C) Universal motor d) Stepper motor
- In a shaded pole motor, the rotating field is developed by using _____. 7)
 - Split phase b) Shading coil a)
 - Inter-pole capacitor d) A capacitor
- 8) In Case of three phase transformer 3 phase to 2 phase transformation is possible in connection.
 - b) V-V a) Star-star Delta-Delta d) T-T c)
- 9) For dc shunt motor T α la because
 - The supply voltage is constant b) Field winding current is constant a)
 - The speed is constant d) The no load current is constant C)

Max. Marks: 70

Marks: 14

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Set

Seat

No.

d) None of the above

b) Dc series motor

b) Decrease

d) 3 phase induction motor

- b) Resistance
- d) All of these

 - b) Hysteresis motor

- 10) According to Fleming's left-hand rule, when the forefinger points in the direction of the field or flux, the middle finger will point the direction of
 - Current in the conductor b) Flux
 - c) Resultant force on conductor d) None of the above
- 11) In a DC machine, rectification process is carried out in order to get unidirectional output (DC). This rectification process is carried out by
 - a) Half wave rectifier

a)

b) Full wave rectifier

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Set R

- c) Mechanical rectification
- d) Centre tapped rectifier
- 12) In normal dc machines operating at full-load conditions, the most powerful electromagnet is _____.
 - a) Field winding
 - b) Interpole Winding
 - c) Interpole and compensating winding together
 - d) Armature winding
- 13) When the supply frequency of a three phase induction motor is increased, then its synchronous speed is _____.
 - a) Decreases

- b) Increases
- c) remain same d) none of the above
- 14) In induction motor the unit of slip is _____
 - a) Rpm
 - c) Radian

- b) Metre per second
- d) Unit less

Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Discuss Characteristics of DC generator
- b) Calculate the speed of lap wound shunt motor which has 6 poles and 600 conductors. It draws a load current of 100 A from 120 V dc supply. Armature and shunt field resistances are 0.06 ohm and 30 ohm respectively. Flux per pole is 30 mwb.
- c) A shunt motor runs at 1000rpm, its armature taking 40A from 250V dc power supply. Calculate the resistance required in series with the armature circuit to decrease the speed to 600 rpm and to reduce armature current to 30A. Armature resistance is 0.5ohm.
- **d)** Why single phase induction motor is not self starting?
- e) Draw and explain the three point starter.

f) Explain with diagram speed control methods for DC series motor.

Q.3 Attempt Following

- a) Explain characteristics of DC motors.
- **b**) Discuss about the working, types, characteristics and applications of universal motor.
- c) Derive the emf equation for generator.

Section – II

Q.4 Attempt any four.

- a) Explain concept of electric drive with block diagram.
- b) Draw neat diagram of star delta starter and explain its operation.
- c) A 12 pole 3 phase alternator is driven at speed of 600 rpm. It supplies power to a 6 pole 3 phase induction motor. Calculate the full load speed of the motor when the slip of the motor is 2.5%.
- d) Write the types of three phase transformer connections and explain any one in detail with diagram
- e) The watt meters in line R and Y a 120 volts, RYB system read 1500 watts and 500 watts respectively. Find the impedance and power factor of the balanced delta connected load.
- f) Discuss the power factor and causes of low power factor.

Q.5 Attempt Following

- a) Write needs and methods of power factor improvement.
- b) Explain two wattmeter method for three phase power measurement
- c) A 11 KV 12 pole 50 Hz 3 phase star connected induction motor has a rotor resistance of 0.2 ohm respectively. Full load speed of the motor is 480rpm. Calculate
 - 1) Slip at maximum torque
 - 2) Ratio between maximum and full load torque
 - 3) Find the ratio of T_{max} and T_{sart}

Max. Marks: 56

Set

12

16

16

Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 3 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The electric motor generally used in computer printer driver is _____. 1)
 - a) Reluctance motor b) Hysteresis motor d) Stepper motor
 - Universal motor c)
- 2) In a shaded pole motor, the rotating field is developed by using _____. b) Shading coil
 - Split phase a)
 - d) A capacitor c) Inter-pole capacitor
- In Case of three phase transformer 3 phase to 2 phase transformation is 3) possible in _____ connection.
 - a) Star-star b) V-V d) T-T Delta-Delta c)
- 4) For dc shunt motor T α la because
 - The supply voltage is constant b) Field winding current is constant a)
 - The speed is constant d) The no load current is constant C)
- 5) According to Fleming's left-hand rule, when the forefinger points in the direction of the field or flux, the middle finger will point the direction of
 - Current in the conductor b) Flux a)
 - Resultant force on conductor d) None of the above c)
- 6) In a DC machine, rectification process is carried out in order to get unidirectional output (DC). This rectification process is carried out by
 - a) Half wave rectifier
- b) Full wave rectifier d) Centre tapped rectifier
- Mechanical rectification c)
- 7) In normal dc machines operating at full-load conditions, the most powerful electromagnet is
 - Field winding a)

c)

- Interpole Winding b)
- Interpole and compensating winding together c)
- Armature winding d)
- When the supply frequency of a three phase induction motor is increased, 8) then its synchronous speed is _
 - a) Decreases
 - remain same d)
- b) Increases
 - none of the above

Max. Marks: 70

Set

Marks: 14

- 9) In induction motor the unit of slip is ____
 - a) Rpm

C)

c)

C)

b) Metre per second

SLR-FM-181

Set S

- Radian d) Unit less
- 10) With the increase in supply voltage, the starting torque of a 3 phase induction motor _____.
 - a) Increases

- b) Decrease
- Remains same d) None of the above
- 11) A capacitor start, capacitor run single phase induction motor is basically a
 - a) Ac series motor

- b) Dc series motor
- c) 2 phase induction motor
- d) 3 phase induction motor
- 12) A universal motor is one _____.
 - a) Which can run on any value of supply voltage
 - b) Which has infinitely varying speed
 - c) Which can operate on ac as well as dc voltage
 - d) Which can work as single phase or three phase motor
- 13) Open delta transformers can be obtained from _____
 - a) Delta-delta

- b) Star-delta
- Delta-star
- d) Any of the mentioned
- 14) For a 3-phase load balanced condition, each phase has the same value of
 - a) Impedance

b) Resistance

c) Power factor

d) All of these

Seat No.

S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Discuss Characteristics of DC generator
- b) Calculate the speed of lap wound shunt motor which has 6 poles and 600 conductors. It draws a load current of 100 A from 120 V dc supply. Armature and shunt field resistances are 0.06 ohm and 30 ohm respectively. Flux per pole is 30 mwb.
- c) A shunt motor runs at 1000rpm, its armature taking 40A from 250V dc power supply. Calculate the resistance required in series with the armature circuit to decrease the speed to 600 rpm and to reduce armature current to 30A. Armature resistance is 0.5ohm.
- d) Why single phase induction motor is not self starting?
- e) Draw and explain the three point starter.
- f) Explain with diagram speed control methods for DC series motor.

Q.3 Attempt Following

- a) Explain characteristics of DC motors.
- **b)** Discuss about the working, types, characteristics and applications of universal motor.
- c) Derive the emf equation for generator.

Section – II

Q.4 Attempt any four.

- a) Explain concept of electric drive with block diagram.
- **b)** Draw neat diagram of star delta starter and explain its operation.
- c) A 12 pole 3 phase alternator is driven at speed of 600 rpm. It supplies power to a 6 pole 3 phase induction motor. Calculate the full load speed of the motor when the slip of the motor is 2.5%.
- d) Write the types of three phase transformer connections and explain any one in detail with diagram
- e) The watt meters in line R and Y a 120 volts, RYB system read 1500 watts and 500 watts respectively. Find the impedance and power factor of the balanced delta connected load.
- f) Discuss the power factor and causes of low power factor.

Q.5 Attempt Following

- a) Write needs and methods of power factor improvement.
- b) Explain two wattmeter method for three phase power measurement
- c) A 11 KV 12 pole 50 Hz 3 phase star connected induction motor has a rotor resistance of 0.2 ohm respectively. Full load speed of the motor is 480rpm. Calculate
 - 1) Slip at maximum torque
 - 2) Ratio between maximum and full load torque
 - 3) Find the ratio of T_{max} and T_{sart}

Max. Marks: 56

SLR-FM-181

12

16

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Set S

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

LINEAR INTEGRATED CIRCUITS

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) For amplifying low level signals affected by noise _____ amplifier is used.

b)

instrumentation

- a) open loop with high gain
- c) inverting d) non inverting
- Voltage follower is a special case of amplifier. 2)
 - a) inverting b) non inverting
 - differential instrumentation d) C)

3) Non identical transistors in the first stage of op amp results into _____.

- input offset current a) input bias current b)
- c) thermal drift d) all of these
- In selecting op amp for high frequency application which of the below 4) parameter is of more importance?
 - input bias current a) b) CMRR open loop gain
 - c) slew rate d)
- An analog signal is converted into a discrete signal by 5)
- a) ADC sample and hold b) c) integrator d) anti aliasing filter amplifier. 6) Op Amp is a _____ coupled _____ a) capacitor, high gain b) directly, class AB c) directly, high gain d) capacitor, non linear
- $T = 2RC \ln\left(\frac{2R_1 + R_2}{R_2}\right),$ 7) If we write, we are talking about third order low pass filter a) square wave generator b)
 - c) second order high pass filter no such circuit exists d)
- Take odd man out: flash, R-2R, tracking, successive approximation. 8) a) flash b) R-2R
 - c) tracking d) successive approximation
- 9) For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and $C = 0.01 \ \mu F$, value of R is _____ Ω .
 - a) 1.59 K 1 K b)
 - 11.9 K none of these c) d)

SLR-FM-182

Set

Ρ

Max. Marks: 70

Marks: 14

To achieve a stable circuit loop gain must be _____ when its magnitude 10) reaches unity.

- a) greater than 0° b)
- c) greater than 360° None of the above d)
- 11) Which of below is not a mode of PLL?
 - a) capture stable b)
 - c) lock free running d)
- Make odd man out: input offset current, input offset voltage, thermal drift, 12) CMRR.
 - a) input offset current
 - b) input offset voltage c) thermal drift d) CMRR
- 13) Bode plot is used for __

a) temperature

14)

- a) Feedback analysis
- c) CMRR calculations

greater than -180°

thermal drift calculations

Stability analysis

- c) supply voltage

Output offset voltage changes with _

b) time

b)

d)

d) all of these





Set

Seat	
No.	

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any two.

- a) How a differential amplifier can be designed using two op amps? Also derive for its output.
- **b)** Derive for resistor values of offset voltage compensation network, for an open loop op amp.
- c) Derive for an output of a differentiator. What are its limitations?

Q.3 Solve any four

- a) For an inverting amplifier with $R_1 = 470\Omega \& R_f = 4.7 K\Omega$. Calculate voltage gain, input resistance, output resistance and bandwidth after feedback. Op Amp is 741 with open loop gain = 200,000, break frequency = 5 Hz, input resistance = 2 M Ω and output resistance = 75 Ω .
- b) Design:
 - 1) A non inverting amplifier with gain 1
 - 2) An inverting amplifier with gain 10
- c) What is thermal drift? How it affects op amp performance?
- d) Derive for output resistance of a non inverting amplifier with feedback.
- e) Comment instrumentation amplifier is used for measurement of physical quantities.

Section – II

Q.4 Solve any two

- a) With suitable diagram analyze working of weighted resistor DAC. What are its limitations?
- **b)** Analyze square wave generator using op amp. Derive for its frequency.
- c) Analyze negative clipper. How it can be converted into a half wave rectifier?

Q.5 Solve any four

- a) Analyze any one application of PLL
- b) Discuss flash ADC
- c) Show how a peak detector can be designed using op amp
- d) Draw and explain narrow band pass filter
- e) Explain any two significant DAC specifications

Max. Marks: 56

16

12

40

16

Set

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

6)

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - Take odd man out: flash, R-2R, tracking, successive approximation. 1)
 - a) flash b) R-2R
 - c) tracking d) successive approximation
 - For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and 2)
 - $C = 0.01 \,\mu\text{F}$, value of R is Ω .
 - a) 1.59 K 1 K b) c) 11.9 K d) none of these
 - To achieve a stable circuit loop gain must be _____ when its magnitude 3) reaches unity.
 - a) greater than 0° b) greater than -180°
 - greater than 360° None of the above C) d)
 - Which of below is not a mode of PLL? 4)
 - a) capture b) stable c) lock d) free running
 - 5) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
 - a) input offset current b) input offset voltage c) thermal drift d) CMRR
 - Bode plot is used for
 - a) Feedback analysis b) thermal drift calculations
 - c) CMRR calculations Stability analysis d)
 - 7) Output offset voltage changes with a) temperature b) time
 - c) supply voltage d) all of these
 - 8) For amplifying low level signals affected by noise _____ amplifier is used.
 - a) open loop with high gain b) instrumentation non inverting
 - c) inverting d)
 - 9) Voltage follower is a special case of _ amplifier. non inverting
 - a) inverting b) c)
 - differential d) instrumentation

Max. Marks: 70

Marks: 14

	SLR-FM-182
	Set Q
10)	Non identical transistors in the first stage of op amp results intoa) input bias currentb) input offset currentc) thermal driftd) all of these
11)	In selecting op amp for high frequency application which of the below parameter is of more importance? a) input bias current b) CMRR c) slew rate d) open loop gain
12)	An analog signal is converted into a discrete signal by a) ADC b) sample and hold c) integrator d) anti aliasing filter
13)	Op Amp is a coupled amplifier.a) capacitor, high gainb) directly, class ABc) directly, high gaind) capacitor, non linear
14)	If we write, $T = 2RC \ln\left(\frac{2R_1 + R_2}{R_2}\right)$, we are talking about
	 a) square wave generator b) third order low pass filter c) second order high pass filter d) no such circuit exists

Set C

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any two.

Seat No.

- a) How a differential amplifier can be designed using two op amps? Also derive for its output.
- b) Derive for resistor values of offset voltage compensation network, for an open loop op amp.
- c) Derive for an output of a differentiator. What are its limitations?

Q.3 Solve any four

a) For an inverting amplifier with $R_1 = 470\Omega \& R_f = 4.7 K\Omega$. Calculate voltage gain, input resistance, output resistance and bandwidth after feedback. Op Amp is 741 with open loop gain = 200,000, break frequency = 5 Hz, input resistance = 2 M\Omega and output resistance = 75 Ω .

b) Design:

- 1) A non inverting amplifier with gain 1
- 2) An inverting amplifier with gain 10
- c) What is thermal drift? How it affects op amp performance?
- d) Derive for output resistance of a non inverting amplifier with feedback.
- e) Comment instrumentation amplifier is used for measurement of physical quantities.

Section – II

Q.4 Solve any two

- a) With suitable diagram analyze working of weighted resistor DAC. What are its limitations?
- **b)** Analyze square wave generator using op amp. Derive for its frequency.
- c) Analyze negative clipper. How it can be converted into a half wave rectifier?

Q.5 Solve any four

- a) Analyze any one application of PLL
- **b)** Discuss flash ADC
- c) Show how a peak detector can be designed using op amp
- d) Draw and explain narrow band pass filter
- e) Explain any two significant DAC specifications

Max. Marks: 56

16

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12

Set

Max. Marks: 70

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - An analog signal is converted into a discrete signal by _ 1)
 - sample and hold a) ADC b)
 - c) integrator anti aliasing filter d)
 - Op Amp is a _____ coupled _____ amplifier. 2) a) capacitor, high gain b) directly, class AB c) directly, high gain d) capacitor, non linear
 - 3) If we write, $T = 2RC \ln\left(\frac{2R_1 + R_2}{R_2}\right)$, we are talking about
 - a) square wave generator third order low pass filter b)
 - c) second order high pass filter d) no such circuit exists
 - Take odd man out: flash, R-2R, tracking, successive approximation. 4) a) flash
 - R-2R b)
 - c) tracking d) successive approximation
 - For a first order low pass filter if f_{H} is 1 KHz, passband gain is 2 and 5)
 - C = 0.01 μ F, value of R is _____ Ω .
 - a) 1.59 K b) 1 K
 - c) 11.9 K d) none of these
 - To achieve a stable circuit loop gain must be when its magnitude 6) reaches unity.
 - a) greater than 0° greater than -180° b)
 - c) greater than 360° None of the above d)
 - Which of below is not a mode of PLL? 7)
 - a) capture b) stable c) lock d) free running
 - 8) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
 - a) input offset current c) thermal drift
- b) input offset voltage
- d) CMRR

Marks: 14

			SLR-FM-182
			Set R
9)	· ·	b) d)	thermal drift calculations Stability analysis
10)	, ,	b) d)	 time all of these
11)			y noise amplifier is used. instrumentation non inverting
12)	, .	b) d)	•
13)		age b) d)	
14)	In selecting op amp for high frequence parameter is of more importance?	y ap	plication which of the below

- b) CMRR
- a) input bias currentc) slew rate
- b) CMRRd) open loop gain

Seat	
No.	

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any two.

- a) How a differential amplifier can be designed using two op amps? Also derive for its output.
- **b)** Derive for resistor values of offset voltage compensation network, for an open loop op amp.
- c) Derive for an output of a differentiator. What are its limitations?

Q.3 Solve any four

- a) For an inverting amplifier with $R_1 = 470\Omega \& R_f = 4.7 K\Omega$. Calculate voltage gain, input resistance, output resistance and bandwidth after feedback. Op Amp is 741 with open loop gain = 200,000, break frequency = 5 Hz, input resistance = 2 M Ω and output resistance = 75 Ω .
- b) Design:
 - 1) A non inverting amplifier with gain 1
 - 2) An inverting amplifier with gain 10
- c) What is thermal drift? How it affects op amp performance?
- d) Derive for output resistance of a non inverting amplifier with feedback.
- e) Comment instrumentation amplifier is used for measurement of physical quantities.

Section – II

Q.4 Solve any two

- a) With suitable diagram analyze working of weighted resistor DAC. What are its limitations?
- **b)** Analyze square wave generator using op amp. Derive for its frequency.
- c) Analyze negative clipper. How it can be converted into a half wave rectifier?

Q.5 Solve any four

- a) Analyze any one application of PLL
- **b)** Discuss flash ADC
- c) Show how a peak detector can be designed using op amp
- d) Draw and explain narrow band pass filter
- e) Explain any two significant DAC specifications



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Set

Max. Marks: 70

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

To achieve a stable circuit loop gain must be _____ when its magnitude 1) reaches unity.

b)

greater than -180°

- a) greater than 0°
- c) greater than 360° None of the above d)
- 2) Which of below is not a mode of PLL?
 - stable a) capture b) c) lock d) free running
- 3) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
 - a) input offset current b) input offset voltage CMRR
 - c) thermal drift d)
- 4) Bode plot is used for ____
 - a) Feedback analysis b) thermal drift calculations
 - c) CMRR calculations Stability analysis d)
- Output offset voltage changes with 5)
 - a) temperature b) time c) supply voltage
 - d) all of these

6) For amplifying low level signals affected by noise _____ amplifier is used.

- a) open loop with high gain instrumentation b)
 - c) inverting d) non inverting
- Voltage follower is a special case of _ 7) amplifier.
 - a) inverting b) non inverting c) differential d) instrumentation
- 8) Non identical transistors in the first stage of op amp results into . input offset current
 - a) input bias current b) c) thermal drift
 - d) all of these
- 9) In selecting op amp for high frequency application which of the below parameter is of more importance?
 - a) input bias current
 - c) slew rate

- b) CMRR
- d) open loop gain

- Marks: 14

			SLR-FM-182
			Set S
10)	An analog signal is converted into a a) ADC c) integrator	b)	ete signal by sample and hold anti aliasing filter
11)	a) capacitor, high gain	b)	amplifier. directly, class AB capacitor, non linear
12)	If we write, $T = 2RC \ln\left(\frac{2R_1 + R_2}{R_2}\right)$, w	e are talking about
	a) square wave generatorc) second order high pass filter	b) d)	third order low pass filter no such circuit exists
13)	Take odd man out: flash, R-2R, trac a) flash c) tracking	b)	
14)	For a first order low pass filter if f_H is C = 0.01 µF, value of R is Ω a) 1.59 K		lz, passband gain is 2 and 1 Κ

c) 11.9 K d) none of these

Set S

Max. Marks: 56

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any two.

Seat No.

- a) How a differential amplifier can be designed using two op amps? Also derive for its output.
- b) Derive for resistor values of offset voltage compensation network, for an open loop op amp.
- c) Derive for an output of a differentiator. What are its limitations?

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- 2) An inverting amplifier with gain 10
- c) What is thermal drift? How it affects op amp performance?
- d) Derive for output resistance of a non inverting amplifier with feedback.
- e) Comment instrumentation amplifier is used for measurement of physical quantities.

Section – II

Q.4 Solve any two

- a) With suitable diagram analyze working of weighted resistor DAC. What are its limitations?
- **b)** Analyze square wave generator using op amp. Derive for its frequency.
- c) Analyze negative clipper. How it can be converted into a half wave rectifier?

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- a) Analyze any one application of PLL
- b) Discuss flash ADC
- c) Show how a peak detector can be designed using op amp
- d) Draw and explain narrow band pass filter
- e) Explain any two significant DAC specifications

12

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No.						Sel	Ρ	
	S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering							
			SIGNALS AND	•	-			
		ednesday, 27 I To 05:30 P			Max	. Marks	s: 70	
Instruc		book.			be solved in first 30 minutes	s in ans	swer	
	2) Figures to	the right indicates fu	ll mai	ˈks.			
-			ICQ/Objective Ty	/pe (Questions			
	on: 30 Mii					Mark		
	Choose t sentence		alternatives from th	ie opt	tions and rewrite the		14	
	l) Doe			(t) co b) d)	rrespond to a stable systen No Cant determine	n?		
2	a)	d the value o h[n − 2] h[n − 1]	f h[n]* δ [n — 1], δ[n]	bein b) d)	g the delta function. h[n] h[n + 1]			
3	•	•••	ems which are chara tain levels are called		zed by input and the output discrete digital	I		
4	ene a)		of the signal is a: ity		nal, if and only if the total Zero Unity			
5	́a)) is an even a ₀ = 0 b _n = 0	function, then its Fo	b)	representation has a _n = 0 a _n = b _n	_·		
6	a) b) c)	Only Period Only aperio	dic signals ic and aperiodic sigr					
7	a)	ystem which scaling shifting and		bey th b) d)	ne rules of additivity both scaling and additivity	,		
8	a)	ording to pro Zeros Both Poles	operty of ZT "ROC ca and Zeros	annot b) d)	contain". Poles None			
9) Fou	irier transfori	m of δ(t) is					
		δ(ω) 1		b) d)	2πδ(ω) can't define			

Set P

Set

- 10) When the system has poles inside the unit circle in Z-domain
 - a) The system is stable and its impulse response is a decaying function
 - b) Time domain behavior will be exponentially increasing signal
 - c) The system is unstable
 - d) The impulse response is marginally constant
- 11) A signal x(t) has a Fourier transform X(jw). If x(t) is a real and odd function of t, then X(jw) is _____.
 - a) A real and even function of w
 - b) Purely imaginary and odd function of w
 - c) An imaginary and even function of w
 - d) A real and odd function of w
- 12) What does the spectral density function of any signal specify?
 - a) Distribution of energy or power
 - b) Consumption of energy or power
 - c) Conservation of energy or power
 - d) Generation of energy or power
- 13) The autocorrelation function is _____
 - a) Even b) Odd
 - c) Both d) None of these
- 14) Which of the following is the method used for reconstruction of signal from its samples?
 - a) Zero order hold
 - h)
- b) Linear interpolation

c) Both a) and b)

d) None of these

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following.

- **a)** Verify following properties for the system y(t) = x(t+2).
 - 1) Static/Dynamic
 - 2) Causality
 - 3) Time Variance
- **b)** Find even and odd parts of the signal

 $x[n] = 1; -2 \le n \le 2$

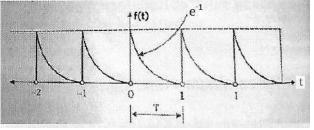
c) Check following signal periodicity. If periodic, find the fundamental time period.

 $x(t) = 2 \cos(3t) + 3 \sin(7t)$

d) Explain Dirichlet's conditions.

Q.3 Attempt any two of the following.

a) Find the exponential Fourier series for the periodic signal x(t).



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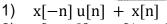
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1

-1/2

b) Refer the sketch below and draw following sequences:

3/2



- 2) x[n+2] + x[1-n]
- c) Convolve the following signals:

 $X(t) = e^{(-2t)} u(t)$ and h(t) = u(t+2)

12



SLR-FM-183

Set P

Max. Marks: 56

Section – II

Q.4 Attempt any four of the following.

- a) Obtain the Fourier transform of $x(t) = e^{-3t} u(t)$. Sketch Magnitude spectrum.
- b) Define Spectral density & state its properties.
- c) A discrete time LTI system is given by the transfer function.

$$(z) = \frac{3 - 4z^{-1}}{2}$$

 $H(z) = \frac{1}{1 - 3.5z^{-1} + 1.5z^{-2}}$ Specify the ROC of H(z) and determine impulse response h[n] if the system is stable.

- d) The analog signal x(t) is given below. $x(t) = 5 \sin(150\pi t) + 6 \cos(1400\pi t) - \sin(350\pi t)$ Calculate the Nyquist sampling rate for the signal.
- e) Explain how to represent periodic signal using Fourier transform?

Q.5 Attempt any two of the following.

- a) State and explain the sampling theorem for continuous time signals.
- **b)** Compute Fourier transform of following signals. Sketch magnitude transforms.

1)
$$x1(t) = e^{-3(t-2)} u(t-2)$$

2)
$$x(t) = \delta(t-3)$$

- c) State
 - 1) Time Shifting.
 - 2) Differentiation Properties of Fourier transform

Determine time domain signal x(t) whose Fourier transform $X(j\omega)$ is as below.

$$X(j\omega) = \begin{cases} 3 \text{ for } & -1 \le \omega \le 1 \\ 0 & \text{otherwise} \end{cases}$$

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Seat				Set Q	
No.	<u>د</u>	E. (Part – II) (New) (CBCS) E	Ivan		
	3.	Electronics Electronics AND	ngin	eering	
		Vednesday, 27-11-2019 PM To 05:30 PM		Max. Marks: 70	
Instru	ctions:	 Q. No. 1 is compulsory and sh book. Figures to the right indicates full 		be solved in first 30 minutes in answer	
		MCQ/Objective Ty			
Duratio	on: 30 N	Minutes	ype v	Marks: 14	
		e the correct alternatives from th	ne op	tions and rewrite the 14	
	senteno 1) A	ce. ccording to property of ZT "ROC ca	annot	contain ".	
	a)) Zeros	b)	Poles	
	c)		d)	None	
4		ourier transform of $\delta(t)$ is) $\delta(\omega)$	 b)	2πδ(ω)	
	c)		d)	can't define	
3	 3) When the system has poles inside the unit circle in Z-domain a) The system is stable and its impulse response is a decaying function b) Time domain behavior will be exponentially increasing signal c) The system is unstable d) The impulse response is marginally constant 				
2	 A signal x(t) has a Fourier transform X(jw). If x(t) is a real and odd function of t, then X(jw) is a) A real and even function of w b) Purely imaginary and odd function of w c) An imaginary and even function of w d) A real and odd function of w 				
Ę	5) W a) b) c) d)	 Consumption of energy or powe Conservation of energy or powe 	er	f any signal specify?	
6		he autocorrelation function is) Even) Both	b) d)	Odd None of these	
7	fro	/hich of the following is the methoc om its samples?) Zero order hold) Both a) and b)	l useo b) d)	d for reconstruction of signal Linear interpolation None of these	
8	8) D a) c)		(t) co b) d)	rrespond to a stable system? No Cant determine	

					Set	Q	
9)	a)	d the value of $h[n]^* \delta [n-1], \delta[n]$ h[n-2] h[n-1]	b)	y the delta function. h[n] h[n + 1]			
10)			as _ b)				
11)	ene a)) or x(n) is defined to be an energergy content of the signal is a: Finite quantity Infinite quantity	-	·			
12)	a)	t) is an even function, then its For $a_0 = 0$ $b_n = 0$	b)	epresentation has a _n = 0 a _n = b _n			
13)	a) b)	ureier series applies to Only Periodic signals Only aperiodic signals Both periodic and aperiodic sign Only random signals					
14)	A s a) c)	ystem which is linear is said to ob scaling shifting and scaling	-	e rules of additivity both scaling and additivity			

- c) shifting and scaling
- d) both scaling and additivity

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following.

- Verify following properties for the system y(t) = x(t+2). a)
 - Static/Dynamic 1)
 - 2) Causality
 - 3) Time Variance
- Find even and odd parts of the signal b)

 $x[n] = 1; -2 \le n \le 2$

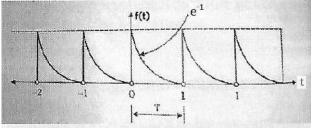
Check following signal periodicity. If periodic, find the fundamental time c) period.

 $x(t) = 2 \cos(3t) + 3 \sin(7t)$

Explain Dirichlet's conditions. d)

Q.3 Attempt any two of the following.

Find the exponential Fourier series for the periodic signal x(t). a)



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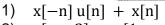
2

1

-1/2

Refer the sketch below and draw following sequences: b)

3/2



- x[n+2] + x[1-n]2)
- c) Convolve the following signals:

 $X(t) = e^{(-2t)} u(t)$ and h(t) = u(t+2)

16

12

Max. Marks: 56

Set Q





Section – II

Q.4 Attempt any four of the following.

- a) Obtain the Fourier transform of $x(t) = e^{-3t} u(t)$. Sketch Magnitude spectrum.
- **b)** Define Spectral density & state its properties.
- c) A discrete time LTI system is given by the transfer function.

$$(z) = \frac{3 - 4z^{-1}}{2}$$

 $H(z) = \frac{1}{1 - 3.5z^{-1} + 1.5z^{-2}}$ Specify the ROC of H(z) and determine impulse response h[n] if the system is stable.

- d) The analog signal x(t) is given below. $x(t) = 5 \sin(150\pi t) + 6 \cos(1400\pi t) - \sin(350\pi t)$ Calculate the Nyquist sampling rate for the signal.
- e) Explain how to represent periodic signal using Fourier transform?

Q.5 Attempt any two of the following.

- a) State and explain the sampling theorem for continuous time signals.
- **b)** Compute Fourier transform of following signals. Sketch magnitude transforms.

1)
$$x1(t) = e^{-3(t-2)} u(t-2)$$

2)
$$x(t) = \delta(t-3)$$

- c) State
 - 1) Time Shifting.
 - 2) Differentiation Properties of Fourier transform

Determine time domain signal x(t) whose Fourier transform $X(j\omega)$ is as below.

$$X(j\omega) = \begin{cases} 3 \text{ for } & -1 \le \omega \le 1 \\ 0 & \text{otherwise} \end{cases}$$

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Seat No.	Set R						
	S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS						
	Date: Wednesday, 27-11-2019 Max. Marks: 70 2:30 PM To 05:30 PM Max. Marks: 70						
Instruc	tions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.2) Figures to the right indicates full marks.						
	MCQ/Objective Type Questions						
Duratic	n: 30 Minutes Marks: 14						
	hoose the correct alternatives from the options and rewrite the 14 entence.						
1	m(t) is an even function, then its Fourier representation has a) $a_0 = 0$ b) $a_n = 0$ c) $b_n = 0$ d) $a_n = b_n$						
2	 Foureier series applies to a) Only Periodic signals b) Only aperiodic signals c) Both periodic and aperiodic signals d) Only random signals 						
3	A system which is linear is said to obey the rules of a) scaling b) additivity c) shifting and scaling d) both scaling and additivity						
4	According to property of ZT "ROC cannot contain". a) Zeros b) Poles c) Both Poles and Zeros d) None						
5	Fourier transform of $\delta(t)$ is a) $\delta(\omega)$ b) $2\pi\delta(\omega)$ c) 1 d) can't define						
6	 When the system has poles inside the unit circle in Z-domain a) The system is stable and its impulse response is a decaying function b) Time domain behavior will be exponentially increasing signal c) The system is unstable d) The impulse response is marginally constant 						
7	 A signal x(t) has a Fourier transform X(jw). If x(t) is a real and odd function of t, then X(jw) is a) A real and even function of w b) Purely imaginary and odd function of w c) An imaginary and even function of w d) A real and odd function of w 						
8	 What does the spectral density function of any signal specify? a) Distribution of energy or power b) Consumption of energy or power c) Conservation of energy or power d) Generation of energy or power 						

			Set R
9)	The autocorrelation function is a) Even c) Both	b) d)	Odd None of these
10)	Which of the following is the method from its samples?a) Zero order holdc) Both a) and b)	usec b) d)	c .
11)	Does the system $h(t) = exp(-7t) u(a)$ c) Marginally Stable	t) co b) d)	rrespond to a stable system? No Cant determine
12)	Find the value of $h[n]^* \delta[n-1], \delta[n]$ a) $h[n-2]$ c) $h[n-1]$	b)	g the delta function. h[n] h[n + 1]
13)	The type of systems which are chara quantized at certain levels are called a) analog c) continuous		zed by input and the output discrete digital
14)	x(t) or $x(n)$ is defined to be an energy energy content of the signal is a:		-

- Finite quantity a) b) Zero d) Unity
- c)

Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following.

- **a)** Verify following properties for the system y(t) = x(t+2).
 - 1) Static/Dynamic
 - 2) Causality
 - 3) Time Variance
- **b)** Find even and odd parts of the signal

 $x[n] = 1; -2 \le n \le 2$

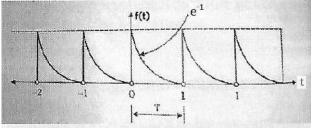
c) Check following signal periodicity. If periodic, find the fundamental time period.

 $x(t) = 2 \cos(3t) + 3 \sin(7t)$

d) Explain Dirichlet's conditions.

Q.3 Attempt any two of the following.

a) Find the exponential Fourier series for the periodic signal x(t).



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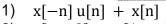
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1

-1/2

b) Refer the sketch below and draw following sequences:

3/2



- 2) x[n+2] + x[1-n]
- c) Convolve the following signals:

 $X(t) = e^{(-2t)} u(t)$ and h(t) = u(t+2)

16

12

Max. Marks: 56

Set R



Section – II

Q.4 Attempt any four of the following.

- a) Obtain the Fourier transform of $x(t) = e^{-3t} u(t)$. Sketch Magnitude spectrum.
- b) Define Spectral density & state its properties.
- c) A discrete time LTI system is given by the transfer function.

$$(z) = \frac{3 - 4z^{-1}}{2}$$

 $H(z) = \frac{1}{1 - 3.5z^{-1} + 1.5z^{-2}}$ Specify the ROC of H(z) and determine impulse response h[n] if the system is stable.

- d) The analog signal x(t) is given below. $x(t) = 5 \sin(150\pi t) + 6 \cos(1400\pi t) - \sin(350\pi t)$ Calculate the Nyquist sampling rate for the signal.
- e) Explain how to represent periodic signal using Fourier transform?

Q.5 Attempt any two of the following.

- a) State and explain the sampling theorem for continuous time signals.
- **b)** Compute Fourier transform of following signals. Sketch magnitude transforms.

1)
$$x1(t) = e^{-3(t-2)} u(t-2)$$

2)
$$x(t) = \delta(t-3)$$

- c) State
 - 1) Time Shifting.
 - 2) Differentiation Properties of Fourier transform

Determine time domain signal x(t) whose Fourier transform $X(j\omega)$ is as below.

$$X(j\omega) = \begin{cases} 3 \text{ for } & -1 \le \omega \le 1 \\ 0 & \text{otherwise} \end{cases}$$

16

12

Set

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Seat No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

- **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 - 2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - 1) When the system has poles inside the unit circle in Z-domain
 - The system is stable and its impulse response is a decaying function a)
 - b) Time domain behavior will be exponentially increasing signal
 - The system is unstable C)
 - d) The impulse response is marginally constant
 - 2) A signal x(t) has a Fourier transform X(jw). If x(t) is a real and odd function of t, then X(jw) is _
 - a) A real and even function of w
 - b) Purely imaginary and odd function of w
 - c) An imaginary and even function of w
 - d) A real and odd function of w
 - 3) What does the spectral density function of any signal specify?
 - a) Distribution of energy or power
 - b) Consumption of energy or power
 - c) Conservation of energy or power
 - d) Generation of energy or power
 - 4) The autocorrelation function is ____
 - a) Even b) Odd
 - c) Both d) None of these
 - 5) Which of the following is the method used for reconstruction of signal from its samples?
 - a) Zero order hold b) Linear interpolation
 - c) Both a) and b) d) None of these
 - Does the system h(t) = exp(-7t) u(t) correspond to a stable system? 6) a) Yes
 - b) No
 - c) Marginally Stable d) Cant determine
 - 7) Find the value of $h[n]^* \delta[n-1], \delta[n]$ being the delta function.
 - a) h[n-2]b) h[n]
 - c) h[n-1]d) h[n + 1]
 - The type of systems which are characterized by input and the output 8) quantized at certain levels are called as
 - a) analog discrete b)
 - c) continuous d) digital

Max. Marks: 70

Marks: 14

Set S 9) x(t) or x(n) is defined to be an energy signal, if and only if the total energy content of the signal is a: _____ b) a) Finite quantity Zero c) Infinite quantity d) Unity 10) m(t) is an even function, then its Fourier representation has _____. a) $a_0 = 0$ b) $a_n = 0$ c) $b_n = 0$ d) $a_n = b_n$ Foureier series applies to _____. 11) a) Only Periodic signals b) Only aperiodic signals c) Both periodic and aperiodic signals d) Only random signals A system which is linear is said to obey the rules of _____. 12) additivity a) scaling b) c) shifting and scaling d) both scaling and additivity According to property of ZT "ROC cannot contain ". 13) a) Zeros Poles b) c) Both Poles and Zeros d) None 14) Fourier transform of $\delta(t)$ is _____. b) $2\pi\delta(\omega)$ a) $\delta(\omega)$ c) 1 d) can't define

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following.

- **a)** Verify following properties for the system y(t) = x(t+2).
 - 1) Static/Dynamic
 - 2) Causality
 - 3) Time Variance
- **b)** Find even and odd parts of the signal

 $x[n] = 1; -2 \le n \le 2$

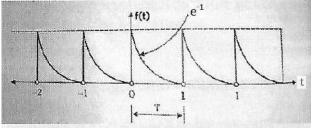
c) Check following signal periodicity. If periodic, find the fundamental time period.

 $x(t) = 2 \cos(3t) + 3 \sin(7t)$

d) Explain Dirichlet's conditions.

Q.3 Attempt any two of the following.

a) Find the exponential Fourier series for the periodic signal x(t).



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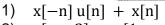
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1

-1/2

b) Refer the sketch below and draw following sequences:

3/2



- 2) x[n+2] + x[1-n]
- c) Convolve the following signals:

 $X(t) = e^{(-2t)} u(t)$ and h(t) = u(t+2)

16

Max. Marks: 56

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Section – II

Q.4 Attempt any four of the following.

- a) Obtain the Fourier transform of $x(t) = e^{-3t} u(t)$. Sketch Magnitude spectrum.
- b) Define Spectral density & state its properties.
- c) A discrete time LTI system is given by the transfer function.

$$(z) = \frac{3 - 4z^{-1}}{2}$$

 $H(z) = \frac{1}{1 - 3.5z^{-1} + 1.5z^{-2}}$ Specify the ROC of H(z) and determine impulse response h[n] if the system is stable.

- d) The analog signal x(t) is given below. $x(t) = 5 \sin(150\pi t) + 6 \cos(1400\pi t) - \sin(350\pi t)$ Calculate the Nyquist sampling rate for the signal.
- e) Explain how to represent periodic signal using Fourier transform?

Q.5 Attempt any two of the following.

- a) State and explain the sampling theorem for continuous time signals.
- **b)** Compute Fourier transform of following signals. Sketch magnitude transforms.

1)
$$x1(t) = e^{-3(t-2)}u(t-2)$$

2)
$$x(t) = \delta(t-3)$$

- c) State
 - 1) Time Shifting.
 - 2) Differentiation Properties of Fourier transform

Determine time domain signal x(t) whose Fourier transform $X(j\omega)$ is as below.

$$X(j\omega) = \begin{cases} 3 \text{ for } & -1 \le \omega \le 1 \\ 0 & \text{otherwise} \end{cases}$$

16

12

Set

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Set T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

CONTROL SYSTEMS Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes

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No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) A control system having damping factor between 0 and 1, will give
 - Critically damped response a)
 - Undamped response c)
- 2) A node having only outgoing branches is called as ____
 - Source node b) Sink node a)
 - Output node d) Both b and c C)
- The output of the closed loop control systems is the function of _____. 3)
 - b) Output a) Input
 - Input and feedback signal d) Output and feedback signal c)
- 4) The transient response of feedback system with damping factor less than unity b) Rises quickly
 - a) Rises slowly
 - c) Decays quickly
- 5) Which of the following state is/are correct statements?
 - L Type of the system is obtained from open loop transfer function
 - Ш Steady state analysis depends on the type of the system
 - Ш Transient state analysis depends on order of the system
 - a) Only I b) II & III
 - c) |&||| d) I, II & III

6) Loops which do not possess any common node are called as _____.

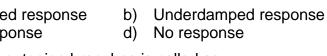
- a) Forward loops b) Feedback loops
- c) Touching loops d) Non touching loops
- 7) One of the basic requirements of a servomotor is that it must produce high torque at all .
 - a) Loads

b) Frequencies

Speeds c)

- d) Voltages

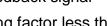
d) None of these



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Max. Marks: 70

Marks: 14



8) Routh Hurwitz criterion gives

- Number of roots in the right half of the s-plane a)
- b) Value of the roots
- Number of roots in the left half of the s-plane c)
- d) Number of roots in the top half of the s-plane
- 9) If a pole is located at origin, how does it get represented on the magnitude plot?
 - a) $-10 \log (\omega) dB$ b) $-20 \log (\omega) dB$
 - d) $-60 \log (\omega) dB$ c) $-40 \log (\omega) dB$
- 10) Which one of the following is not the property of root loci?
 - The root locus is symmetrical about imaginary axis a)
 - They start from the open loop poles and terminate at the open loop b) zeroes
 - c) The breakaway points are determined from dk/ds = 0
 - d) Segments of the real axis are the part of the root locus if and only is the total number of real poles and zeroes to their right is odd
- At which frequency does the magnitude of the system becomes zero dB? 11)
 - Resonant frequency a)
- b) Cut-off frequency d) Phase crossover frequency
- Gain crossover frequency C)
- 12) With regard to the filtering capacity the lead compensator and lag compensator are respectively _
 - a) Low pass and high pass filter
- b) High pass and low pass filter d) Both low pass filters

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- c) Both high pass filter
- 13) If the system is specified by open loop transfer function G(s)H(s) = k/s(s+3) (s + 2), how many root loci proceed to end at infinity? a) 2
 - b) 3 d) 6
 - 5 c)
- 14) Due to an addition of pole at origin, the polar plot gets shifted by _____ at $\omega = 0$?
 - a) -45° b) -60°
 - -90° d) -180° c)

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

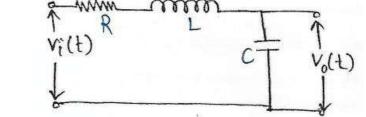
Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if required.

Section I

Q.2 Solve any four of the following questions.

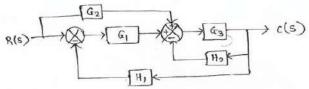
- a) Differentiate between open loop & closed loop control systems.
- b) Explain use of potentiometer as an error detector.
- c) Explain poles, zeros and time constant form of transfer function. Write following transfer function in Time Constant form. $T(S) = \frac{-7s-15}{(s+3)(s+5)}$
- d) Define transfer function and find transfer function for given circuit



e) Explain working principle and construction of tacho generator.

Q.3 Solve any two of the following questions.

- a) Derive the relation for peak time of Second order system.
- **b)** Determine position, velocity and acceleration constant for unity feedback control system with open loop transfer function. $G(s) = \frac{s(s+5)}{(s+3)(1+3s)}$
- c) Determine the overall transfer function for the following system using Mason's gain formula.



Section II

Q.4 Solve any four of the following questions.

- a) Explain with example special case number one of Routh's criterion.
- **b)** For $G(s)H(s) = \frac{K}{s(s+1)(s+4)}$, determine the coordinates of valid breakaway points.
- c) Explain the nature of Bode plots for
 - i) Poles at origin
 - ii) Zeros at origin
- d) Consider a Type 0 system with open loop transfer function $G(s)H(s) = \frac{1}{1+Ts}$, where T is constant. Obtain its polar plot.
- e) Explain with neat diagram lead compensator.



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Set P

Q.5 Solve any Two.

- a) Sketch the Bode plot for the system having $G(s)H(s) = \frac{20}{s(1+0.1s)}$
- **b)** Explain the following rules for construction of root locus with example
 - 1) Angle of asymptotes
 - 2) Determination of centroid
 - 3) Break way point (with general predictions)
- c) The output c(t) of a control system is related to its input r(t) by $[s^4 + 2s^3 + 2s^2 + (3 + K)s + K]C(s) = K(s + 1)R(s)$ Determine the limiting positive values of K for stability.

Seat	
No.	

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes

a)

C)

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Routh Hurwitz criterion gives
 - Number of roots in the right half of the s-plane a)
 - b) Value of the roots
 - Number of roots in the left half of the s-plane C)
 - d) Number of roots in the top half of the s-plane
- 2) If a pole is located at origin, how does it get represented on the magnitude plot?

a)	$-10 \log (\omega) dB$	b)	$-20 \log (\omega) dB$
C)	$-40 \log (\omega) dB$	d)	$-60 \log (\omega) dB$

- 3) Which one of the following is not the property of root loci?
 - The root locus is symmetrical about imaginary axis a)
 - They start from the open loop poles and terminate at the open loop b) zeroes
 - The breakaway points are determined from dk/ds = 0C)
 - Segments of the real axis are the part of the root locus if and only is d) the total number of real poles and zeroes to their right is odd

4) At which frequency does the magnitude of the system becomes zero dB?

- Resonant frequency b) Cut-off frequency Gain crossover frequency
 - d) Phase crossover frequency
- 5) With regard to the filtering capacity the lead compensator and lag compensator are respectively
 - a) Low pass and high pass filter b) High pass and low pass filter
 - Both high pass filter d) Both low pass filters C)
- If the system is specified by open loop transfer function 6) G(s)H(s) = k/s(s+3) (s + 2), how many root loci proceed to end at infinity? a) 2 b) 3
 - 5 d) 6 c)

7) Due to an addition of pole at origin, the polar plot gets shifted by _____ at $\omega = 0$?

a)	-45°	b)	-60 [°]
C)	-90°	d)	-180°

Set

Max. Marks: 70

- 8) A control system having damping factor between 0 and 1, will give
 - a) Critically damped response
 - c) Undamped response
- 9) A node having only outgoing branches is called as _____.
 - a) Source node b) Sink node
 - c) Output node d) Both b and c
- 10) The output of the closed loop control systems is the function of _____.
 - a) Input
- b) Output
- c) Input and feedback signal d) Output and feedback signal
- 11) The transient response of feedback system with damping factor less than unity _____.
 - a) Rises slowly b) Rises quickly
 - c) Decays quickly d) None of these
- 12) Which of the following state is/are correct statements?
 - I Type of the system is obtained from open loop transfer function
 - II Steady state analysis depends on the type of the system
 - III Transient state analysis depends on order of the system
 - a) Only I b) II & III
 - c) I & III d) I, II & III
- 13) Loops which do not possess any common node are called as _____.
 - a) Forward loopsc) Touching loops
- b) Feedback loopsd) Non touching loops
- 14) One of the basic requirements of a servomotor is that it must produce high torque at all _____.
 - a) Loads

b) Frequencies

c) Speeds

d) Voltages

- b) Underdamped response
- d) No response



Set



T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

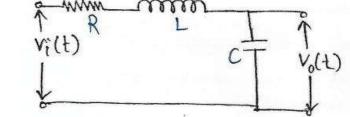
Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if required.

Section I

Q.2 Solve any four of the following questions.

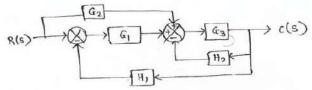
- a) Differentiate between open loop & closed loop control systems.
- b) Explain use of potentiometer as an error detector.
- **c)** Explain poles, zeros and time constant form of transfer function. Write following transfer function in Time Constant form. $T(S) = \frac{-7s-15}{(s+3)(s+5)}$
- d) Define transfer function and find transfer function for given circuit



e) Explain working principle and construction of tacho generator.

Q.3 Solve any two of the following questions.

- a) Derive the relation for peak time of Second order system.
- **b)** Determine position, velocity and acceleration constant for unity feedback control system with open loop transfer function. $G(s) = \frac{s(s+5)}{(s+3)(1+3s)}$
- c) Determine the overall transfer function for the following system using Mason's gain formula.



Section II

Q.4 Solve any four of the following questions.

- a) Explain with example special case number one of Routh's criterion.
- **b)** For $G(s)H(s) = \frac{K}{s(s+1)(s+4)}$, determine the coordinates of valid breakaway points.
- c) Explain the nature of Bode plots for
 - i) Poles at origin
 - ii) Zeros at origin
- d) Consider a Type 0 system with open loop transfer function $G(s)H(s) = \frac{1}{1+Ts}$, where T is constant. Obtain its polar plot.
- e) Explain with neat diagram lead compensator.

Max. Marks: 56

12

16



SLR-FM-184

Set

Q.5 Solve any Two.

- a) Sketch the Bode plot for the system having $G(s)H(s) = \frac{20}{s(1+0.1s)}$
- **b)** Explain the following rules for construction of root locus with example
 - 1) Angle of asymptotes
 - 2) Determination of centroid
 - 3) Break way point (with general predictions)
- c) The output c(t) of a control system is related to its input r(t) by $[s^4 + 2s^3 + 2s^2 + (3 + K)s + K]C(s) = K(s + 1)R(s)$ Determine the limiting positive values of K for stability.

Q

Set

Max. Marks: 70

R

Seat No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes

L

C)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of the following state is/are correct statements?
 - Type of the system is obtained from open loop transfer function
 - Ш Steady state analysis depends on the type of the system
 - Transient state analysis depends on order of the system Ш
 - Only I b) II & III a)
 - c) | & ||| d) I. II & III
- 2) Loops which do not possess any common node are called as _____.
 - a) Forward loops b) Feedback loops
 - Touching loops d) Non touching loops
- 3) One of the basic requirements of a servomotor is that it must produce high torque at all _____.
 - a) Loads
 - b) Frequencies Speeds d) Voltages c)
- 4) Routh Hurwitz criterion gives
 - Number of roots in the right half of the s-plane a)
 - b) Value of the roots
 - c) Number of roots in the left half of the s-plane
 - Number of roots in the top half of the s-plane
- 5) If a pole is located at origin, how does it get represented on the magnitude plot?
 - a) $-10 \log (\omega) dB$ b) $-20 \log (\omega) dB$
 - c) $-40 \log (\omega) dB$ d) $-60 \log (\omega) dB$
- Which one of the following is not the property of root loci? 6)
 - The root locus is symmetrical about imaginary axis a)
 - They start from the open loop poles and terminate at the open loop b) zeroes
 - The breakaway points are determined from dk/ds = 0C)
 - d) Segments of the real axis are the part of the root locus if and only is the total number of real poles and zeroes to their right is odd
- 7) At which frequency does the magnitude of the system becomes zero dB?
 - Resonant frequency a)
 - Gain crossover frequency c)
- b) Cut-off frequency
- d) Phase crossover frequency

Marks: 14

	SLR-FM-184
	Set R
8)	With regard to the filtering capacity the lead compensator and lagcompensator are respectivelya) Low pass and high pass filterb) High pass and low pass filterc) Both high pass filterd) Both low pass filters
9)	If the system is specified by open loop transfer function G(s)H(s) = k/s(s+3) (s + 2), how many root loci proceed to end at infinity? a) 2 b) 3 c) 5 d) 6
10)	Due to an addition of pole at origin, the polar plot gets shifted by at $\omega = 0$? a) -45° b) -60° c) -90° d) -180°
11)	A control system having damping factor between 0 and 1, will give a) Critically damped response b) Underdamped response c) Undamped response d) No response
12)	A node having only outgoing branches is called as a) Source node b) Sink node c) Output node d) Both b and c
13)	The output of the closed loop control systems is the function ofa) Inputb) Outputc) Input and feedback signald) Output and feedback signal
14)	The transient response of feedback system with damping factor less than unity

- b) Rises quicklyd) None of these
- unity _____. a) Rises slowly c) Decays quickly

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

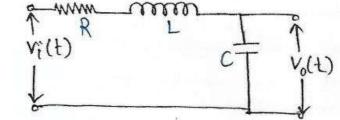
Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if required.

Section I

Q.2 Solve any four of the following questions.

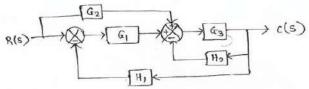
- a) Differentiate between open loop & closed loop control systems.
- b) Explain use of potentiometer as an error detector.
- **c)** Explain poles, zeros and time constant form of transfer function. Write following transfer function in Time Constant form. $T(S) = \frac{-7s-15}{(s+3)(s+5)}$
- d) Define transfer function and find transfer function for given circuit



e) Explain working principle and construction of tacho generator.

Q.3 Solve any two of the following questions.

- a) Derive the relation for peak time of Second order system.
- **b)** Determine position, velocity and acceleration constant for unity feedback control system with open loop transfer function. $G(s) = \frac{s(s+5)}{(s+3)(1+3s)}$
- c) Determine the overall transfer function for the following system using Mason's gain formula.



Section II

Q.4 Solve any four of the following questions.

- a) Explain with example special case number one of Routh's criterion.
- **b)** For $G(s)H(s) = \frac{K}{s(s+1)(s+4)}$, determine the coordinates of valid breakaway points.
- c) Explain the nature of Bode plots for
 - i) Poles at origin
 - ii) Zeros at origin
- d) Consider a Type 0 system with open loop transfer function $G(s)H(s) = \frac{1}{1+Ts}$, where T is constant. Obtain its polar plot.
- e) Explain with neat diagram lead compensator.

Max. Marks: 56

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12

16



Set

Q.5 Solve any Two.

- a) Sketch the Bode plot for the system having $G(s)H(s) = \frac{20}{s(1+0.1s)}$
- **b)** Explain the following rules for construction of root locus with example
 - 1) Angle of asymptotes
 - 2) Determination of centroid
 - 3) Break way point (with general predictions)
- c) The output c(t) of a control system is related to its input r(t) by $[s^4 + 2s^3 + 2s^2 + (3 + K)s + K]C(s) = K(s + 1)R(s)$ Determine the limiting positive values of K for stability.

R

Seat	
No.	

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes

C)

c)

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which one of the following is not the property of root loci? 1)
 - The root locus is symmetrical about imaginary axis a)
 - b) They start from the open loop poles and terminate at the open loop zeroes
 - The breakaway points are determined from dk/ds = 0c)
 - d) Segments of the real axis are the part of the root locus if and only is the total number of real poles and zeroes to their right is odd

2) At which frequency does the magnitude of the system becomes zero dB?

- Resonant frequency a) Gain crossover frequency
- b) Cut-off frequency d) Phase crossover frequency
- 3) With regard to the filtering capacity the lead compensator and lag compensator are respectively
 - a) Low pass and high pass filter b) High pass and low pass filter
 - Both high pass filter d) Both low pass filters c)
- If the system is specified by open loop transfer function 4) G(s)H(s) = k/s(s+3) (s + 2), how many root loci proceed to end at infinity?
 - 2 a) b) 3 5 d) 6
 - C)
- 5) Due to an addition of pole at origin, the polar plot gets shifted by _____ at $\omega = 0$?
 - -45° b) -60° a)
 - -90° d) -180° C)
- A control system having damping factor between 0 and 1, will give 6)
 - Critically damped response a)
- b) Underdamped response

d) No response

- c) Undamped response
- 7) A node having only outgoing branches is called as _
 - a) Source node Output node
 - b) Sink node d) Both b and c

Set

Max. Marks: 70

Page 14 of 16

- The output of the closed loop control systems is the function of _____. 8)
 - a) Input

- b) Output
- c) Input and feedback signal
- 9) The transient response of feedback system with damping factor less than unity _____.
 - a) Rises slowly

10)

b) Rises quickly d) None of these

d) Output and feedback signal

- Decays quickly C) Which of the following state is/are correct statements?
 - Type of the system is obtained from open loop transfer function L
 - Ш Steady state analysis depends on the type of the system
 - Transient state analysis depends on order of the system
 - a) Only I b) || & |||
 - c) | & |||
- 11) Loops which do not possess any common node are called as .
 - a) Forward loops c) Touching loops
- b) Feedback loops d) Non touching loops
- One of the basic requirements of a servomotor is that it must produce high 12) torque at all _____.
 - a) Loads
- c) Speeds
- 13) Routh Hurwitz criterion gives
 - Number of roots in the right half of the s-plane a)
 - b) Value of the roots
 - Number of roots in the left half of the s-plane c)
 - d) Number of roots in the top half of the s-plane
- 14) If a pole is located at origin, how does it get represented on the magnitude plot?
 - a) $-10 \log (\omega) dB$ b) $-20 \log (\omega) dB$
 - c) $-40 \log (\omega) dB$ d) $-60 \log (\omega) dB$

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Set S

- b) Frequencies
- d) Voltages

d) I, II & III

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering CONTROL SYSTEMS**

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

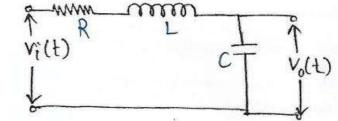
Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if required.

Section I

Solve any four of the following questions. Q.2

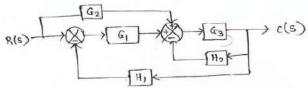
- a) Differentiate between open loop & closed loop control systems.
- b) Explain use of potentiometer as an error detector.
- c) Explain poles, zeros and time constant form of transfer function. Write following transfer function in Time Constant form. $T(S) = \frac{-r_{S-15}}{(s+3)(s+5)}$
- d) Define transfer function and find transfer function for given circuit



e) Explain working principle and construction of tacho generator.

Solve any two of the following questions. Q.3

- a) Derive the relation for peak time of Second order system.
- **b)** Determine position, velocity and acceleration constant for unity feedback control system with open loop transfer function. $G(s) = \frac{s(s+5)}{(s+3)(1+3s)}$
- Determine the overall transfer function for the following system using C) Mason's gain formula.



Section II

Solve any four of the following questions. Q.4

- a) Explain with example special case number one of Routh's criterion.
- **b)** For $G(s)H(s) = \frac{K}{s(s+1)(s+4)}$, determine the coordinates of valid breakaway points.
- c) Explain the nature of Bode plots for
 - Poles at origin i)
 - ii) Zeros at origin
- Consider a Type 0 system with open loop transfer function $G(s)H(s) = \frac{1}{1+T_s}$, d) where T is constant. Obtain its polar plot.
- Explain with neat diagram lead compensator. e)

Max. Marks: 56

12

16

16



Set

SLR-FM-184

SLR-FM-184 Set S

Q.5 Solve any Two.

- a) Sketch the Bode plot for the system having $G(s)H(s) = \frac{20}{s(1+0.1s)}$
- **b)** Explain the following rules for construction of root locus with example
 - 1) Angle of asymptotes
 - 2) Determination of centroid
 - 3) Break way point (with general predictions)
- c) The output c(t) of a control system is related to its input r(t) by $[s^4 + 2s^3 + 2s^2 + (3 + K)s + K]C(s) = K(s + 1)R(s)$ Determine the limiting positive values of K for stability.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.
- 4) Draw neat diagrams wherever required.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- DFT of a impulse function is 1)
 - b) $\delta[n-1]$ a) $\delta[n]$ C) 1 d) None
- 2) Circular convolution of {2,3,1,4} and {1,2,2,3} is _
 - a) {21,18,23,18} b) {23,18,21,18} c)
 - {0,18, 0,18} d) {21,18,18,23}
- What is the ROC of a causal finite length sequence? 3)
 - b) |z| > r1a) $r_2 < |z| < r_1$
 - d) None of the mentioned c) |z| < r1
- In the basic butterfly structure of DIT FFT algorithm, number of complex 4) multiplications and additions are
 - a) 2 and 1 respectively b) 1 and 2 respectively
 - 2 and 4 respectively d) 4 and 2 respectively
- The number of multipliers required for realization of FIR systems is 5) reduced if we choose _____.
 - a) Direct form

c)

- c) Parallel form
- b) Cascade form
- d) Linear phase realization
- The system is linear if _____ 6)
 - a) It is a homogeneous
 - b) It is additive
 - It is a homogeneous or additive c)
 - d) It is a homogeneous and additive
- 7) The value of twiddle factor – W_8^5 is same as that of _____
 - W_{8}^{0} b) W_8^1 a) $-W_{8}^{4}$ d) None of the mentioned c)
- The features in which P-DSP is superior to advanced microprocessor is _____. 8)
 - a) Low cost c) Computational speed
- b) Low power
- d) Real time I/O capability

SLR-FM-185



Max. Marks: 70



Marks: 14

- 9) The following realization minimizes the delay elements .
 - Direct form I realization a)
- b) Direct form II realization d) Parallel realization
- Cascade form realization C)
- The addressing mode that is convenient for FFT computation is _____. 10)
 - a) Indirect addressing Bit reversed addressing

c)

C)

c)

- b) Circular mode addressing d) Memory mapped addressing
- 11) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
 - Many to many a) One to many
- b) Many to one
- d) None of above

b) Are always stable

- 12) Which of the following is true for FIR filters?
 - They have linear phase a)
 - They are all zero filters d) All above a, b & c
- The approximate width of the main lobe in rectangular window of length M 13) is _____.
 - a) $6\pi/M$ b) 8π/M
 - 12π/M d) 4π/M C)
- Which of the following has the best transition width characteristics? 14)
 - Bartlett a)
 - C) Blackman

- b) Rectangular
- d) Hamming

Set

SLR-FM-185

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.
- 4) Draw neat diagrams wherever required.

Section – I

Q.2 Attempt any Four.

- a) Find four point IDFT of DFT signal. $X[k] = \{12,-4 + 4j,-4,-4 - 4j\}$ \uparrow
- b) Explain the circular convolution property of DFT.
- c) Explain the overlap Save method with a neat diagram.
- **d)** Find DFT of the sequence $x[n] = \{1,2,3,4\}$ using DIT FFT algorithm.
- e) Draw the linear phase realization for FIR systems with length of filter M odd and M even.

Q.3 Attempt any Two.

a) Determine the cascade realization of given function.

$$H[Z] = \frac{10.(1 - \frac{1}{2}Z^{-1})(1 - \frac{2}{3}Z^{-1})(1 + 2Z^{-1})}{\left(1 - \frac{3}{4}Z^{-1}\right)\left(1 - \frac{1}{8}Z^{-1}\right)\left[1 - \left(\frac{1}{2} + \frac{j}{2}\right)Z^{-1}\right]\left[1 - \left(\frac{1}{2} - \frac{j}{2}\right)Z^{-1}\right]}$$

- **b)** Find the IDFT of $X(k) = \{10, -1 + 3j, 0, -1 3j\}$ using DIF FFT.
- c) Obtain the output of a filter using overlap add method whose input and impulse response are as below.

 $x(n) = \{2, 0, -2, 0, 2, 1, 0, -2, -1, 0\}$ and $h(n) = \{3, 2, 1\}$.

Section – II

Q.4 Attempt any Four.

- a) Draw and explain the structure for 4 x 4 Baron Multiplier for unsigned numbers.
- **b)** Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- c) Write the analog transfer function for Low Pass Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to.

- 1) Low pass filter with cutoff frequency $\Omega c' = 0.68$
- 2) High pass filter with cutoff frequency $\Omega c' = 1.414$
- **d)** Explain the Windowing technique for FIR filter design along with different window functions.
- e) Differentiate FIR and IIR filters.

Max. Marks: 56

Set

SLR-FM-185

12

16

SLR-FM-185 Set P

Q.5 Attempt any Two.

 Convert the analog filter in to digital filter whose system function is (Assume T=1s).

$$H(s) = \frac{1}{(s+1)(s+2)}$$

Explain in detail steps for designing IIR filter using impulse invariance method. Hence find H(z).

- b) Explain the applications of DSP in audio processing and biomedical field.
- c) The desired frequency response of a low pass filter is

$$\operatorname{Hd}(e^{j\omega}) = \begin{cases} e^{-j2\omega} & -\frac{\pi}{4} \le \omega \le \pi/4\\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using s rectangular window with window length 5. Determine the frequency response $H(e^{j\omega})$.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No 1 is compulsory and should be solved in first 30 minutes in answer book.

DIGITAL SIGNAL PROCESSING

- Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.
- 4) Draw neat diagrams wherever required.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The features in which P-DSP is superior to advanced microprocessor is _____. 1)
 - a) Low cost
 - c) Computational speed d) Real time I/O capability
- 2) The following realization minimizes the delay elements _
 - a) Direct form I realization
 - c) Cascade form realization
- The addressing mode that is convenient for FFT computation is 3)
 - a) Indirect addressing
- b) Circular mode addressing d) Memory mapped addressing
- Bit reversed addressing c) 4) The frequency mapping from s domain to z domain using impulse
 - invariant technique is _____. Many to many a)
- b) Many to one
- c) One to many d) None of above
- Which of the following is true for FIR filters? 5)
 - a) They have linear phase b) Are always stable
 - They are all zero filters d) All above a, b & c c)
- The approximate width of the main lobe in rectangular window of length M 6) is
 - a) $6\pi/M$ b) 8π/M d) $4\pi/M$ c) $12\pi/M$
- Which of the following has the best transition width characteristics? 7)
 - Bartlett a) b)
 - c) Blackman d) Hamming
- 8) DFT of a impulse function is a) $\delta[n]$ b) $\delta[n-1]$ c) d) None 1
- 9) Circular convolution of $\{2,3,1,4\}$ and $\{1,2,2,3\}$ is _
 - a) {21,18,23,18} b) {23,18,21,18} c) {0,18, 0,18} d) {21,18,18,23}

Max. Marks: 70

Marks: 14

Set

SLR-FM-185



- d) Parallel realization

b) Low power

- b) Direct form II realization

- What is the ROC of a causal finite length sequence? 10)
 - a) $r^2 < |z| < r^1$

a)

- b) |z| > r1
- c) |z| < r1d) None of the mentioned
- In the basic butterfly structure of DIT FFT algorithm, number of complex 11) multiplications and additions are 2 and 1 respectively
 - b) 1 and 2 respectively
 - 2 and 4 respectively c)
- d) 4 and 2 respectively

SLR-FM-185

Set C

- The number of multipliers required for realization of FIR systems is 12) reduced if we choose _____.
 - a) Direct form

- b) Cascade form
- c) Parallel form
- d) Linear phase realization
- The system is linear if _____. 13)
 - a) It is a homogeneous
 - b) It is additive
 - c) It is a homogeneous or additive
 - d) It is a homogeneous and additive
- 14) The value of twiddle factor – W_8^5 is same as that of _____.
 - a) W_8^0 c) $-W_8^4$

- b) W_8^1
- d) None of the mentioned

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.
- 4) Draw neat diagrams wherever required.

Section – I

Q.2 Attempt any Four.

- a) Find four point IDFT of DFT signal. $X[k] = \{12,-4 + 4j,-4,-4 - 4j\}$ \uparrow
- b) Explain the circular convolution property of DFT.
- c) Explain the overlap Save method with a neat diagram.
- **d**) Find DFT of the sequence $x[n] = \{1,2,3,4\}$ using DIT FFT algorithm.
- e) Draw the linear phase realization for FIR systems with length of filter M odd and M even.

Q.3 Attempt any Two.

a) Determine the cascade realization of given function.

$$H[Z] = \frac{10.(1 - \frac{1}{2}Z^{-1})(1 - \frac{2}{3}Z^{-1})(1 + 2Z^{-1})}{(1 - \frac{3}{4}Z^{-1})(1 - \frac{1}{8}Z^{-1})[1 - (\frac{1}{2} + \frac{j}{2})Z^{-1}][1 - (\frac{1}{2} - \frac{j}{2})Z^{-1}]}$$

- **b)** Find the IDFT of $X(k) = \{10, -1 + 3j, 0, -1 3j\}$ using DIF FFT.
- c) Obtain the output of a filter using overlap add method whose input and impulse response are as below.

 $x(n) = \{2, 0, -2, 0, 2, 1, 0, -2, -1, 0\}$ and $h(n) = \{3, 2, 1\}$.

Section – II

Q.4 Attempt any Four.

- a) Draw and explain the structure for 4 x 4 Baron Multiplier for unsigned numbers.
- **b)** Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- c) Write the analog transfer function for Low Pass Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to.

- 1) Low pass filter with cutoff frequency $\Omega c' = 0.68$
- 2) High pass filter with cutoff frequency $\Omega c' = 1.414$
- **d)** Explain the Windowing technique for FIR filter design along with different window functions.
- e) Differentiate FIR and IIR filters.

Max. Marks: 56

Set

SLR-FM-185

12

16

SLR-FM-185 Set Q

Q.5 Attempt any Two.

 Convert the analog filter in to digital filter whose system function is (Assume T=1s).

$$H(s) = \frac{1}{(s+1)(s+2)}$$

Explain in detail steps for designing IIR filter using impulse invariance method. Hence find H(z).

- b) Explain the applications of DSP in audio processing and biomedical field.
- c) The desired frequency response of a low pass filter is

$$\operatorname{Hd}(e^{j\omega}) = \begin{cases} e^{-j2\omega} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using s rectangular window with window length 5. Determine the frequency response $H(e^{j\omega})$.

Set

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering DIGITAL SIGNAL PROCESSING**

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

5)

c)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The number of multipliers required for realization of FIR systems is 1)
 - reduced if we choose _____.
 - a) Direct form
 - Parallel form c)

- b) Cascade form
- d) Linear phase realization
- 2) The system is linear if _____.
 - a) It is a homogeneous
 - It is additive b)
 - It is a homogeneous or additive c)
 - d) It is a homogeneous and additive
- 3) The value of twiddle factor – W_8^5 is same as that of _____.
 - a) W_8^0 b) W_{8}^{1}
 - c) $-W_8^4$ d) None of the mentioned
- 4) The features in which P-DSP is superior to advanced microprocessor is _____. b) Low power
 - a) Low cost
 - Computational speed C)
 - The following realization minimizes the delay elements _
 - Direct form I realization a)

Bit reversed addressing

- Cascade form realization c)
- b) Direct form II realization

d) Real time I/O capability

- d) Parallel realization
- 6) The addressing mode that is convenient for FFT computation is _____.
 - Indirect addressing a)
 - b) Circular mode addressing d) Memory mapped addressing

b) Are always stable

- 7) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
 - a) Many to many b) Many to one c) One to many
 - d) None of above
- Which of the following is true for FIR filters? 8)
 - They have linear phase a)
 - They are all zero filters d) All above a, b & c c)

Max. Marks: 70

- 4) Draw neat diagrams wherever required.

Marks: 14

9) The approximate width of the main lobe in rectangular window of length M is _____.

a) $6\pi/M$ b) 8π/M

d) $4\pi/M$ c) $12\pi/M$

- 10) Which of the following has the best transition width characteristics?
 - Bartlett b) Rectangular a)
 - Blackman d) Hamming c)
- DFT of a impulse function is _____. 11) b) $\delta[n-1]$ a) $\delta[n]$
 - 1 d) None C)
- Circular convolution of {2,3,1,4} and {1,2,2,3} is _____. 12) a) {21,18,23,18} b) {23,18,21,18}
 - d) {21,18,18,23} c) {0,18, 0,18}
- 13) What is the ROC of a causal finite length sequence?
 - a) $r^2 < |z| < r^1$ b) |z| > r1
 - d) None of the mentioned c) |z| < r1
- 14) In the basic butterfly structure of DIT FFT algorithm, number of complex multiplications and additions are _____
 - a) 2 and 1 respectivelyc) 2 and 4 respectively
- b) 1 and 2 respectively
- d) 4 and 2 respectively

SLR-FM-185

Set R

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.
- 4) Draw neat diagrams wherever required.

Section – I

Q.2 Attempt any Four.

- a) Find four point IDFT of DFT signal. $X[k] = \{12,-4 + 4j,-4,-4 - 4j\}$ \uparrow
- **b)** Explain the circular convolution property of DFT.
- c) Explain the overlap Save method with a neat diagram.
- **d)** Find DFT of the sequence $x[n] = \{1,2,3,4\}$ using DIT FFT algorithm.
- e) Draw the linear phase realization for FIR systems with length of filter M odd and M even.

Q.3 Attempt any Two.

a) Determine the cascade realization of given function.

$$H[Z] = \frac{10.(1 - \frac{1}{2}Z^{-1})(1 - \frac{2}{3}Z^{-1})(1 + 2Z^{-1})}{\left(1 - \frac{3}{4}Z^{-1}\right)\left(1 - \frac{1}{8}Z^{-1}\right)\left[1 - \left(\frac{1}{2} + \frac{j}{2}\right)Z^{-1}\right]\left[1 - \left(\frac{1}{2} - \frac{j}{2}\right)Z^{-1}\right]}$$

- **b)** Find the IDFT of $X(k) = \{10, -1 + 3j, 0, -1 3j\}$ using DIF FFT.
- c) Obtain the output of a filter using overlap add method whose input and impulse response are as below.

 $x(n) = \{2, 0, -2, 0, 2, 1, 0, -2, -1, 0\}$ and $h(n) = \{3, 2, 1\}$.

Section – II

Q.4 Attempt any Four.

- a) Draw and explain the structure for 4 x 4 Baron Multiplier for unsigned numbers.
- **b)** Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- c) Write the analog transfer function for Low Pass Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to.

- 1) Low pass filter with cutoff frequency $\Omega c' = 0.68$
- 2) High pass filter with cutoff frequency $\Omega c' = 1.414$
- **d)** Explain the Windowing technique for FIR filter design along with different window functions.
- e) Differentiate FIR and IIR filters.

Max. Marks: 56

Set

SLR-FM-185

12

16

SLR-FM-185 Set R

Q.5 Attempt any Two.

 Convert the analog filter in to digital filter whose system function is (Assume T=1s).

$$H(s) = \frac{1}{(s+1)(s+2)}$$

Explain in detail steps for designing IIR filter using impulse invariance method. Hence find H(z).

- b) Explain the applications of DSP in audio processing and biomedical field.
- c) The desired frequency response of a low pass filter is

$$\operatorname{Hd}(e^{j\omega}) = \begin{cases} e^{-j2\omega} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using s rectangular window with window length 5. Determine the frequency response $H(e^{j\omega})$.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.
- 4) Draw neat diagrams wherever required.

MCQ/Objective Type Questions

Duration: 30 Minutes

3)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The addressing mode that is convenient for FFT computation is _____. 1)
 - a) Indirect addressing
 - c) Bit reversed addressing

b) Are always stable

d) All above a, b & c

- 2) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
 - Many to many b) Many to one a) d) None of above
 - One to many C)
 - Which of the following is true for FIR filters?
 - They have linear phase a)
 - They are all zero filters c)
- 4) The approximate width of the main lobe in rectangular window of length M
 - is _____. b) 8π/M a) 6π/M
 - d) 4π/M 12π/M C)
- 5) Which of the following has the best transition width characteristics?
 - a) Bartlett b) Rectangular
 - c) Blackman Hamming d)
- DFT of a impulse function is ____ 6)
 - b) $\delta[n-1]$ a) $\delta[n]$ d) None c) 1
- Circular convolution of {2,3,1,4} and {1,2,2,3} is _ 7)
 - a) {21,18,23,18} b) {23,18,21,18}
 - d) {21,18,18,23} c) {0,18, 0,18}
- What is the ROC of a causal finite length sequence? 8)
 - b) |z| > r1a) $r^2 < |z| < r^1$ d) None of the mentioned c) |z| < r1
- 9) In the basic butterfly structure of DIT FFT algorithm, number of complex multiplications and additions are ____
 - a) 2 and 1 respectively
 - 2 and 4 respectively c)
- b) 1 and 2 respectively
- d) 4 and 2 respectively

- Marks: 14
- b) Circular mode addressing
- d) Memory mapped addressing

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Set

Max. Marks: 70

10) The number of multipliers required for realization of FIR systems is reduced if we choose _____.

- a) Direct form
- c) Parallel form

- b) Cascade form
- d) Linear phase realization

SLR-FM-185

Set

- 11) The system is linear if _____.
 - a) It is a homogeneous
 - b) It is additive

 W_{8}^{0}

 $-W_{8}^{4}$

a) Low cost

a) c)

- c) It is a homogeneous or additive
- d) It is a homogeneous and additive
- 12) The value of twiddle factor W_8^5 is same as that of _____.
 - b) W_8^1
 - d) None of the mentioned
- 13) The features in which P-DSP is superior to advanced microprocessor is _____.
 - b) Low power
 - c) Computational speed
- 14) The following realization minimizes the delay elements _
 - a) Direct form I realization
 - c) Cascade form realization
- b) Direct form II realization
 d) Parallel realization

d) Real time I/O capability

d) Parallel realization

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019

Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.
- 4) Draw neat diagrams wherever required.

Section – I

Q.2 Attempt any Four.

- Find four point IDFT of DFT signal. a) $X[k] = \{12, -4 + 4j, -4, -4 - 4j\}$ 1
- Explain the circular convolution property of DFT. b)
- c) Explain the overlap Save method with a neat diagram.
- d) Find DFT of the sequence $x[n] = \{1,2,3,4\}$ using DIT FFT algorithm.
- Draw the linear phase realization for FIR systems with length of filter M e) odd and M even.

Q.3 Attempt any Two.

a) Determine the cascade realization of given function.

$$H[Z] = \frac{10.(1 - \frac{1}{2}Z^{-1})(1 - \frac{2}{3}Z^{-1})(1 + 2Z^{-1})}{(1 - \frac{3}{4}Z^{-1})(1 - \frac{1}{8}Z^{-1})[1 - (\frac{1}{2} + \frac{j}{2})Z^{-1}][1 - (\frac{1}{2} - \frac{j}{2})Z^{-1}]}$$

- b) Find the IDFT of $X(k) = \{10, -1 + 3j, 0, -1 - 3j\}$ using DIF FFT.
- Obtain the output of a filter using overlap add method whose input and C) impulse response are as below.

 $x(n) = \{2, 0, -2, 0, 2, 1, 0, -2, -1, 0\}$ and $h(n) = \{3, 2, 1\}$.

Section – II

Q.4 Attempt any Four.

- Draw and explain the structure for 4 x 4 Baron Multiplier for unsigned a) numbers.
- Explain in detail the multiply and Accumulate (MAC) unit of digital signal b) processor.
- Write the analog transfer function for Low Pass Butterworth filter of order 2 c) & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to.

- 1) Low pass filter with cutoff frequency $\Omega c' = 0.68$
- 2) High pass filter with cutoff frequency $\Omega c' = 1.414$
- Explain the Windowing technique for FIR filter design along with different d) window functions.
- Differentiate FIR and IIR filters. e)

Max. Marks: 56

12

16

16



SLR-FM-185

SLR-FM-185 Set S

Q.5 Attempt any Two.

 Convert the analog filter in to digital filter whose system function is (Assume T=1s).

$$H(s) = \frac{1}{(s+1)(s+2)}$$

Explain in detail steps for designing IIR filter using impulse invariance method. Hence find H(z).

- b) Explain the applications of DSP in audio processing and biomedical field.
- c) The desired frequency response of a low pass filter is

$$\operatorname{Hd}(e^{j\omega}) = \begin{cases} e^{-j2\omega} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using s rectangular window with window length 5. Determine the frequency response $H(e^{j\omega})$.

2) Assume suitable data whenever necessary.					
	 Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book 				
		MCQ/Objective Type Questions			
Dura	tion: 3		arks: 14		
Q.1	Cho	ose the correct alternatives from the options and rewrite the sentenc	e. 14		
	1)	The I/O port that does not have a dual-purpose role is			
		a) PORT 0 b) PORT 1 c) PORT 2 d) PORT 3			
	0)	, , , , , , , , , , , , , , , , , , , ,			
	2)	The ADC0808 has resolution.a) 4-bitb) 8-bit			
		c) 16-bit d) 32-bit			
	3)	The total amount of external code memory that can be interfaced to the			
	0)	8051 is			
		a) 32K b) 16K			
		c) 46K d) 64K			
	4)	If a period is 0.33 ms between the serial bits, we can transfer in			
		one second when SCON sets for mode 2: a) 300 characters b) 275 characters			
		 a) 300 characters b) 275 characters c) 30 characters d) 272 characters 			
	5)	Of the lower 128 byte of RAM in the 8051, how many bytes are bit			
	5)	addressable?			
		a) eight b) thirty two			
		c) sixteen d) four			
	6)	In 8051, serial communication mode 1, the baud rate will be			
		a) variable b) fosc/164			
	7)	c) fosc/32 d) fosc/12			
	7)	Bit address 0x00 and byte address 0x00 are for the a) Bit 0 at 0x20 and the byte at 0x00 in the internal RAM			
		b) Bit 0 at 0x00 and the byte at 0x00 in the internal RAM			
		c) Bit = 0 in a SFR and the byte = 0x00			
		d) Bit 0 at 0x20 and the byte at 0x00 in the external RAM			
	8)	In 8051 an Timer1 interrupt vector address is of			
		a) 000Bh b) 001Bh c) 0013h d) 0023h			
	9)	The PIC 16F877 has on chip flash program memory.			
		a) 4K x 8 bytes b) 4K x 14 words			
		c) 8K x 8 bytes d) 8K x 14 words			

MICROCONTROLLERS Day & Date: Wednesday, 11-12-2019

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics** Engineering

Time: 02:30 PM To 05:30 PM

Instructions: 1) Figures to the right indicate full marks.

- 2) Assume suitable data whenever necessary

Seat

No.

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Page **1** of **12**

Max. Marks: 70

Set P

Set P

- The PIC 16F877 has _____ I/O ports. 10) a) 4 b)
 - 6 3 C) d)
- The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack. 11) 13,8 8,13 b) a)

- c) 8,12 d) 12,8
- What is the address of the last location of on-chip flash program memory 12) for PIC 16F877?
 - 0FFF h b) 1FFF h a)
 - FFFF h 7FFF h C) d)
- The instruction "movlw D'200" loads the W register with _____. 13)
 - 200h b) C8h a) C) 8C h d) 1100100
- In PIC 16F877 the _____ module is with prescaler and postscaler. 14)
 - a) Timer 0 b) Timer 2 Timer 1 Timer 3 C)
 - d)

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.

Section - I

Q.2 Solve any four:

- a) Compare RISC and CISC architecture.
- **b)** Write a program to add two 16 bit hex numbers.
- c) How to enable/disable the interrupts in 8051? Explain with respective SFR.
- d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
- e) Explain the modes of operation of Timer in 8051.

Q.3 Solve any two:

- a) Write a program for finding even and odd numbers form a given array of 10 elements.
- **b)** Write an 8051 program to toggle pin P1.0 continuously every 250ms. Use Timer1, mode1 to create the delay. Assume XTAL= 11.0592MHz.
- c) Read data through ports 0, 1, and 2, one after other and transfer this data serially, continuously.

Section – II

Q.4 Solve any four:

- a) Draw and explain memory organization in PIC 16F877.
- b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC.
- c) Explain addressing modes in PIC 16F877.
- d) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.
- e) Explain operation of Timer 0 in PIC 16F877.

Q.5 Solve any two:

- a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display "HI" on the LCD.
- b) Draw and explain interfacing of DAC to 8051. Write a program 1) To generate triangular wave and
 - 2) To generate a saw tooth wave.
- c) Draw and explain interfacing of 16K x 8 Data RAM to 8051. Write a assembly program to transfer 30 bytes starting at 1000h to 2000hh in external Data RAM.

Max. Marks: 56

12

16

12

16



		30 PM To 05:30 PM
Insti	ructio	ns: 1) Figures to the right indicate full marks.
		2) Assume suitable data whenever necessary.
		 Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book
		MCQ/Objective Type Questions
Dura	ation: 3	30 Minutes Marks: 14
Q.1	Cho	ose the correct alternatives from the options and rewrite the sentence. 14
	1)	In 8051 an Timer1 interrupt vector address is of
		a) 000Bh b) 001Bh c) 0013h d) 0023h
	2)	The PIC 16F877 has on chip flash program memory.
		a) 4K x 8 bytes b) 4K x 14 words
		c) 8K x 8 bytes d) 8K x 14 words
	3)	The PIC 16F877 has I/O ports.
		a) 4 b) 5 c) 6 d) 3
	4)	-, -
	4)	The PIC 16F877 has a level deep x bit wide hardware stack.a) 8,13b) 13,8
		c) 8,12 d) 12,8
	5)	What is the address of the last location of on-chip flash program memory
	,	for PIC 16F877?
		a) 0FFF h b) 1FFF h
	-	c) FFFF h d) 7FFF h
	6)	The instruction "movlw D'200" loads the W register with a) 200h
		c) 8C h d) 1100100
	7)	In PIC 16F877 the module is with prescaler and postscaler.
	• /	a) Timer 0 b) Timer 2
		c) Timer 1 d) Timer 3
	8)	The I/O port that does not have a dual-purpose role is
		a) PORT 0 b) PORT 1
		c) PORT 2 d) PORT 3
	9)	The ADC0808 has resolution.
		a) 4-bit b) 8-bit c) 16-bit d) 32-bit
	10)	The total amount of external code memory that can be interfaced to the
	10)	8051 is
		a) 32 K b) 16K

Electronics Engineering MICROCONTROLLERS

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Q.

a)	32K	b)	16K
c)	46K	d)	64K



Max. Marks: 70

- 11) If a period is 0.33 ms between the serial bits, we can transfer _____ in one second when SCON sets for mode 2:
 - a) 300 characters

C)

- b) 275 characters
- 30 characters
- d) 272 characters

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Set Q

- 12) Of the lower 128 byte of RAM in the 8051, how many bytes are bit addressable?
 - a) eight b) thi
 - c) sixteen
- b) thirty twod) four
- 13) In 8051, serial communication mode 1, the baud rate will be _____.
 - a) variable b) fosc/164
 - c) fosc/32 d) fosc/12
- 14) Bit address 0x00 and byte address 0x00 are for the ____
 - a) Bit 0 at 0x20 and the byte at 0x00 in the internal RAM
 - b) Bit 0 at 0x00 and the byte at 0x00 in the internal RAM
 - c) Bit = 0 in a SFR and the byte = 0x00
 - d) Bit 0 at 0x20 and the byte at 0x00 in the external RAM

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.

Section - I

Q.2 Solve any four:

- a) Compare RISC and CISC architecture.
- **b)** Write a program to add two 16 bit hex numbers.
- c) How to enable/disable the interrupts in 8051? Explain with respective SFR.
- d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
- e) Explain the modes of operation of Timer in 8051.

Q.3 Solve any two:

- a) Write a program for finding even and odd numbers form a given array of 10 elements.
- **b)** Write an 8051 program to toggle pin P1.0 continuously every 250ms. Use Timer1, mode1 to create the delay. Assume XTAL= 11.0592MHz.
- c) Read data through ports 0, 1, and 2, one after other and transfer this data serially, continuously.

Section – II

Q.4 Solve any four:

- a) Draw and explain memory organization in PIC 16F877.
- b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC.
- c) Explain addressing modes in PIC 16F877.
- d) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.
- e) Explain operation of Timer 0 in PIC 16F877.

Q.5 Solve any two:

- a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display "HI" on the LCD.
- b) Draw and explain interfacing of DAC to 8051. Write a program
 1) To generate triangular wave and
 - 2) To generate a saw tooth wave.
- c) Draw and explain interfacing of 16K x 8 Data RAM to 8051. Write a assembly program to transfer 30 bytes starting at 1000h to 2000hh in external Data RAM.

Max. Marks: 56

12

12

16



		book				
MCQ/Objective Type Questions						
Dura	ation: 3	30 Minutes Ma	arks: 14			
Q.1	Cho 1)	oose the correct alternatives from the options and rewrite the sentence Of the lower 128 byte of RAM in the 8051, how many bytes are bit addressable?	e. 14			
		a) eight b) thirty two c) sixteen d) four				
	2)	In 8051, serial communication mode 1, the baud rate will be a) variable b) fosc/164 c) fosc/32 d) fosc/12				
	3)	 Bit address 0x00 and byte address 0x00 are for the a) Bit 0 at 0x20 and the byte at 0x00 in the internal RAM b) Bit 0 at 0x00 and the byte at 0x00 in the internal RAM c) Bit = 0 in a SFR and the byte = 0x00 d) Bit 0 at 0x20 and the byte at 0x00 in the external RAM 				
	4)	In 8051 an Timer1 interrupt vector address is of a) 000Bh b) 001Bh c) 0013h d) 0023h				
	5)	The PIC 16F877 has on chip flash program memory. a) 4K x 8 bytes b) 4K x 14 words c) 8K x 8 bytes d) 8K x 14 words				
	6)	The PIC 16F877 has I/O ports. a) 4 b) 5 c) 6 d) 3				
	7)	The PIC 16F877 has a level deep x bit wide hardware stack a) 8,13 b) 13,8 c) 8,12 d) 12,8				
	8)	What is the address of the last location of on-chip flash program memory for PIC 16F877? a) 0FFF h b) 1FFF h c) FFFF h d) 7FFF h				
	9)	The instruction "movlw D'200" loads the W register with a) 200h b) C8h				

1100100

d)

Day & Date: Wednesday, 11-12-2019

8C h

c)

Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) Figures to the right indicate full marks.

- 2) Assume suitable data whenever necessary.
- 3) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics** Engineering MICROCONTROLLERS

Set | R

Max. Marks: 70

In PIC 16F877 the _____ module is with prescaler and postscaler. 10)

- b) Timer 2 Timer 0
- Timer 1 d) Timer 3 c)
- The I/O port that does not have a dual-purpose role is _____. 11)
 - PORT 0 PORT 1 b) a) C)
 - PORT 2 d) PORT 3
- The ADC0808 has _____ resolution. 12) a) 4-bit b) 8-bit

a)

- 16-bit 32-bit C) d)
- The total amount of external code memory that can be interfaced to the 13) 8051 is _____.
 - 32K b) 16K a)
 - C) 46K d) 64K
- 14) If a period is 0.33 ms between the serial bits, we can transfer _____ in one second when SCON sets for mode 2:
 - 300 characters 275 characters a) b)
 - C) 30 characters d) 272 characters

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Set R

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.

Section - I

Q.2 Solve any four:

- a) Compare RISC and CISC architecture.
- **b)** Write a program to add two 16 bit hex numbers.
- c) How to enable/disable the interrupts in 8051? Explain with respective SFR.
- d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
- e) Explain the modes of operation of Timer in 8051.

Q.3 Solve any two:

- a) Write a program for finding even and odd numbers form a given array of 10 elements.
- **b)** Write an 8051 program to toggle pin P1.0 continuously every 250ms. Use Timer1, mode1 to create the delay. Assume XTAL= 11.0592MHz.
- c) Read data through ports 0, 1, and 2, one after other and transfer this data serially, continuously.

Section – II

Q.4 Solve any four:

- a) Draw and explain memory organization in PIC 16F877.
- b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC.
- c) Explain addressing modes in PIC 16F877.
- d) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.
- e) Explain operation of Timer 0 in PIC 16F877.

Q.5 Solve any two:

- a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display "HI" on the LCD.
- b) Draw and explain interfacing of DAC to 8051. Write a program 1) To generate triangular wave and
 - 2) To generate a saw tooth wave.
- c) Draw and explain interfacing of 16K x 8 Data RAM to 8051. Write a assembly program to transfer 30 bytes starting at 1000h to 2000hh in external Data RAM.

Max. Marks: 56

12

16

12

16

Set R

WICKUCUNIKULLEKS						
	Day & Date: Wednesday, 11-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Max. Marks: 70					
Instr	 Instructions: 1) Figures to the right indicate full marks. 2) Assume suitable data whenever necessary. 3) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer 					
		book				
_		MCQ/Objective Type	Que			
		30 Minutes		Marks: 14		
Q.1	Cho 1)	ose the correct alternatives from the o The PIC 16F877 has I/O ports.	ptio	ons and rewrite the sentence. 14		
	')	a) 4 b)	5		
		c) 6 d	,	3		
	2)	, , , ,	x)) d)	bit wide hardware stack. 13,8 12,8		
	3)	What is the address of the last location for PIC 16F877? a) 0FFF h	of o b)			
		c) FFFF h	d)	7FFF h		
	4)	The instruction "movlw D'200" loads the				
		a) 200h b c) 8C h d	'	C8h 1100100		
	5)	In PIC 16F877 the module is with	-			
		a) Timer 0 b c) Timer 1 d	,	Timer 2 Timer 3		
	6)	The I/O port that does not have a dual-p				
		,	/	PORT 1		
	_`	,	d)	PORT 3		
	7)	The ADC0808 has resolution. a) 4-bit b))	8-bit		
		,	ッ 1)	32-bit		
	8)	The total amount of external code memory 8051 is	,			
		a) 32K b)	16K		
		c) 46K d)	64K		
	9)	If a period is 0.33 ms between the seria one second when SCON sets for mode		s, we can transfer in		
)	275 characters		
		c) 30 characters	4)	272 characters		

Seat No.

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS

30 characters d) 272 characters C)

Set S

10) Of the lower 128 byte of RAM in the 8051, how many bytes are bit addressable?

a) eight

b) thirty two

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Set S

- c) sixteen d) four
- 11) In 8051, serial communication mode 1, the baud rate will be _____.
 - a) variable b) fosc/164
 - c) fosc/32 d) fosc/12
- 12) Bit address 0x00 and byte address 0x00 are for the ____
 - a) Bit 0 at 0x20 and the byte at 0x00 in the internal RAM
 - b) Bit 0 at 0x00 and the byte at 0x00 in the internal RAM
 - c) Bit = 0 in a SFR and the byte = 0x00
 - d) Bit 0 at 0x20 and the byte at 0x00 in the external RAM
- 13) In 8051 an Timer1 interrupt vector address is of _____.
 - a) 000Bh b) 001Bh c) 0013h d) 0023h
- 14) The PIC 16F877 has _____ on chip flash program memory.
 - a)
 4K x 8 bytes
 b)
 4K x 14 words
 - c) 8K x 8 bytes d) 8K x 14 words

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** MICROCONTROLLERS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data whenever necessary.

Section - I

Q.2 Solve any four:

- Compare RISC and CISC architecture. a)
- Write a program to add two 16 bit hex numbers. b)
- How to enable/disable the interrupts in 8051? Explain with respective c) SFR.
- Interface 8 LEDs to 8051 and write a program to turn on and off alternate d) LEDs continuously.
- Explain the modes of operation of Timer in 8051. e)

Q.3 Solve any two:

- Write a program for finding even and odd numbers form a given array of a) 10 elements.
- Write an 8051 program to toggle pin P1.0 continuously every 250ms. Use b) Timer1, mode1 to create the delay. Assume XTAL= 11.0592MHz.
- Read data through ports 0, 1, and 2, one after other and transfer this data c) serially, continuously.

Section – II

Q.4 Solve any four:

- Draw and explain memory organization in PIC 16F877. a)
- Explain W, FSR, INDF, PCL, PCLATH registers in PIC. b)
- C) Explain addressing modes in PIC 16F877.
- Write PIC program to clear memory location 20 h to 2F h with indirect d) addressing mode. Also explain meaning of each used instructions.
- e) Explain operation of Timer 0 in PIC 16F877.

Q.5 Solve any two:

- Draw and explain interfacing of 16*2 LCD to 8051. Write a program to a) display "HI" on the LCD.
- Draw and explain interfacing of DAC to 8051. Write a program b) 1) To generate triangular wave and
 - 2) To generate a saw tooth wave.
- Draw and explain interfacing of 16K x 8 Data RAM to 8051. Write a c) assembly program to transfer 30 bytes starting at 1000h to 2000hh in external Data RAM.

Max. Marks: 56

12

12



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16

No. T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING Day & Date: Friday,13-12-2019 Max. Marks: 70

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) $\nabla \times A$ is equal to _____.
 - a) H b) B
 - c) J d) zero
- If the direction of Coloumb's Force on a unit charge is a_x, the direction of electric field is _____.

a)	a _y	b)	-a _x
c)	a _z	d)	a _x

- 3) Potential at all points on the surface of a conductor is _____.
 - a) same b) infinity c) not same d) zero
- If pair of +ve & -ve charges of 1C separated by distance 2µm then the magnitude of dipole moment is _____.

a)	1C – μm	b)	2C – m
C)	2C — μm	d)	0.5 C — μm

- 5) The charge density of 10 nC-m² is distributed on a plane z = -5m, the electric field intensity at origin is _____.
 - a) $180 \pi a_z$ c) $-10 \pi a_z$ b) $-180 \pi a_z$ c) $-360 \pi a_z$
- 6) If E is a vector then $\nabla \cdot \nabla \times E$ is _____.
 - a) 1b) 0c) ∞ d) doesn't exist
- 7) A point is obtained by intersection of _____ in cylindrical co-ordinates.
 - a) 3 planes b) 2 planes and circle
 - c) plane, circle and a cone d) None of these
- 8) Potential due to charge at a point situated at ∞ is _____.
 - a) ∞ b) zero c) finite d) 1
- 9) For transformation from the Cartesian coordinate system to Spherical coordinate system, should be equal to _____.
 - a) $\cos \theta$ b) $-\cos \theta$ c) $\sin \theta$ d) $-\sin \theta$

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Marks: 14

			SLR-FM-187
			Set P
10)	Voltage reflection coefficient is the a) Incident, reflected c) Incident, absorbed	b)	of wave to wave. Reflected, incident Absorbed, incident
11)	The α is known as a) Amplitude constant c) Absolute constant	b) d)	Attenuation constant None
12)	If antenna directivity and antenna g is %. a) 20 c) 75	ain a b) d)	are equal, then antenna efficiency 50 100
13)	For static magnetic field Maxwell's (a) $\nabla . \vec{B} = \mu_0 \vec{J}$ c) $\nabla \times \vec{B} = 0$	b)	equation is given by $\nabla \times \vec{B} = \mu_0 \vec{J}$ $\nabla \times \vec{B} = \mu_0 / \vec{J}$

- 14) In a free space which of the following relations hold good?
 - a) $\nabla \times D = g$ c) $\nabla \times D = 0$ b) $\nabla D = g$ d) $\nabla D = 0$

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTROMAGNETIC ENGINEERING**

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- Assume suitable data if necessary.

Section – I

Q.2 Answer any four questions.

- State and Explain Culombs Law. a)
- Uniform charge distribution $\rho_1 = 20$ n c/m is distributed along x=2m, y=-4m. b) Find E at (-2, 1, 4).
- Prove That $E = -\nabla V$. c)
- Find the area of circular disc with radius 2m and circumference of circle d) with radius 3m.
- Convert point A(3,4,5) in cylindrical and spherical form. e)

Answer any two questions. Q.3

- State and derive point form of gauss's law and state Divergence theorem. a)
- Derive the expression for H due to finite length filament placed along zb) axis from $z = z_1$ to z_2 .
- Given $\ddot{E} = -8xy\ddot{a}_x 4x^2\ddot{a}_y + \ddot{a}_zv/m$ find work done in moving 6C charge c) from point A(1.8.5) to B(2.18.6) along path y = 3x + 2 and z = x + 4.

Section – II

Q.4 Answer any four questions.

- a) Write a note on skin depth.
- b) Show that.

 $Z_0 = \sqrt{ZscZoc}$

- c) A signal of 10V is applied to a 50 Ω coaxiai transmission line terminated in load 200 Ω . Find ρ_v & reflected voltage.
- Define Directive Gain and Directivity of antenna. d)
- e) Explain Antenna Efficiency and give its significance.

Q.5 Answer any two questions.

- a) Derive the expression for radiation resistance of short dipole antenna.
- **b)** A uniform transmission line has the constants $R = 2 \Omega/m$, L=8n H/m, C=0.23pF/m and G=0.5 m Mho/m. At 1GHz determine: 1) Z_0
 - 2) Propagation constant
- c) State and derive Poynting Theorem.

Max. Marks: 56

12

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12



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Electronics Engineering ELECTROMAGNETIC ENGINEERING				
Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM	Max. Marks: 70			
 Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. 				
MCQ/Objective Type Questions				

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1) Potential due to charge at a point situated at ∞ is _____. a) ∞ b) zero c) finite d) 1 For transformation from the Cartesian coordinate system to Spherical 2) coordinate system, should be equal to _ a) $\cos\theta$ b) $-\cos\theta$ d) $-\sin\theta$ c) $\sin\theta$ 3) Voltage reflection coefficient is the ratio of _____ wave to _____ wave. b) Reflected, incident a) Incident, reflected c) Incident, absorbed d) Absorbed, incident 4) The α is known as ____ a) Amplitude constant b) Attenuation constant c) Absolute constant d) None 5) If antenna directivity and antenna gain are equal, then antenna efficiency is _____ %. 20 b) 50 a) c) 75 d) 100 For static magnetic field Maxwell's curl equation is given by _____. 6) a) $\nabla \vec{B} = \mu_0 \vec{J}$ b) $\nabla \times \vec{B} = \mu_0 \vec{I}$ d) $\nabla \times \vec{B} = \mu_0 / \vec{I}$ c) $\nabla \times \vec{B} = 0$ In a free space which of the following relations hold good? 7) a) $\nabla \times D = g$ b) $\nabla D = g$ c) $\nabla \times D = 0$ d) $\nabla D = 0$ 8) $\nabla \times A$ is equal to _____. a) H b) B d) zero c) J 9) If the direction of Coloumb's Force on a unit charge is a_x, the direction of electric field is _____. a) a_v b) -a_x d) a_x c) a_z



Duration: 30 Minutes

Seat

No.

Marks: 14

Set

			Set
10)	Potential at all points on the surface a) same c) not same	of a b) d)	
11)	If pair of +ve & -ve charges of 1C semagnitude of dipole moment is a) $1C - \mu m$ c) $2C - \mu m$	 b)	ated by distance 2μm then the 2C – m 0.5 C – μm
12)	The charge density of 10 nC-m ² is a electric field intensity at origin is a) $180 \pi a_z$ c) $-10 \pi a_z$	 b)	ibuted on a plane z = -5m, the $-180 \pi a_z$ $-360 \pi a_z$
13)	If E is a vector then $\nabla . \nabla \times E$ is a) 1 c) ∞	 b) d)	0 doesn't exist
14)	A point is obtained by intersection ofa) 3 planesc) plane, circle and a cone	b)	in cylindrical co-ordinates. 2 planes and circle None of these

Q

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING

Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four questions.

- a) State and Explain Culombs Law.
- **b)** Uniform charge distribution $\rho_1 = 20$ n c/m is distributed along x=2m, y=-4m. Find E at (-2, 1, 4).
- **c)** Prove That $E = -\nabla V$.
- d) Find the area of circular disc with radius 2m and circumference of circle with radius 3m.
- e) Convert point A(3,4,5) in cylindrical and spherical form.

Q.3 Answer any two questions.

- a) State and derive point form of gauss's law and state Divergence theorem.
- **b)** Derive the expression for H due to finite length filament placed along z-axis from $z = z_1$ to z_2 .
- **c)** Given $\ddot{E} = -8xy\ddot{a}_x 4x^2\ddot{a}_y + \ddot{a}_zv/m$ find work done in moving 6C charge from point A(1,8,5) to B(2,18,6) along path y = 3x + 2 and z = x + 4.

Section – II

Q.4 Answer any four questions.

- a) Write a note on skin depth.
- **b)** Show that.

 $Z_0 = \sqrt{ZscZoc}$

- c) A signal of 10V is applied to a 50 Ω coaxiai transmission line terminated in load 200 Ω . Find ρ_v & reflected voltage.
- d) Define Directive Gain and Directivity of antenna.
- e) Explain Antenna Efficiency and give its significance.

Q.5 Answer any two questions.

- a) Derive the expression for radiation resistance of short dipole antenna.
- **b)** A uniform transmission line has the constants R= 2 Ω /m, L=8n H/m, C=0.23pF/m and G=0.5 m Mho/m. At 1GHz determine: 1) Z_0
 - 2) Propagation constant
- c) State and derive Poynting Theorem.

Max. Marks: 56

12

16

16

12



T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

7)

Seat

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

The charge density of 10 nC-m² is distributed on a plane z = -5m, the 1) electric field intensity at origin is .

a)	180 πa_z	U	b)	$-180 \pi a_{z}$
c)	$-10 \pi a_{z}$		d)	$-360 \pi a_z$

2)	If E is a vector then ∇ . $\nabla \times E$ is		
	a) 1	b)	0

- C) ∞ d) doesn't exist
- 3) A point is obtained by intersection of in cylindrical co-ordinates. b) 2 planes and circle 3 planes a)
 - plane, circle and a cone d) None of these c)
- 4) Potential due to charge at a point situated at ∞ is _____.

a)	∞	b)	zero
C)	Finite	d)	1

- For transformation from the Cartesian coordinate system to Spherical 5) coordinate system, should be equal to
 - b) $-\cos\theta$ a) $\cos\theta$ d) $-\sin\theta$ C) $\sin\theta$

____ wave to _____ wave. 6) Voltage reflection coefficient is the ratio of _____

- b) Reflected, incident a) Incident, reflected c) Incident, absorbed d) Absorbed, incident
- The α is known as a) Amplitude constant b) Attenuation constant c) Absolute constant d) None
- 8) If antenna directivity and antenna gain are equal, then antenna efficiency is _____ %.
 - 20 b) 50 a) c) 75 d) 100
- For static magnetic field Maxwell's curl equation is given by _____. 9)
 - a) $\nabla \vec{B} = \mu_0 \vec{I}$ b) $\nabla \times \vec{B} = \mu_0 \vec{I}$
 - d) $\nabla \times \vec{B} = \mu_0 / \vec{J}$ c) $\nabla \times \vec{B} = 0$

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Set

Marks: 14

ELECTROMAGNETIC ENGINEERING Max. Marks: 70

No.

			Set R
10)	In a free space which of the following a) $\nabla \times D = g$ c) $\nabla \times D = 0$	b)	lations hold good? $\nabla D = g$ $\nabla D = 0$
11)	∇×A is equal to a) H c) J	b) d)	B zero
12)	If the direction of Coloumb's Force electric field is a) a_y c) a_z	on a b) d)	unit charge is a_x , the direction of $-a_x$ a_x
13)	Potential at all points on the surface a) same c) not same	e of a b) d)	a conductor is infinity zero
14)	If pair of +ve & -ve charges of 1C so magnitude of dipole moment isa) $1C - \mu m$	•	

a) $1C - \mu m$ c) $2C - \mu m$ b) 2C - md) $0.5 C - \mu m$

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTROMAGNETIC ENGINEERING**

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- Assume suitable data if necessary.

Section – I

Q.2 Answer any four questions.

- State and Explain Culombs Law. a)
- Uniform charge distribution $\rho_1 = 20$ n c/m is distributed along x=2m, y=-4m. b) Find E at (-2, 1, 4).
- Prove That $E = -\nabla V$. c)
- Find the area of circular disc with radius 2m and circumference of circle d) with radius 3m.
- Convert point A(3,4,5) in cylindrical and spherical form. e)

Answer any two questions. Q.3

- State and derive point form of gauss's law and state Divergence theorem. a)
- Derive the expression for H due to finite length filament placed along zb) axis from $z = z_1$ to z_2 .
- Given $\ddot{E} = -8xy\ddot{a}_x 4x^2\ddot{a}_y + \ddot{a}_zv/m$ find work done in moving 6C charge c) from point A(1.8.5) to B(2.18.6) along path y = 3x + 2 and z = x + 4.

Section – II

Q.4 Answer any four questions.

- a) Write a note on skin depth.
- b) Show that.

 $Z_0 = \sqrt{ZscZoc}$

- c) A signal of 10V is applied to a 50 Ω coaxiai transmission line terminated in load 200 Ω . Find ρ_v & reflected voltage.
- Define Directive Gain and Directivity of antenna. d)
- e) Explain Antenna Efficiency and give its significance.

Q.5 Answer any two questions.

- a) Derive the expression for radiation resistance of short dipole antenna.
- **b)** A uniform transmission line has the constants $R = 2 \Omega/m$, L=8n H/m, C=0.23pF/m and G=0.5 m Mho/m. At 1GHz determine: 1) Z_0
 - 2) Propagation constant
- c) State and derive Poynting Theorem.

Max. Marks: 56

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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

ELECTROMAGNETIC ENGINEERING

Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b) Reflected, incident

b) Attenuation constant

d) None

- 1) Voltage reflection coefficient is the ratio of _____ wave to _____ wave.
 - a) Incident, reflected
 - c) Incident, absorbed d) Absorbed, incident
- 2) The α is known as _____
 - a) Amplitude constant
 - c) Absolute constant
- If antenna directivity and antenna gain are equal, then antenna efficiency is ______%.
 - a) 20 b) 50 c) 75 d) 100
- 4) For static magnetic field Maxwell's curl equation is given by _____.
 - a) $\nabla . \vec{B} = \mu_0 \vec{J}$ b) $\nabla \times \vec{B} = \mu_0 \vec{J}$ c) $\nabla \times \vec{B} = 0$ d) $\nabla \times \vec{B} = \mu_0 \vec{J}$
 - $a_{1} \quad \forall \quad x \quad b = 0 \qquad a_{1} \quad \forall \quad x \quad b = \mu_{0}/J$
- 5) In a free space which of the following relations hold good?
 - a) $\nabla \times D = g$ b) $\nabla D = g$ c) $\nabla \times D = 0$ d) $\nabla D = g$
- 6) ∇ × A is equal to ____.
 a) H
 b) B
 c) J
 d) zero
- If the direction of Coloumb's Force on a unit charge is a_x, the direction of electric field is _____.
 - a) a_y b) $-a_x$ c) a_z d) a_x
- 8) Potential at all points on the surface of a conductor is _____.
 - a) same b) infinity
 - c) not same d) zero
- If pair of +ve & -ve charges of 1C separated by distance 2µm then the magnitude of dipole moment is _____.
 - a) $1C \mu m$ c) $2C - \mu m$ b) 2C - md) $0.5 C - \mu m$

SLR-FM-187



Max. Marks: 70

Marks: 14

			Set S
10)	The charge density of 10 nC-m ² is electric field intensity at origin is		
	a) $180 \pi a_z$ c) $-10 \pi a_z$		$-180 \pi a_z$ $-360 \pi a_z$
	, 2		$500 \ n \ u_Z$
11)	If E is a vector then $\nabla . \nabla \times E$ is a) 1 c) ∞	 b) d)	0 doesn't exist
12)	A point is obtained by intersection o a) 3 planes c) plane, circle and a cone	b)	in cylindrical co-ordinates. 2 planes and circle None of these
13)	Potential due to charge at a point sit	tuate	ed at ∞ is
,	a) ∞	b)	zero
	c) finite	d)	1
14)	For transformation from the Cartesia coordinate system, should be equal	to _	·
	A = 1	n N	cos A

a)	$\cos \theta$	b)	$-\cos\theta$
c)	sin $ heta$	d)	$-\sin\theta$

Seat No. T.E. (Part – I) (No)

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING

Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four questions.

- a) State and Explain Culombs Law.
- **b)** Uniform charge distribution $\rho_1 = 20$ n c/m is distributed along x=2m, y=-4m. Find E at (-2, 1, 4).
- **c)** Prove That $E = -\nabla V$.
- d) Find the area of circular disc with radius 2m and circumference of circle with radius 3m.
- e) Convert point A(3,4,5) in cylindrical and spherical form.

Q.3 Answer any two questions.

- a) State and derive point form of gauss's law and state Divergence theorem.
- b) Derive the expression for H due to finite length filament placed along z-axis from $z = z_1$ to z_2 .
- **c)** Given $\ddot{E} = -8xy\ddot{a}_x 4x^2\ddot{a}_y + \ddot{a}_zv/m$ find work done in moving 6C charge from point A(1,8,5) to B(2,18,6) along path y = 3x + 2 and z = x + 4.

Section – II

Q.4 Answer any four questions.

- a) Write a note on skin depth.
- **b)** Show that.

 $Z_0 = \sqrt{ZscZoc}$

- c) A signal of 10V is applied to a 50 Ω coaxiai transmission line terminated in load 200 Ω . Find ρ_v & reflected voltage.
- d) Define Directive Gain and Directivity of antenna.
- e) Explain Antenna Efficiency and give its significance.

Q.5 Answer any two questions.

- a) Derive the expression for radiation resistance of short dipole antenna.
- **b)** A uniform transmission line has the constants R= 2 Ω /m, L=8n H/m, C=0.23pF/m and G=0.5 m Mho/m. At 1GHz determine: 1) Z_0
 - 2) Propagation constant
- c) State and derive Poynting Theorem.

Max. Marks: 56

12

16

12



SLR-FM-187

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

- Matched filter may be optimally used only for _____. 1)
 - Gaussian noise a)

Transit time noise b) d) All of the above

- c) Flicker
- 2) In uniform quantization process ____
 - The step size remains same a)
 - Step size varies according to the values of the input signal b)
 - The quantizer has linear characteristics c)
 - d) Both a and c are correct
- 3) The modulation techniques used to convert analog signal into digital signal are
 - Pulse code modulation a)
 - Adaptive delta modulation c)
- Delta modulation b) All of the above d)
- One of the disadvantages of PCM is 4)
 - It requires large bandwidth b) Very high noise a) All of the above
 - c) Cannot be decoded easily d)
- 5) The channel capacity according to Shannon's equation is _____.
 - Maximum error free communication a)
 - Defined for optimum system b)
 - Information transmitted c)
 - All of the above d)
- The information rate R for given average information H= 2.0 for analog 6) signal band limited to B Hz is ____
 - a) 8 B bits/sec b) 4 B bits/sec
 - c) 2 B bits/sec d) 16 B bits/sec
- For decoding in convolution coding, in a code tree, ____ 7)
 - Diverge upward when a bit is 0 and diverge downward when the bit is 1 a)
 - Diverge downward when a bit is 0 and diverge upward when the bit is 1 b)
 - Diverge left when a bit is 0 and diverge right when the bit is 1 c)
 - Diverge right when a bit is 0 and diverge left when the bit is 1 d)
- 8) Parity check bit coding is used for
 - Error correction a) c)

- b) Error detection
- Error correction and detection d) None of the above

SLR-FM-188

Max. Marks: 70



Marks: 14

The probability of error of DPSK is ______than that of BPSK. a) Higher b) Lower 9)

- c) Same d) Not predictable
- 10) QPSK is a modulation scheme where each symbol consists of _____.
 - a) 4 bits
 - b) 2 bits
 - 1 bits c)
 - M number of bits, depending upon the requirement d)
- 11) The data rate of QPSK is _____ of BPSK.
 - Thrice a)
 - b) Four times
 - c) Twice
 - Same d)
- One of the disadvantages of PCM is _ 12)
 - b) Very high noise It requires large bandwidth a)
 - cannot be decoded easily d) All of the above C)
- The sequence of operations in which PCM is done is _____. 13)
 - Sampling, quantizing, encoding a)
 - Quantizing, encoding, sampling b)
 - Quantizing, sampling, encoding c)
 - d) None of the above
- Minimum shift keying is similar to _____ 14)
 - Continuous phase frequency shift keying a)
 - Binary phase shift keying b)
 - Binary frequency shift keying c)
 - d) QPSK

SLR-FM-188

Set P

Seat No. T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019

Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary

Section I

Q.2 Attempt any four of the following questions.

- Compare Analog Communication and Digital Communication. a)
- Explain PPM using IC555. b)
- Define the Information Theory and Mutual information. c)
- Why compading is necessary? d)
- Determine the Nyquist sampling rate & sampling interval for the following e) signal

$x(t) = 6\cos(50\pi t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt any two of the following questions.

- Compare PCM, DPCM, DM and ADM. a)
- b) Derive the expression for condition of maximum entropy.
- A DMS X has five symbols x1,x2,x3,x4 and x5 with 0.4,0.19,0.16,0.15 and c) 0.1 respectively.
 - i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
 - Repeat for Huffman code and compare the result. ii)

Section -II

Attempt any four of the following questions. **Q.4**

- What is coherent and non-coherent detection? a)
- Explain Matched Filter BPSK Detector. b)
- Explain convolution code with Example. c)
- In an (n, k) linear block code, how many code words will be there? Justify d) vour answer.
- With suitable example explain baseband modulation and band pass e) modulation.

Q.5 Attempt any two of the following questions.

- With suitable waveforms explain QPSK & OQPSK. a)
- For a (7,4) code the generator matrix G is given by b)

G

= 1	0	0	0	1	0	1
0	1	0	0	1	1	1
0	0	1	0	1	1	0
0	0	0	1	0	1	1

- i) Find the code Vector for Message 1 1 0 1
- Find the parity Check Matrix ii)
- Explain frame synchronization. c)

Max. Marks: 56

12

16

Set

SLR-FM-188

16

Seat No.				Set Q					
110.	T.E	E. (Part - II) (New) (CBCS) Ex							
Electronics Engineering DIGITAL COMMUNICATION									
	Day & Date: Saturday, 23-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM								
Instru	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.								
		 2) Figures to the right indicate full r 3) Assume suitable data if necessa 		S.					
Dust		MCQ/Objective Typ	be Qu						
	on: 30 M		ont	Marks: 14					
		rity check bit coding is used for	-	ions and rewrite the sentence. 14					
	a) c)	Error correction Error correction and detection	b) d)	Error detection None of the above					
		e probability of error of DPSK is Higher Same	b) d)						
;	3) QP a) b) c) d)								
2	a) b) c)	e data rate of QPSK is of B Thrice Four times Twice Same	PSK.						
Į	5) On a) c)	1 0	b) d)	 Very high noise All of the above					
(a)	Quantizing, encoding, sampling	PCM	1 is done is					
-		Binary frequency shift keying		ing					
٤	́a)	tched filter may be optimally used Gaussian noise Flicker	only b) d)	for Transit time noise					

- d) All of the above

- 9) In uniform quantization process _____.
 - a) The step size remains same
 - b) Step size varies according to the values of the input signal
 - c) The quantizer has linear characteristics
 - d) Both a and c are correct
- 10) The modulation techniques used to convert analog signal into digital signal are _____.
 - a) Pulse code modulation b) Delta modulation
 - c) Adaptive delta modulation d) All of the above
- 11) One of the disadvantages of PCM is _
 - a) It requires large bandwidth b) Very high noise
 - c) Cannot be decoded easily d) All of the above

Set Q

- 12) The channel capacity according to Shannon's equation is _____.
 - a) Maximum error free communication
 - b) Defined for optimum system
 - c) Information transmitted
 - d) All of the above
- The information rate R for given average information H= 2.0 for analog signal band limited to B Hz is _____.
 - a) 8 B bits/sec b) 4 B bits/sec
 - c) 2 B bits/sec d) 16 B bits/sec
- 14) For decoding in convolution coding, in a code tree, ____
 - a) Diverge upward when a bit is 0 and diverge downward when the bit is 1
 - b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
 - c) Diverge left when a bit is 0 and diverge right when the bit is 1
 - d) Diverge right when a bit is 0 and diverge left when the bit is 1

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary

Section I

Q.2 Attempt any four of the following questions.

- a) Compare Analog Communication and Digital Communication.
- b) Explain PPM using IC555.
- c) Define the Information Theory and Mutual information.
- d) Why compading is necessary?
- e) Determine the Nyquist sampling rate & sampling interval for the following signal

 $x(t) = 6\cos(50\pi t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- **b)** Derive the expression for condition of maximum entropy.
- c) A DMS X has five symbols x1,x2,x3,x4 and x5 with 0.4,0.19,0.16,0.15 and 0.1 respectively.
 - i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
 - ii) Repeat for Huffman code and compare the result.

Section –II

Q.4 Attempt any four of the following questions.

- a) What is coherent and non-coherent detection?
- b) Explain Matched Filter BPSK Detector.
- c) Explain convolution code with Example.
- **d)** In an (*n*, *k*) linear block code, how many code words will be there? Justify your answer.
- e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two of the following questions.

- a) With suitable waveforms explain QPSK & OQPSK.
- b) For a (7,4) code the generator matrix G is given by

G = 1	0	0	0	1	0	1
0	1	0	0	1	1	1
0	0	1	0	1	1	0
			1		1	1
- " N/		- 4	A 0	4		

- i) Find the code Vector for Message 1 1 0 1
- ii) Find the parity Check Matrix
- **c)** Explain frame synchronization.

Max. Marks: 56

Set

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12

16

16

Set R

Max. Marks: 70

Marks: 14

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering DIGITAL COMMUNICATION**

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The channel capacity according to Shannon's equation is _____. 1)
 - a) Maximum error free communication
 - b) Defined for optimum system
 - c) Information transmitted
 - d) All of the above
- 2) The information rate R for given average information H= 2.0 for analog signal band limited to B Hz is ____
 - a) 8 B bits/sec 4 B bits/sec b)
 - c) 2 B bits/sec d) 16 B bits/sec
- 3) For decoding in convolution coding, in a code tree, ____
 - a) Diverge upward when a bit is 0 and diverge downward when the bit is 1
 - b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
 - c) Diverge left when a bit is 0 and diverge right when the bit is 1
 - d) Diverge right when a bit is 0 and diverge left when the bit is 1
- Parity check bit coding is used for 4)
 - a) Error correction b)
 - c) Error correction and detection
- The probability of error of DPSK is _____ 5) than that of BPSK.
 - a) Higher b) Lower c) Same
 - d) Not predictable

6) QPSK is a modulation scheme where each symbol consists of .

- a) 4 bits
- b) 2 bits
- c) 1 bits
- d) M number of bits, depending upon the requirement
- 7) The data rate of QPSK is _____ of BPSK.
 - a) Thrice
 - b) Four times
 - c) Twice
 - d) Same
- One of the disadvantages of PCM is 8)
 - a) It requires large bandwidth
 - c) cannot be decoded easily
- Very high noise b)
- All of the above d)

- Error detection

- d)
- - None of the above

9) The sequence of operations in which PCM is done is _____.

- a) Sampling, quantizing, encoding
- b) Quantizing, encoding, sampling
- c) Quantizing, sampling, encoding
- d) None of the above
- 10) Minimum shift keying is similar to _____
 - a) Continuous phase frequency shift keying
 - b) Binary phase shift keying
 - c) Binary frequency shift keying
 - d) QPSK
- 11) Matched filter may be optimally used only for ____
 - a) Gaussian noise
- b) Transit time noise

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Set R

- c) Flicker d) All of the above
- 12) In uniform quantization process _____.
 - a) The step size remains same
 - b) Step size varies according to the values of the input signal
 - c) The quantizer has linear characteristics
 - d) Both a and c are correct
- 13) The modulation techniques used to convert analog signal into digital signal are _____.
 - a) Pulse code modulation
- b) Delta modulation
- c) Adaptive delta modulation
- d) All of the above

b) Very high noise

- 14) One of the disadvantages of PCM is _
 - a) It requires large bandwidth
 - c) Cannot be decoded easily d) All of the above

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary

Section I

Q.2 Attempt any four of the following questions.

- a) Compare Analog Communication and Digital Communication.
- b) Explain PPM using IC555.
- c) Define the Information Theory and Mutual information.
- d) Why compading is necessary?
- e) Determine the Nyquist sampling rate & sampling interval for the following signal

$x(t) = 6\cos(50\pi t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- b) Derive the expression for condition of maximum entropy.
- c) A DMS X has five symbols x1,x2,x3,x4 and x5 with 0.4,0.19,0.16,0.15 and 0.1 respectively.
 - i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
 - ii) Repeat for Huffman code and compare the result.

Section –II

Q.4 Attempt any four of the following questions.

- a) What is coherent and non-coherent detection?
- b) Explain Matched Filter BPSK Detector.
- c) Explain convolution code with Example.
- d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
- e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two of the following questions.

- a) With suitable waveforms explain QPSK & OQPSK.
- **b)** For a (7,4) code the generator matrix G is given by

G

= 1	0	0	0	1	0	1	
0	1	0	0	1	1	1	
0	0	1	0	1	1	0	
0	0	0	1	0	1	1	

- i) Find the code Vector for Message 1 1 0 1
- ii) Find the parity Check Matrix
- c) Explain frame synchronization.

Max. Marks: 56

12

16

16

12

Set R

Set

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) QPSK is a modulation scheme where each symbol consists of _____.
 - a) 4 bits
 - b) 2 bits
 - c) 1 bits
 - d) M number of bits, depending upon the requirement
- 2) The data rate of QPSK is _____ of BPSK.
 - a) Thrice
 - b) Four times
 - c) Twice
 - d) Same
- 3) One of the disadvantages of PCM is _____
 - a) It requires large bandwidth b) Very high noise
 - c) cannot be decoded easily d) All of the above
- 4) The sequence of operations in which PCM is done is _____.
 - a) Sampling, quantizing, encoding
 - b) Quantizing, encoding, sampling
 - c) Quantizing, sampling, encoding
 - d) None of the above
- 5) Minimum shift keying is similar to _____
 - a) Continuous phase frequency shift keying
 - b) Binary phase shift keying
 - c) Binary frequency shift keying
 - d) QPSK
- 6) Matched filter may be optimally used only for _____.
 - a) Gaussian noise b) Transit time noise
 - c) Flicker d) All of the above
- 7) In uniform quantization process _____.
 - a) The step size remains same
 - b) Step size varies according to the values of the input signal
 - c) The quantizer has linear characteristics
 - d) Both a and c are correct

Max. Marks: 70

Marks: 14

	Set S
8)	The modulation techniques used to convert analog signal into digitalsignal area) Pulse code modulationb) Delta modulationc) Adaptive delta modulationd) All of the above
9)	One of the disadvantages of PCM is a) It requires large bandwidth b) Very high noise c) Cannot be decoded easily d) All of the above
10)	 The channel capacity according to Shannon's equation is a) Maximum error free communication b) Defined for optimum system c) Information transmitted d) All of the above
11)	The information rate R for given average information H= 2.0 for analogsignal band limited to B Hz isa) 8 B bits/secb) 4 B bits/secc) 2 B bits/secd) 16 B bits/sec
12)	 For decoding in convolution coding, in a code tree, a) Diverge upward when a bit is 0 and diverge downward when the bit is 1 b) Diverge downward when a bit is 0 and diverge upward when the bit is 1 c) Diverge left when a bit is 0 and diverge right when the bit is 1 d) Diverge right when a bit is 0 and diverge left when the bit is 1
13)	Parity check bit coding is used fora) Error correctionb) Error detectionc) Error correction and detectiond) None of the above
14)	The probability of error of DPSK isthan that of BPSK. a) Higher b) Lower c) Same d) Not predictable

Seat No. T.E. (Part - II) (Now)

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary

Section I

Q.2 Attempt any four of the following questions.

- a) Compare Analog Communication and Digital Communication.
- b) Explain PPM using IC555.
- c) Define the Information Theory and Mutual information.
- d) Why compading is necessary?
- e) Determine the Nyquist sampling rate & sampling interval for the following signal

$x(t) = 6\cos(50\pi t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- b) Derive the expression for condition of maximum entropy.
- c) A DMS X has five symbols x1,x2,x3,x4 and x5 with 0.4,0.19,0.16,0.15 and 0.1 respectively.
 - i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
 - ii) Repeat for Huffman code and compare the result.

Section –II

Q.4 Attempt any four of the following questions.

- a) What is coherent and non-coherent detection?
- b) Explain Matched Filter BPSK Detector.
- c) Explain convolution code with Example.
- d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
- e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two of the following questions.

- a) With suitable waveforms explain QPSK & OQPSK.
- **b)** For a (7,4) code the generator matrix G is given by

G

= 1	0	0	0	1	0	1
0	1	0	0	1	1	1
0	0	1	0	1	1	0
0	0	0	1	0	1	1

- i) Find the code Vector for Message 1 1 0 1
- ii) Find the parity Check Matrix
- c) Explain frame synchronization.

Max. Marks: 56

12

16

16

12

Set S

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering EMBEDDED SYSTEMS**

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) mode has more banked registers as compared to other modes.
 - IRQ a)
 - d) Abort Supervisor C)
- 2) In LPC2148 _____ pin select register is used to configure port pins P0.0 to P0.15.
 - a) PINSEL2
 - PINSEL0 C)
- The CPSR register contains 3)
 - Condition code flags a)
 - Current processor mode C)
- To force logic '1' on port pin P1.24, _____ register is used in LPC2148. 4)
 - IOSET0 a)
 - b) IOCLR0 IODIR0 d) IOSET1 C)
- 5) The _____ directive aligns the current location to a specified boundary by padding with zeros.
 - a) ALIGN b) AREA C)
 - END d) DCD
- vector is location of the first instruction executed by the processor 6) when powered on.
 - a) Undefined b) Abort
 - Reset d) Data abort C)
- 7) If the register R2 contains the hexadecimal number A3A33838, the hexadecimal value of the number stored in register R4 after executing ARM instruction MVN R4, R2 will be 5353C7C7 b)
 - 3A3A8383 a)
 - 5C5CC7C7 C)
- d) None of the above
- 8) The _____ is the part of the kernel responsible for determining which task will run next.
 - Scheduler b) Semaphore a) Mailbox d) Mutex C)

SLR-FM-189

Max. Marks: 70

Set

- b) FIQ
- b) IODIR2
- d) PINSEL1
- b) Interrupt disable bits
- d) All of the above

- 9) Pipes in RTOS are entirely _____ oriented.
 - a) Byte
 - Bit & Byte d) none C)
- 10) Inter Process Communication can be done through ____
 - a) Mailbox
 - C) Both a and b
- b) Messages Queue d) Trap

b) Bit

- The strategy of allowing processes that are logically runnable to be 11) temporarily suspended is called _____.
 - preemptive scheduling a)
 - Shortest job first C)
- b) non preemptive scheduling

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Set

- d) first come first served
- 12) A binary semaphore _____.
 - is essential to binary computers a)
 - b) has the values one or zero
 - is used only for synchronization c)
 - is used only for mutual exclusion d)

Execution time of all μ C/OS-II functions and services are _____. 13)

Deterministic a) Both a & b

- b) Non deterministic
- d) None of the above
- µcos-II and most commercial real-time kernels are _____ because 14) system responsiveness is important.
 - Selective preemption a)
 - Preemptive c)

C)

- b) Non-preemptive
- d) None of above

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

Section – I

EMBEDDED SYSTEMS

Q.2 Attempt any four of the following question.

- a) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
- **b)** Explain LDR and STR data transfer instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.10. Write an embedded C program to blink it continuously.
- d) Sketch and explain ARM core data flow model.
- e) List and elaborate the privileged and non-privileged modes of operation in ARM7 processor.

Q.3 Attempt any two of the following question.

- a) What is pipeline? Explain the effect of pipeline on program execution with example.
- b) List and elaborate the group of registers available in Pin Connect block of LPC2148.
- c) Interface a stepper motor with LPC2148 for the following specifications
 - i) The motor is connected to port pins P0.10, P0.11, P0.12, and P0.13.
 - ii) Rotate motor in anti-clockwise direction
 - Section II

Q.4 Attempt any four of the following question.

- a) Define the context Switching. Explain with timing diagram the steps involved in µcos-II context switching?
- b) Draw & discuss block diagram of Smart card.
- c) Define priority inheritance also elaborates with example.
- d) Discuss shared data problem and methods to solve it.
- e) Discuss different kernel services in µcos-II

Q.5 Attempt any two of the following question.

- Explain the task state diagram for µcos-II. State various functions related to task.
- **b)** What is scheduling? Explain Non Preemptive scheduling methods in RTOS.
- **c)** What is semaphore? Explain how semaphore can be used for Resource synchronization in RTOS.

Max. Marks: 56

12

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Set T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) The _____ is the part of the kernel responsible for determining which
 - Scheduler a)
 - C) Mailbox d) Mutex
- Pipes in RTOS are entirely _____ oriented. 2)
 - a) Byte b) Bit
 - Bit & Byte d) none c)
- Inter Process Communication can be done through 3)
 - Mailbox b) Messages Queue a) d) Trap
 - Both a and b C)
- The strategy of allowing processes that are logically runnable to be 4) temporarily suspended is called _____ b) non preemptive scheduling
 - a) preemptive scheduling
 - Shortest job first c)
- 5) A binary semaphore .
 - is essential to binary computers a)
 - b) has the values one or zero
 - is used only for synchronization C)
 - is used only for mutual exclusion d)

Execution time of all µC/OS-II functions and services are _ 6)

- Deterministic b) Non deterministic a)
- c) Both a & b d) None of the above
- 7) ucos-II and most commercial real-time kernels are because system responsiveness is important. b) Non-preemptive
 - Selective preemption a)
 - Preemptive c)
- mode has more banked registers as compared to other modes. 8)
 - IRQ a) c) Supervisor
- b) FIQ

d) None of above

d) Abort

- Marks: 14

- task will run next.
- b) Semaphore

d) first come first served

Max. Marks: 70



Q

- 9) In LPC2148 _____ pin select register is used to configure port pins P0.0 to P0.15. b) IODIR2
 - a) PINSEL2
 - PINSEL0 C)
- 10) The CPSR register contains _____.
 - Condition code flags a)
 - Current processor mode C)
- To force logic '1' on port pin P1.24, _____ register is used in LPC2148. a) IOSET0 b) IOCLR0 11)

IODIR0

C)

d) All of the above

b) Interrupt disable bits

d) PINSEL1

- d) IOSET1
- The _____ directive aligns the current location to a specified boundary by 12) padding with zeros.
 - a) ALIGN b) AREA
 - END d) DCD c)
- 13) vector is location of the first instruction executed by the processor when powered on.
 - a) Undefined

- b) Abort d) Data abort
- c) Reset If the register R2 contains the hexadecimal number A3A33838, the 14)
 - hexadecimal value of the number stored in register R4 after executing ARM instruction MVN R4, R2 will be
 - 3A3A8383 a)
 - 5C5CC7C7 C)

- b) 5353C7C7
- d) None of the above

- **SLR-FM-189**
 - Set | Q

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

Section – I

EMBEDDED SYSTEMS

Q.2 Attempt any four of the following question.

- a) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
- **b)** Explain LDR and STR data transfer instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.10. Write an embedded C program to blink it continuously.
- d) Sketch and explain ARM core data flow model.
- e) List and elaborate the privileged and non-privileged modes of operation in ARM7 processor.

Q.3 Attempt any two of the following question.

- a) What is pipeline? Explain the effect of pipeline on program execution with example.
- b) List and elaborate the group of registers available in Pin Connect block of LPC2148.
- c) Interface a stepper motor with LPC2148 for the following specifications
 - i) The motor is connected to port pins P0.10, P0.11, P0.12, and P0.13.
 - ii) Rotate motor in anti-clockwise direction

Section – II

Q.4 Attempt any four of the following question.

- a) Define the context Switching. Explain with timing diagram the steps involved in µcos-II context switching?
- b) Draw & discuss block diagram of Smart card.
- c) Define priority inheritance also elaborates with example.
- d) Discuss shared data problem and methods to solve it.
- e) Discuss different kernel services in µcos-II

Q.5 Attempt any two of the following question.

- a) Explain the task state diagram for µcos-II. State various functions related to task.
- **b)** What is scheduling? Explain Non Preemptive scheduling methods in RTOS.
- **c)** What is semaphore? Explain how semaphore can be used for Resource synchronization in RTOS.

Max. Marks: 56



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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The _____ directive aligns the current location to a specified boundary by 1) padding with zeros.
 - a) ALIGN
 - b) AREA C) **END** d) DCD
- 2) vector is location of the first instruction executed by the processor when powered on.
 - b) Abort Undefined a)
 - Reset C) d) Data abort
- If the register R2 contains the hexadecimal number A3A33838, the 3) hexadecimal value of the number stored in register R4 after executing ARM instruction MVN R4, R2 will be
 - 3A3A8383 a) c) 5C5CC7C7

- b) 5353C7C7
- d) None of the above

d) Mutex

- The is the part of the kernel responsible for determining which 4) task will run next. b) Semaphore
 - a) Scheduler
 - Mailbox c)
- Pipes in RTOS are entirely _____ oriented. 5)
 - a) Byte b) Bit
 - Bit & Byte d) none c)

6) Inter Process Communication can be done through b) Messages Queue a) Mailbox

- Both a and b d) c) Trap The strategy of allowing processes that are logically runnable to be 7)
 - temporarily suspended is called _____
 - preemptive scheduling a)
 - Shortest job first c)
- 8) A binary semaphore _____.
 - is essential to binary computers a)
 - has the values one or zero b)
 - C) is used only for synchronization
 - is used only for mutual exclusion d)
- b) non preemptive scheduling
- d) first come first served

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Max. Marks: 70

		SLR-FM-189
		Set R
9)	Execution time of all μC/OS-II function a) Deterministic c) Both a & b	s and services are b) Non deterministic d) None of the above
10)	 µcos-II and most commercial real-time system responsiveness is important. a) Selective preemption c) Preemptive 	kernels are because b) Non-preemptive d) None of above
11)	mode has more banked registe a) IRQ c) Supervisor	ers as compared to other modes. b) FIQ d) Abort
12)	In LPC2148 pin select register to P0.15. a) PINSEL2 c) PINSEL0	is used to configure port pins P0.0 b) IODIR2 d) PINSEL1
13)	The CPSR register containsa) Condition code flagsc) Current processor mode	b) Interrupt disable bitsd) All of the above

- To force logic '1' on port pin P1.24, _____ register is used in LPC2148. a) IOSET0 b) IOCLR0 14)
 - a) c)
 - IODIR0

- d) IOSET1

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

Section – I

Electronics Engineering EMBEDDED SYSTEMS

Q.2 Attempt any four of the following question.

- a) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
- **b)** Explain LDR and STR data transfer instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.10. Write an embedded C program to blink it continuously.
- d) Sketch and explain ARM core data flow model.
- e) List and elaborate the privileged and non-privileged modes of operation in ARM7 processor.

Q.3 Attempt any two of the following question.

- a) What is pipeline? Explain the effect of pipeline on program execution with example.
- b) List and elaborate the group of registers available in Pin Connect block of LPC2148.
- c) Interface a stepper motor with LPC2148 for the following specifications
 - i) The motor is connected to port pins P0.10, P0.11, P0.12, and P0.13.
 - ii) Rotate motor in anti-clockwise direction

Section – II

Q.4 Attempt any four of the following question.

- a) Define the context Switching. Explain with timing diagram the steps involved in µcos-II context switching?
- b) Draw & discuss block diagram of Smart card.
- c) Define priority inheritance also elaborates with example.
- d) Discuss shared data problem and methods to solve it.
- e) Discuss different kernel services in µcos-II

Q.5 Attempt any two of the following question.

- a) Explain the task state diagram for µcos-II. State various functions related to task.
- **b)** What is scheduling? Explain Non Preemptive scheduling methods in RTOS.
- **c)** What is semaphore? Explain how semaphore can be used for Resource synchronization in RTOS.

Max. Marks: 56

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Seat No.

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Inter Process Communication can be done through _ b) Messages Queue
 - a) Mailbox d)
 - C) Both a and b
- The strategy of allowing processes that are logically runnable to be 2) temporarily suspended is called _____
 - a) preemptive scheduling
 - Shortest job first c)
- A binary semaphore _ . 3)
 - is essential to binary computers a)
 - has the values one or zero b)
 - C) is used only for synchronization
 - is used only for mutual exclusion d)

Execution time of all μ C/OS-II functions and services are . 4)

- Deterministic b) Non deterministic a)
- Both a & b d) None of the above C)
- µcos-II and most commercial real-time kernels are _____ because 5) system responsiveness is important.
 - Selective preemption a)
 - b) Non-preemptive Preemptive d) None of above C)
- 6) mode has more banked registers as compared to other modes. b) FIQ
 - IRQ a)
 - Supervisor c)
- 7) In LPC2148 _____ pin select register is used to configure port pins P0.0 to P0.15.
 - a) PINSEL2
 - PINSEL0 C)
- The CPSR register contains ____ 8)
 - a) Condition code flags
 - Current processor mode C)
- b) Interrupt disable bits
- d) All of the above

d) Abort

b) IODIR2

d) PINSEL1

b) non preemptive scheduling

d) first come first served

Trap

Max. Marks: 70

Marks: 14

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- To force logic '1' on port pin P1.24, _____ register is used in LPC2148. 9)
 - a) IOSET0

b) IOCLR0

C) IODIR0

- d) IOSET1
- 10) The _____ directive aligns the current location to a specified boundary by padding with zeros. a) ALIGN
 - b) AREA
 - END d) DCD C)
- 11) vector is location of the first instruction executed by the processor when powered on.
 - a) Undefined
- b) Abort
- d) Data abort Reset c)
- If the register R2 contains the hexadecimal number A3A33838, the 12) hexadecimal value of the number stored in register R4 after executing ARM instruction MVN R4, R2 will be
 - a) 3A3A8383
- b) 5353C7C7
- 5C5CC7C7 d) None of the above C)
- The _____ is the part of the kernel responsible for determining which 13) task will run next.
 - a) Scheduler
 - Mailbox C)

- b) Semaphore
- d) Mutex
- Pipes in RTOS are entirely _____ oriented. 14)
 - Byte a)
 - Bit & Byte C)
- b) Bit d) none

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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate full marks.
- 3) Assume suitable data if necessary and state it clearly.

Section – I

Q.2 Attempt any four of the following question.

- a) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
- **b)** Explain LDR and STR data transfer instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.10. Write an embedded C program to blink it continuously.
- d) Sketch and explain ARM core data flow model.
- e) List and elaborate the privileged and non-privileged modes of operation in ARM7 processor.

Q.3 Attempt any two of the following question.

- a) What is pipeline? Explain the effect of pipeline on program execution with example.
- **b)** List and elaborate the group of registers available in Pin Connect block of LPC2148.
- c) Interface a stepper motor with LPC2148 for the following specifications
 - i) The motor is connected to port pins P0.10, P0.11, P0.12, and P0.13.
 - ii) Rotate motor in anti-clockwise direction

Section – II

Q.4 Attempt any four of the following question.

- a) Define the context Switching. Explain with timing diagram the steps involved in µcos-II context switching?
- b) Draw & discuss block diagram of Smart card.
- c) Define priority inheritance also elaborates with example.
- d) Discuss shared data problem and methods to solve it.
- e) Discuss different kernel services in µcos-II

Q.5 Attempt any two of the following question.

- a) Explain the task state diagram for µcos-II. State various functions related to task.
- **b)** What is scheduling? Explain Non Preemptive scheduling methods in RTOS.
- c) What is semaphore? Explain how semaphore can be used for Resource synchronization in RTOS.



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Max. Marks: 56

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

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- Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In case of class A type commutation with low value of load resistance _____
 - a) L is connected across R
 - b) L-C is connected across R
 - c) L is connected in series with R
 - d) L-C is connected in series with R
- 2) Thyristor is a
 - a) DC switch
 - c) latch proof device d)

3) Inductor is connected in series with the thyristor to

- a) reduce dv/dt across it
 - c) protect over voltage
- d)

4) In dual converter due to circulating current

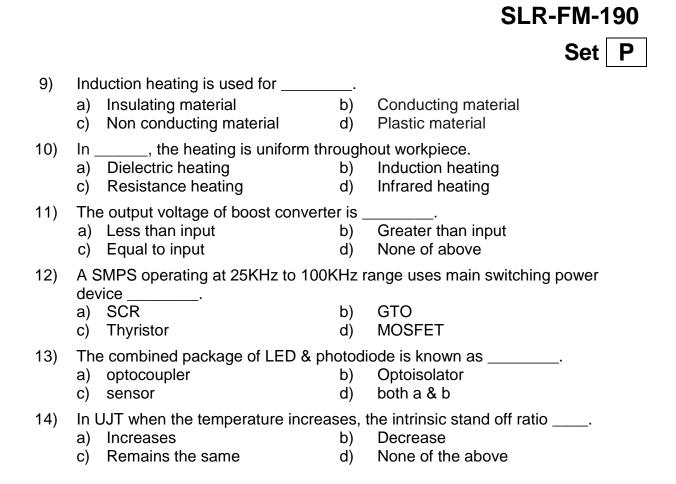
- a) losses are increases b) losses are reduces
- efficiency increases d) improves power factor C)
- Average value of output voltage for single phase fully controlled bridge 5) converter with inductive load ____
 - $\frac{2Vm}{2}\cos\alpha$ Vma) b) $\sqrt{2}$
 - $\frac{Vm}{\pi}\cos\alpha$ $\frac{Vm}{2\pi}(1+\cos\alpha)$ d) C)
- 6) A triac is equivalent to two SCRs _ a) In parallel b) In series
 - c) In inverse-parallel d) In inverse- series
- 7) Latching current for the GTOs is _____ as compared to conventional thyristors.
 - more b) Less a) c) constant d) cannot be said
- 8) Which of the following method will turn SCS on?
 - a) Applying positive pulse to cathode gate
 - Applying positive pulse to anode gate b)
 - Applying negative pulse to cathode gate C)
 - None of above d)

Set

Max. Marks: 70



- b)
 - bilateral device
 - voltage controlled device
- protect against di/dt b)
- trigger thyristor



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Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Describe how to protect power device from overvoltage and overcurrent using RC snubber circuit.
- b) Prove that thyristor is latching device with help of two transistor analogy.
- c) Comapre circulating and non circulating current mode of Single phase dual converter.
- d) Sketch the cross sectional view of GTO. Explain its operation.
- e) A single phase semiconverter is operated from 120V, 60Hz AC supply. The R_L is 10Ω .If the average output voltage is 25% of the maximum possible output voltage. Determine:
 - 1) Firing angle
 - 2) Average DC voltage
 - 3) RMS DC voltage

Q.3 Attempt any two of the following questions.

- a) What is meant by forced commutation? Explain working of Class D auxiliary commutation. Sketch associated waveforms.
- **b)** With help of structural diagram illustrate switching action, V-I characteristics and different triggering modes of TRIAC.
- c) Derive an exp for Average load voltage and RMS Voltage for single phase fully controlled bridge converter with highly inductive load. Sketch associated waveforms for $\alpha = 45^{\circ}$ Prove that bridge converter with highly inductive load acts as a two quadrant converter

Section – II

Q.4 Attempt any four of the following questions.

- a) With suitable block diagram explain working of ON line UPS.
- b) What is necessity of optocoupler? Explain its different configuration.
- c) With suitable circuit diagram explain working single phase preventer system.
- d) Explain working of solid state voltage stabilizer using Thyristors.
- e) With suitable circuit diagram illustrate working of battery charger circuit.

Q.5 Attempt any two of the following questions.

- Explain equivalent circuit & VI Characteristics of PUT. Explain working of an oscillator employing PUT. Derive an expression for frequency of triggering.
- **b)** Draw a neat block diagram of switched mode power supply and explain its working.
- c) Explain working principle of Dielectric heating. Describe any two application of dielectric heating.

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Max. Marks: 56

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- Which of the following method will turn SCS on? 1)
 - a) Applying positive pulse to cathode gate
 - Applying positive pulse to anode gate b)
 - Applying negative pulse to cathode gate c)
 - d) None of above
- 2) Induction heating is used for _____
 - a) Insulating material Conducting material b)
 - c) Non conducting material d) Plastic material
- In _____, the heating is uniform throughout workpiece. 3)
 - Induction heating a) Dielectric heating b)
 - c) Resistance heating d) Infrared heating
- The output voltage of boost converter is _ 4)
 - a) Less than input b) Greater than input None of above
 - c) Equal to input d)
- 5) A SMPS operating at 25KHz to 100KHz range uses main switching power device GTO
 - a) SCR b)
 - c) Thyristor d) MOSFET

The combined package of LED & photodiode is known as _____. 6)

- Optoisolator a) optocoupler b)
- c) sensor d) both a & b
- In UJT when the temperature increases, the intrinsic stand off ratio _____. 7)
 - a) Increases b) Decrease
 - c) Remains the same d) None of the above
- 8) In case of class A type commutation with low value of load resistance .
 - a) L is connected across R
 - b) L-C is connected across R
 - c) L is connected in series with R
 - d) L-C is connected in series with R

Thyristor is a _____. 9)

- a) DC switch
 - c) latch proof device
- bilateral device b)
- voltage controlled device d)

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Max. Marks: 70

			Set Q
10)	Inductor is connected in series witha) reduce dv/dt across itc) protect over voltage	b)	protect against di/dt
11)	In dual converter due to circulating (a) losses are increases c) efficiency increases	b)	losses are reduces
12)	Average value of output voltage for converter with inductive load a) $\frac{Vm}{\sqrt{2}}$ c) $\frac{Vm}{\pi}\cos\alpha$	 b)	e phase fully controlled bridge $\frac{2Vm}{\pi}\cos\alpha$ $\frac{Vm}{2\pi}(1+\cos\alpha)$
13)	A triac is equivalent to two SCRs a) In parallel c) In inverse-parallel		In series In inverse- series
14)	Latching current for the GTOs is thyristors. a) more	a b)	s compared to conventional Less

c) constant

d) cannot be said

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Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

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- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Describe how to protect power device from overvoltage and overcurrent using RC snubber circuit.
- b) Prove that thyristor is latching device with help of two transistor analogy.
- c) Comapre circulating and non circulating current mode of Single phase dual converter.
- d) Sketch the cross sectional view of GTO. Explain its operation.
- e) A single phase semiconverter is operated from 120V, 60Hz AC supply. The R_L is 10Ω . If the average output voltage is 25% of the maximum possible output voltage. Determine:
 - 1) Firing angle
 - 2) Average DC voltage
 - 3) RMS DC voltage

Q.3 Attempt any two of the following questions.

- a) What is meant by forced commutation? Explain working of Class D auxiliary commutation. Sketch associated waveforms.
- **b)** With help of structural diagram illustrate switching action, V-I characteristics and different triggering modes of TRIAC.
- c) Derive an exp for Average load voltage and RMS Voltage for single phase fully controlled bridge converter with highly inductive load. Sketch associated waveforms for $\alpha = 45^{\circ}$ Prove that bridge converter with highly inductive load acts as a two quadrant converter

Section – II

Q.4 Attempt any four of the following questions.

- a) With suitable block diagram explain working of ON line UPS.
- b) What is necessity of optocoupler? Explain its different configuration.
- c) With suitable circuit diagram explain working single phase preventer system.
- d) Explain working of solid state voltage stabilizer using Thyristors.
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- Explain equivalent circuit & VI Characteristics of PUT. Explain working of an oscillator employing PUT. Derive an expression for frequency of triggering.
- **b)** Draw a neat block diagram of switched mode power supply and explain its working.
- c) Explain working principle of Dielectric heating. Describe any two application of dielectric heating.

Max. Marks: 56

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1)	Average value of output voltage for single phase fully controlled bridge converter with inductive load			
	a) $\frac{Vm}{\sqrt{2}}$	 b)	$\frac{2Vm}{\pi}\cos\alpha$	
	c) $\frac{Vm}{\pi}\cos\alpha$	d)	$\frac{Vm}{2\pi}(1+\cos\alpha)$	
2)	A triac is equivalent to two SCRs		·	
	a) In parallel	b)	In series	
	c) In inverse-parallel	d)	In inverse- series	
3)	Latching current for the GTOs is thyristors.	a	s compared to conventional	
	a) more	b)	Less	
	c) constant	d)	cannot be said	
4)	 Which of the following method will turn a) Applying positive pulse to cathode b) Applying positive pulse to anode g c) Applying negative pulse to cathod d) None of above 	e gate jate		
5)	Induction heating is used for			
	a) Insulating material	b)	Conducting material	
	 Non conducting material 	d)	Plastic material	
6)	In, the heating is uniform th	rough	nout workpiece.	
	a) Dielectric heating	b)	•	
	c) Resistance heating	d)	Infrared heating	
7)	The output voltage of boost convert	er is _	·	
	a) Less than input	b)	•	
	c) Equal to input	d)	None of above	
8)	A SMPS operating at 25KHz to 100 device	KHz ı	ange uses main switching power	
	a) SCR	b)	GTO	
	c) Thyristor	d)	MOSFET	
9)	The combined package of LED & pl	hotod	iode is known as	
	a) optocoupler	b)	Optoisolator	
	c) sensor	d)	both a & b	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering INDUSTRIAL ELECTRONICS**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

Average value of output voltage for single phase fully controlled bridge 1)

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Max. Marks: 70

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Marks: 14

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			Set R
10)	In UJT when the temperature increa a) Increases c) Remains the same	ses, t b) d)	he intrinsic stand off ratio Decrease None of the above
11)	 In case of class A type commutation a) L is connected across R b) L-C is connected across R c) L is connected in series with R d) L-C is connected in series with I 		low value of load resistance
12)	Thyristor is a a) DC switch c) latch proof device	b) d)	bilateral device voltage controlled device
13)	Inductor is connected in series witha) reduce dv/dt across itc) protect over voltage	the th b) d)	

- 14) In dual converter due to circulating current _
 - a) losses are increasesc) efficiency increases
- b) losses are reduces
- d) improves power factor

_•

SLR-FM-190

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Tuesday, 26-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

INDUSTRIAL ELECTRONICS

Q.2 Attempt any four of the following questions.

- a) Describe how to protect power device from overvoltage and overcurrent using RC snubber circuit.
- **b)** Prove that thyristor is latching device with help of two transistor analogy.
- c) Comapre circulating and non circulating current mode of Single phase dual converter.
- d) Sketch the cross sectional view of GTO. Explain its operation.
- e) A single phase semiconverter is operated from 120V, 60Hz AC supply. The R_L is 10Ω .If the average output voltage is 25% of the maximum possible output voltage. Determine:
 - 1) Firing angle
 - 2) Average DC voltage
 - 3) RMS DC voltage

Q.3 Attempt any two of the following questions.

- a) What is meant by forced commutation? Explain working of Class D auxiliary commutation. Sketch associated waveforms.
- **b)** With help of structural diagram illustrate switching action, V-I characteristics and different triggering modes of TRIAC.
- c) Derive an exp for Average load voltage and RMS Voltage for single phase fully controlled bridge converter with highly inductive load. Sketch associated waveforms for $\alpha = 45^{\circ}$ Prove that bridge converter with highly inductive load acts as a two quadrant converter

Section – II

Q.4 Attempt any four of the following questions.

- a) With suitable block diagram explain working of ON line UPS.
- **b)** What is necessity of optocoupler? Explain its different configuration.
- c) With suitable circuit diagram explain working single phase preventer system.
- d) Explain working of solid state voltage stabilizer using Thyristors.
- e) With suitable circuit diagram illustrate working of battery charger circuit.

Q.5 Attempt any two of the following questions.

- Explain equivalent circuit & VI Characteristics of PUT. Explain working of an oscillator employing PUT. Derive an expression for frequency of triggering.
- **b)** Draw a neat block diagram of switched mode power supply and explain its working.
- c) Explain working principle of Dielectric heating. Describe any two application of dielectric heating.

16

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12

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SLR-FM-190



Max. Marks: 56

Seat T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Tuesday, 26-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

Electronics Engineering INDUSTRIAL ELECTRONICS

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

5)

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- In _____, the heating is uniform throughout workpiece. 1) Induction heating
 - a) Dielectric heating
 - b) c) Resistance heating d)
 - The output voltage of boost converter is Greater than input

Infrared heating

Optoisolator

both a & b

b) None of above d)

b)

d)

b)

- c) Equal to input 3) A SMPS operating at 25KHz to 100KHz range uses main switching power
 - device

a) Less than input

- a) SCR b) GTO MOSFET c) Thyristor d)
- 4) The combined package of LED & photodiode is known as .
 - a) optocoupler
 - c) sensor
 - In UJT when the temperature increases, the intrinsic stand off ratio .
 - a) Increases Decrease b)
 - c) Remains the same d) None of the above
- 6) In case of class A type commutation with low value of load resistance _____.
 - a) L is connected across R
 - b) L-C is connected across R
 - c) L is connected in series with R
 - d) L-C is connected in series with R
- 7) Thyristor is a
 - a) DC switch
 - c) latch proof device voltage controlled device d)
- Inductor is connected in series with the thyristor to _____ 8)
 - a) reduce dv/dt across it c) protect over voltage
- protect against di/dt b)

bilateral device

- d) trigger thyristor
- 9) In dual converter due to circulating current _
 - a) losses are increases
 - efficiency increases C)
- b) losses are reduces
- d) improves power factor



S

Set

Max. Marks: 70

			Set	S
10)	Average value of output voltage for converter with inductive load a) $\frac{Vm}{\sqrt{2}}$ c) $\frac{Vm}{\pi} \cos \alpha$	 b)	e phase fully controlled bridge $\frac{2Vm}{\pi}\cos\alpha$ $\frac{Vm}{2\pi}(1+\cos\alpha)$	
11)	A triac is equivalent to two SCRs _ a) In parallel c) In inverse-parallel	b) d)		
12)	Latching current for the GTOs is thyristors. a) more c) constant	a b) d)	s compared to conventional Less cannot be said	
13)	 Which of the following method will turn a) Applying positive pulse to cathode b) Applying positive pulse to anode c) Applying negative pulse to cathode d) None of above 	e gate gate		
14)	Induction heating is used for a) Insulating material c) Non conducting material	b)	Conducting material Plastic material	

- a) Insulating materialc) Non conducting material
- Conducting material Plastic material

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SLR-FM-190

Set

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Describe how to protect power device from overvoltage and overcurrent using RC snubber circuit.
- b) Prove that thyristor is latching device with help of two transistor analogy.
- c) Comapre circulating and non circulating current mode of Single phase dual converter.
- d) Sketch the cross sectional view of GTO. Explain its operation.
- e) A single phase semiconverter is operated from 120V, 60Hz AC supply. The R_L is 10Ω . If the average output voltage is 25% of the maximum possible output voltage. Determine:
 - 1) Firing angle
 - 2) Average DC voltage
 - 3) RMS DC voltage

Q.3 Attempt any two of the following questions.

- a) What is meant by forced commutation? Explain working of Class D auxiliary commutation. Sketch associated waveforms.
- **b)** With help of structural diagram illustrate switching action, V-I characteristics and different triggering modes of TRIAC.
- c) Derive an exp for Average load voltage and RMS Voltage for single phase fully controlled bridge converter with highly inductive load. Sketch associated waveforms for $\alpha = 45^{\circ}$ Prove that bridge converter with highly inductive load acts as a two quadrant converter

Section – II

Q.4 Attempt any four of the following questions.

- a) With suitable block diagram explain working of ON line UPS.
- b) What is necessity of optocoupler? Explain its different configuration.
- c) With suitable circuit diagram explain working single phase preventer system.
- d) Explain working of solid state voltage stabilizer using Thyristors.
- e) With suitable circuit diagram illustrate working of battery charger circuit.

Q.5 Attempt any two of the following questions.

- Explain equivalent circuit & VI Characteristics of PUT. Explain working of an oscillator employing PUT. Derive an expression for frequency of triggering.
- **b)** Draw a neat block diagram of switched mode power supply and explain its working.
- c) Explain working principle of Dielectric heating. Describe any two application of dielectric heating.

Max. Marks: 56

12

16

12

	a) C)	inputs	d)	None
3)	a)	there is a change in value of sig change in reset signal		
4)	a)	an entity statement buffer is signal type signal mode	b) d)	signal Port None
5)		riable in VHDL is used in Process Function	 b) d)	Procedure All of above
6)	a)	iich of the following is not VHDL o Signal Wire	-	data? Variable Constant
7)	a)	per IEEE 1164 standard 'W' repr Forcing unknown Weak unknown		s High Impedance Weak '1'
8)	a)	e CPLD contains several PLD blc AND-OR arrays Field programmable switches	b)	A language compiler
9)	Syr a) b) c) d)	Conversion of the Design to act	ual co	•

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

a) Signal

c) Std-logic

a) present state

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 - 2) Figures to the right indicates full marks.

Which VHDL data type can only have value of '1' or '0'?

MCQ/Objective Type Questions

Choose the correct alternatives from the options and rewrite the sentence. 14

b)

d)

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Set

Ρ

Seat No.

Duration: 30 Minutes

1)

2)

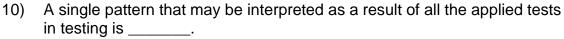
Q.1

Max. Marks: 70

In Moore circuits, the output depends on _ b) present state and past inputs

Integer

Bit



- a) MIC
- c) SIC

- b) PRBSG
- d) Signature
- The element in product term allocator that connect their input to one of 11) their two or three outputs is _____.
 - a) product term OE
 - b) Multiplexer
 - c) programmable signal steering element
 - d) None of these

12) The power dissipation of CMOS IC will _____

- a) Decrease with frequency
- Increase with gate size

SLR-FM-191

Set

Ρ

c) Decrease with gate size d) Increase with frequency

b)

13) CMOS logic consists of _____. a) pull up network

c) both a) and b)

- b) pull down network
- d) None of above
- 14) Which among the following is an output generated by synthesis process?
 - **RTL VHDL description** b)
 - a) Attributes and Library c) Circuit constraints
- d) Gate-level net list

ctional gate level verification.	
Nowing question. Itan 4000 FPGA architecture. The schematic arrangement for testing sequential	12
t regions of operation of CMOS Inverter along with	

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions compulsory.

2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- a) Explain Data types of VHDL in detail.
- Write a VHDL Code for 4x4 bit multiplier. b)
- Explain process statement in detail. c)
- Write a VHDL code for half adder and full adder. d)
- Explain data objects i.e. constant, signal, and variable in detail. e)

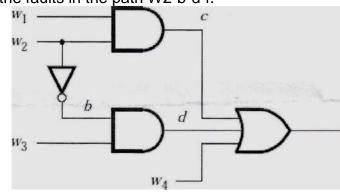
Q.3 Solve any two of the following question.

- Explain different operators in detail. Write a short note of operator a) overloading.
- Write VHDL code for Mealy machine to detect sequence 101. b)
- Write VHDL code for 8 bit serial in serial out shift register. c)

Section – II

Q.4 Solve any four of the following question.

- Explain function block for CPLD. a)
- Draw and explain 3 input CMOS NAND gate. b)
- Explain path sensitizing. Determine the values of W1W2W3 and W4 for c) detecting all the faults in the path W2-b-d-f.



- d) Explain the CMOS noise margin in detail.
- Explain in brief funct e)

Solve any two of the fol Q.5

- **Explain Xilinx Sparta** a)
- Draw and explain the b) circuits.
- Explain the different C) equations.

16

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SLR-FM-191



Max. Marks: 56

Set

VLSI DESIGN Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicates full marks. MCQ/Objective Type Questions **Duration: 30 Minutes** Choose the correct alternatives from the options and rewrite the sentence. 14 A language compiler b) d)

- The CPLD contains several PLD blocks and _____
 - a) AND-OR arrays
 - c) Field programmable switches A global interconnect matrix

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

- 2) Synthesis means _____
 - a) Checking correctness of the Design
 - b) Conversion of the Design to actual component
 - c) Implement design into target technology
 - d) None of Above
- 3) A single pattern that may be interpreted as a result of all the applied tests in testing is .
 - a) MIC b) PRBSG
 - c) SIC d) Signature
- The element in product term allocator that connect their input to one of 4) their two or three outputs is _____.
 - a) product term OE
 - b) Multiplexer
 - c) programmable signal steering element
 - d) None of these
- 5) The power dissipation of CMOS IC will b)
 - a) Decrease with frequency
 - c) Decrease with gate size
- 6) CMOS logic consists of _____.

c) inputs

- a) pull up network b) pull down network
- c) both a) and b) d) None of above
- 7) Which among the following is an output generated by synthesis process? **RTL VHDL description** b)

d)

- a) Attributes and Library
- c) Circuit constraints d) Gate-level net list
- Which VHDL data type can only have value of '1' or '0'? 8)
 - a) Signal b) bit
 - c) Std-logic d) Integer
- 9) In Moore circuits, the output depends on _ a) present state b)
 - present state and past inputs

Increase with gate size

Increase with frequency

d) None

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Set

Q

Seat

No.

Q.1

1)

Max. Marks: 70

SLR-FM-191 Set Q Process in VHDL becomes active, when _____. a) change in clock statement b) there is a change in value of signal insensitivity list c) change in reset signal d) none of above In an entity statement buffer is _____ b) signal Port c) signal mode d) None Variable in VHDL is used in _____.

- 12) a) Process b) Procedure
 - c) Function d) All of above
- Which of the following is not VHDL object data? 13)
 - a) Signal b) Variable
 - c) Wire d) Constant
- 14) As per IEEE 1164 standard 'W' represents _
 - a) Forcing unknown

a) signal type

10)

11)

- **High Impedance** b)
- c) Weak unknown
- d) Weak '1'

Explain in bheirtunctional gate level vernication.	
ve any two of the following question.	12
Explain Xilinx Spartan 4000 FPGA architecture.	
Draw and explain the schematic arrangement for testing sequential circuits.	
Explain the different regions of operation of CMOS Inverter along with equations.	

W

d

Explain the CMOS noise margin in detail.

W3

Explain in brief functional gate level verification

d)

e)

Q.5

- - a)
 - Draw and explain the s b) circuits.

Solve any two of the follow Explain Xilinx Spartan

detecting all the faults in the path W2-b-d-f. WI W2

Write VHDL code for 8 bit serial in serial out shift register. c)

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Section – I

Q.4 Solve any four of the following question.

- Explain function block for CPLD. a)
- b)
- Draw and explain 3 input CMOS NAND gate. Explain path sensitizing. Determine the values of W1W2W3 and W4 for c)

Write a VHDL Code for 4x4 bit multiplier. Explain process statement in detail.

2) Figures to the right indicates full marks.

- c) Write a VHDL code for half adder and full adder.
- d) Explain data objects i.e. constant, signal, and variable in detail. e)

Q.3 Solve any two of the following question.

Solve any four of the following question.

Explain Data types of VHDL in detail.

Day & Date: Wednesday, 27-11-2019

Instructions: 1) All questions compulsory.

Time: 10:00 AM To 01:00 PM

- Explain different operators in detail. Write a short note of operator a)
- overloading.
- Write VHDL code for Mealy machine to detect sequence 101. b)

Section – II

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16

12

Max. Marks: 56

Seat No.

Q.2

a)

b)

c)

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		0 AM To 01:00 PM			
Instr	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.				
		Figures to the right indicates full marks.			
		MCQ/Objective Type Questions			
Dura	tion: 3	30 Minutes Marks: 14			
Q.1	Cho 1)	ose the correct alternatives from the options and rewrite the sentence. 14 Variable in VHDL is used in			
		a) Processb) Procedurec) Functiond) All of above			
	2)	Which of the following is not VHDL object data? a) Signal b) Variable c) Wire d) Constant			
	3)	As per IEEE 1164 standard 'W' represents a) Forcing unknown b) High Impedance c) Weak unknown d) Weak '1'			
	4)	The CPLD contains several PLD blocks anda) AND-OR arraysb) A language compilerc) Field programmable switchesd) A global interconnect matrix			
	5)	 Synthesis means a) Checking correctness of the Design b) Conversion of the Design to actual component c) Implement design into target technology d) None of Above 			
	6)	A single pattern that may be interpreted as a result of all the applied tests in testing is a) MIC b) PRBSG c) SIC d) Signature			
	7)	 The element in product term allocator that connect their input to one of their two or three outputs is a) product term OE b) Multiplexer c) programmable signal steering element d) None of these 			
	8)	The power dissipation of CMOS IC willa) Decrease with frequencyb) Increase with gate sizec) Decrease with gate sized) Increase with frequency			
	9)	CMOS logic consists of a) pull up network b) pull down network			

d)

. None of above

SLR-FM-191

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics** Engineering **VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Tin

Max. Marks: 70

Set R

- Set R 10) Which among the following is an output generated by synthesis process? a) Attributes and Library b) **RTL VHDL description** c) Circuit constraints d) Gate-level net list Which VHDL data type can only have value of '1' or '0'? 11) a) Signal b) bit c) Std-logic d) Integer In Moore circuits, the output depends on ____ 12) a) present state present state and past inputs b) c) inputs d) None Process in VHDL becomes active, when _____. 13) a) change in clock statement
 - b) there is a change in value of signal insensitivity list
 - c) change in reset signal
 - d) none of above

14) In an entity statement buffer is _____

- a) signal type
- c) signal mode
- b) signal Port

SLR-FM-191

d) None

Explain in brief functional gate level verification.	
ve any two of the following question. Explain Xilinx Spartan 4000 FPGA architecture. Draw and explain the schematic arrangement for testing sequential circuits. Explain the different regions of operation of CMOS Inverter along with equations.	12

Explain in brief function e)

Solve any two of the follo Q.5

c)

- **Explain Xilinx Spartar** a)
- Draw and explain the b) circuits.

- 2) Figures to the right indicates full marks. Section – I Solve any four of the following question. Explain Data types of VHDL in detail.
- a)
 - Write a VHDL Code for 4x4 bit multiplier. b)
 - Explain process statement in detail. c)
 - Write a VHDL code for half adder and full adder. d)
 - Explain data objects i.e. constant, signal, and variable in detail. e)

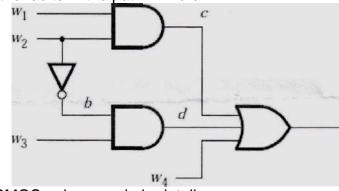
Q.3 Solve any two of the following question.

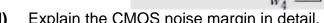
- Explain different operators in detail. Write a short note of operator a) overloading.
- Write VHDL code for Mealy machine to detect sequence 101. b)
- Write VHDL code for 8 bit serial in serial out shift register. c)

Section – II

Q.4 Solve any four of the following question.

- Explain function block for CPLD. a)
- Draw and explain 3 input CMOS NAND gate. b)
- Explain path sensitizing. Determine the values of W1W2W3 and W4 for c) detecting all the faults in the path W2-b-d-f.





Page **9** of **12**

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions compulsory.

Seat

No.

Q.2

Set R

Max. Marks: 56

16

12



book. MCQ/Objective Type Questions **Duration: 30 Minutes** Choose the correct alternatives from the options and rewrite the sentence. A single pattern that may be interpreted as a result of all the applied tests in testing is _____. PRBSG MIC b) SIC d) Signature The element in product term allocator that connect their input to one of their two or three outputs is _____. a) product term OE b) Multiplexer c) programmable signal steering element d) None of these The power dissipation of CMOS IC will a) Decrease with frequency Increase with gate size b) c) Decrease with gate size d) Increase with frequency CMOS logic consists of _____. a) pull up network b) pull down network c) both a) and b) None of above d) Which among the following is an output generated by synthesis process? a) Attributes and Library **RTL VHDL description** b) c) Circuit constraints d) Gate-level net list Which VHDL data type can only have value of '1' or '0'? a) Signal b) bit c) Std-logic d) Integer In Moore circuits, the output depends on _ a) present state b) present state and past inputs c) inputs d) None Process in VHDL becomes active, when _____.

8)

- a) change in clock statement
- b) there is a change in value of signal insensitivity list
- c) change in reset signal
- d) none of above
- 9) In an entity statement buffer is _____
 - a) signal type b) signal Port
 - c) signal mode d) None

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

- **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer
 - 2) Figures to the right indicates full marks.

Marks: 14

14

SLR-FM-191

Max. Marks: 70



Seat No.

Q.1

1)

2)

3)

4)

5)

6)

7)

a)

c)

10) Variable in VHDL is used in _____

- a) Process b) Procedure
- c) Function d) All of above
- 11) Which of the following is not VHDL object data?
 - a) Signal b) Variable
 - c) Wire d) Constant

12) As per IEEE 1164 standard 'W' represents ____

- a) Forcing unknownc) Weak unknown
- b) High Impedance
- d) Weak '1'
- 13) The CPLD contains several PLD blocks and _
 - a) AND-OR arrays
- b) A language compiler

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Set S

- c) Field programmable switches d) A global interconnect matrix
- 14) Synthesis means _____
 - a) Checking correctness of the Design
 - b) Conversion of the Design to actual component
 - c) Implement design into target technology
 - d) None of Above

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions compulsory.

2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- a) Explain Data types of VHDL in detail.
- Write a VHDL Code for 4x4 bit multiplier. b)
- Explain process statement in detail. c)
- Write a VHDL code for half adder and full adder. d)
- Explain data objects i.e. constant, signal, and variable in detail. e)

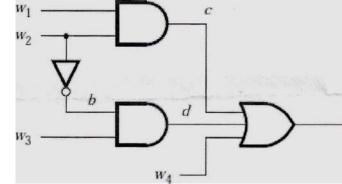
Q.3 Solve any two of the following question.

- Explain different operators in detail. Write a short note of operator a) overloading.
- Write VHDL code for Mealy machine to detect sequence 101. b)
- Write VHDL code for 8 bit serial in serial out shift register. c)

Section – II

Q.4 Solve any four of the following question.

- Explain function block for CPLD. a)
- Draw and explain 3 input CMOS NAND gate. b)
- Explain path sensitizing. Determine the values of W1W2W3 and W4 for c) detecting all the faults in the path W2-b-d-f.



- d) Explain the CMOS noise margin in detail.
- Explain in brief functional gate level verification. e)

Solve any two of the following question. Q.5

- Explain Xilinx Spartan 4000 FPGA architecture. a)
- Draw and explain the schematic arrangement for testing sequential b) circuits.
- Explain the different regions of operation of CMOS Inverter along with c) equations.

12

SLR-FM-191

Set

Max. Marks: 56



S

12

16

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The transmission, _____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 2) What does a microcomputer use to interface with other systems?
 - a) parallel interface b) analog-to-digital converter
 - c) digital-to-analog converter d) all of the above
- 3) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 4) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 5) A thermistor is ____
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 6) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 7) 'Star' and 'Delta' are types of _____
 - a) rotor winding
 - c) field winding

- b) stator winding
- d) Regulator winding

Max. Marks: 50

Marks: 10

Set I

- 8) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b)
 - c) their long life d) all of the above
- 9) The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 10) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque

that they produce whiter light

Set P

Seat No. T.E. (Part – II) (New) (CBCS)

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- b) Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.



Set

Max. Marks: 40



80

12

12

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 2) 'Star' and 'Delta' are types of _____
 - a) rotor winding b) stator winding
 - c) field winding d) Regulator winding
- The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours availableb)c) their long lifed)
 - ailable b) that they produce whiter light d) all of the above
- 4) The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 5) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 6) The transmission, _____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 7) What does a microcomputer use to interface with other systems?
 - a) parallel interfacec) digital-to-analog converter
- b) analog-to-digital converterd) all of the above

Max. Marks: 50

Marks: 10



- 8) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 9) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 10) A thermistor is _
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor

Seat <u>No.</u> T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Electronics Engineering AUTOMOTIVE ELECTRONICS

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- b) Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.

SLR-FM-192



08

Max. Marks: 40

08

12

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 2) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 3) The transmission, ____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 4) What does a microcomputer use to interface with other systems?
 - a) parallel interface b) analog-to-digital converter
 - c) digital-to-analog converter d) all of the above
- 5) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 6) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver

Max. Marks: 50

Set R

- 7) A thermistor is _____.
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 8) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 9) 'Star' and 'Delta' are types of _____
 - a) rotor winding

c) field winding

- b) stator winding
- d) Regulator winding
- 10) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b)
 - c) their long life

that they produce whiter light

SLR-FM-192

Set R

d) all of the above

Seat <u>No.</u> T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Electronics Engineering AUTOMOTIVE ELECTRONICS

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- b) Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.



08

Max. Marks: 40

08

12

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 2) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 3) A thermistor is _
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 4) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 5) 'Star' and 'Delta' are types of _____.
 - a) rotor winding b) stator winding
 - c) field winding d) Regulator winding
- 6) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b) that they produce whiter light
 - c) their long life d) all of the above
- The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100 c) 1.280 d) 1.500

Set

Max. Marks: 50



- 8) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 9) The transmission, ____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 10) What does a microcomputer use to interface with other systems?
 - a) parallel interface
- b) analog-to-digital converterd) all of the above
- c) digital-to-analog converter d) all of the

Seat <u>No.</u> T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Electronics Engineering AUTOMOTIVE ELECTRONICS Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- b) Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.



Max. Marks: 40

80

12

12

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ROBOTICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate maximum marks.
- 3) Assume suitable data wherever necessary.

Q.1 Attempt any four.

- a) What are the different key issues for locomotion in mobile robots?
- **b)** Explain spray painting application of robot with neat diagram.
- c) With neat sketch explain working of vision-based sensors.
- d) List down the types of end effectors. Discuss mechanical gripper with neat diagram.
- e) List different robot programming methods.

Q.2 Attempt any three.

- a) With neat sketch explain wheeled mobile robots.
- **b)** Describe the steps involved in preventive maintenance.
- c) Describe operations and functions of machine vision in detail.
- d) Classify robots based on control methods. Explain non servo controlled robots.

Max. Marks: 50

30

20

Set F

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS INSTRUMENTATION**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) In signal generators,
 - a) Energy is created
 - b) Energy is generated
 - c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency

Low frequencies

d) All the above

a) Gates

- 2) Period measurement is done in frequency meters for achieving high accuracy in the case b) Medium frequencies
 - a) High frequencies
 - d) c) DC
- 3) Which of the below is not a building block of frequency measurement?
 - Shift registers b)
 - c) Counters d) Schmitt trigger
- 4) is used to scale down the input gains so as to match the input signal level of the device.
 - a) Amplifier Attenuator b)
 - c) Converter d) Multiplexer
- The degree of closeness of a measurement compared to the expected 5) value is
 - a) measurement b) resolution
 - c) Precision d) accuracy
- Take odd man out speed, fidelity, sensitivity, lag 6)
 - Speed fidelity a) b) c) sensitivity d) lag
- is a measure of signal impurity. 7)
 - Fidelity a) b) distortion
 - c) Error d) power

The instrument used to study relationship of many signals at one glance 8)

- ___ analyzer. is
- logic b) FFT a)
- distortion c) Spectrum d)

Set Ρ

Max. Marks: 50

Marks: 10

Set P

- The ultrasonic transmitter uses ______ effect. 9) a) piezoelectric
 - reverse piezoelectric b)
 - c) load-cell d) hall
- Which of below is a part of typical DAS _____? a) transducer b) signal c 10)

 - c) Buffer

- signal conditioning all of these
- d)

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

80

12

12

ELECTRONICS INSTRUMENTATION						
		ite: Thursday, 28-11-2019 00 AM To 12:00 PM	Max. Marks: 50			
Instr	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.					
		2) Figures to the right indicates full ma3) Assume suitable data if necessary.	ırks.			
		MCQ/Objective Type	Questions			
Dura	tion: 2	20 Minutes	Marks: 10			
Q.1		oose the correct alternatives from the or				
	1)	Take odd man out - speed, fidelity, sens				
		a) Speed b) c) sensitivity d)	fidelity lag			
	2)	is a measure of signal impurity.	1 4 9			
	2)	a) Fidelity b)	distortion			
		c) Error d)	power			
	3)	The instrument used to study relationshi is analyzer.	o of many signals at one glance			
		a) logic b)	FFT			
		c) Spectrum d)	distortion			
	4)		effect.			
		a) piezoelectricb)c) load-celld)	reverse piezoelectric hall			
	5)	Which of below is a part of typical DAS _				
			signal conditioning			
	-)	c) Buffer d)	all of these			
	6)	 In signal generators, a) Energy is created b) Energy is generated c) Energy is converted from a simple d specific frequency d) All the above 	.c. source into a.c. energy at some			
	7)	Period measurement is done in frequence accuracy in the case a) High frequencies b)	Medium frequencies			
		c) DC d)	Low frequencies			
	8)	Which of the below is not a building bloc				
		a) Gates b)	Shift registers			
		c) Counters d)	Schmitt trigger			

Seat No.

SLR-FM-194

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

. .

Set

Q

9) _____ is used to scale down the input gains so as to match the input signal level of the device.

a) Amplifier

b) Attenuator

SLR-FM-194

Set Q

- c) Converter d) Multiplexer
- 10) The degree of closeness of a measurement compared to the expected value is _____.
 - a) measurement

b) resolution

c) Precision

d) accuracy

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

12

08

08

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS INSTRUMENTATION**

Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The ultrasonic transmitter uses effect.
 - a) piezoelectric b)
 - reverse piezoelectric c) load-cell d) hall
- Which of below is a part of typical DAS 2)
 - signal conditioning a) transducer b) Buffer c)
 - all of these d)

3) In signal generators,

- a) Energy is created
- b) Energy is generated
- c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency
- d) All the above
- 4) Period measurement is done in frequency meters for achieving high accuracy in the case _____
 - High frequencies a)
- b) Medium frequencies Low frequencies d)

?

- 5) Which of the below is not a building block of frequency measurement?
 - a) Gates Shift registers b)
 - c) Counters d) Schmitt trigger
- is used to scale down the input gains so as to match the input 6) signal level of the device.
 - a) Amplifier

DC

c)

- b) Attenuator
- c) Converter d) Multiplexer
- 7) The degree of closeness of a measurement compared to the expected value is
 - a) measurement b) resolution
 - d) c) Precision accuracy
- Take odd man out speed, fidelity, sensitivity, lag _____. 8)
 - a) Speed c) sensitivity

b) fidelity d) lag

Max. Marks: 50

Marks: 10

Set R



- 9) _____ is a measure of signal impurity.
 - a) Fidelity b)
 - c) Error d) power
- 10) The instrument used to study relationship of many signals at one glance
 - is _____ analyzer.
 - a) logic
 - c) Spectrum

- b) FFT
- d) distortion

distortion

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

12

08

08

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) Which of the below is not a building block of frequency measurement?
 - a) Gates
- b) Shift registersd) Schmitt trigger
- 2) _____ is used to scale down the input gains so as to match the input signal level of the device.
 - a) Amplifier

c) Counters

- b) Attenuator
- c) Converter d) Multiplexer
- The degree of closeness of a measurement compared to the expected value is ______.
 - a) measurement b) resolution
 - c) Precision d) accuracy
- 4) Take odd man out speed, fidelity, sensitivity, lag _____.
 - a) Speed b) fidelity
 - c) sensitivity d) lag
- 5) _____ is a measure of signal impurity.
 - a) Fidelity b) distortion c) Error d) power
- 6) The instrument used to study relationship of many signals at one glance is _____ analyzer.
 - a) logic b) FFT c) Spectrum d) distortion
- 7) The ultrasonic transmitter uses ______ effect.
 - a) piezoelectric b) reverse piezoelectric c) load-cell d) hall
- 8) Which of below is a part of typical DAS _____?
 - a) transducer b) signal conditioning
 - c) Buffer d) all of these

Set

S

Max. Marks: 50

Marks: 10

SLR-FM-194

- In signal generators, _____. 9)
 - a) Energy is created
 - b) Energy is generated
 - c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency
 - d) All the above
- 10) Period measurement is done in frequency meters for achieving high accuracy in the case _____.
 - a) High frequencies
- b) Medium frequencies

c) DC

- d) Low frequencies

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

08

12

12

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering PROGRAMMING IN VB NET**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

1) AGUI

a)

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- both (a) and (b) c)
- d) stands for Graphic Use Interaction
- 2) Which does the solution explorer not display? Form Properties
 - b) **Reference Folder**
 - Form File d) Assemble File c)

The member "clear" of the Array class that sets a range of array elements 3) to zero, false or null reference is a method.

- a) Shared Method b)
- c) Class d) Object
- 4) An object is composed of _____.
 - b) a) properties
 - c) Events d)
- The CancelButton property belongs to which object? 5)
 - Form a) b)
 - c) Label d) TextBox
- 6) Which is not a property of the Common control class?
 - a) Font b)
 - c) ForeColor BackColor d)
- VB.Net is _ . 7)
 - a) Platform Independent
 - c) Forward compatibale
- Which of the following property of Array class in VB.NET checks whether 8) the Array has a fixed size?

b)

d)

a) IsFixedSize c) Length

- b) IsStatic
- d) None of the above.

Compiler Language

Backward compatible

Max. Marks: 50

Marks: 10

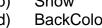
Set

Ρ

All of the above

Methods

- **Button**



- Show

9) Which of the following access modifier specifies that a function or Get accessor is an iterator?

- a) In b) Itera
- c) Key

b) Iterator d) Module **SLR-FM-195**

Set P

- d) Mo
- 10) _____ allows custom items of information about a program element to be stored with an assembly's metadata.
 - a) Properties

b) Attributes

c) Methods

d) Classes

Set P

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Max. Marks: 4 Time: 10:00 AM To 12:00 PM				
Instr	uctio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.		
Q.2	Expl	ain multiple catch block with example?	10	
Q.3	Expl	ain list box and combo box with example.	10	
		OR ain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10	
Q.4	Atte a)	mpt any four of the following questions. Explain while and do while loops in VB.net.	20	
	b)	Explain type casting in VB.NET.		
	c)	Explain User Defined function with example.		
	d)	Explain MSIL?		
	e)	Explain radio button control events.		

d)	stands for Graphic Use Interacti	on	
	iich does the solution explorer no Form Properties Form File	t disp b) d)	lay? Reference Folder Assemble File
	e member "clear" of the Array clas zero, false or null reference is a _ Shared Class		- .

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering PROGRAMMING IN VB NET**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10
 - Which is not a property of the Common control class? 1)
 - a) Font
 - c) ForeColor
 - 2) VB.Net is
 - a) Platform Independent
 - c) Forward compatibale
 - Which of the following property of Array class in VB.NET checks whether 3) the Array has a fixed size?

b)

d)

- a) IsFixedSize b) IsStatic
 - c) Length d)
- 4) Which of the following access modifier specifies that a function or Get accessor is an iterator?
 - b) Iterator a) In d) Module
 - c) Key
- _ allows custom items of information about a program element to be 5) stored with an assembly's metadata.
 - a) Properties b) Attributes
 - c) Methods d) Classes
- 6) AGUI

8)

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- c) both (a) and (b)
- d) stands for Grag
- Which does the so 7)
 - a) Form Propertie
 - Form File C)

Compiler Language Backward compatible

- None of the above.



Max. Marks: 50

Marks: 10



- b) Show
- d) BackColor

SLR-FM-195 Set Q

- 9) An object is composed of _____.
 - a) properties c) Events
- b) Methods
- d) All of the above
- 10) The CancelButton property belongs to which object?
 - a) Form
 - c) Label

- b) Button
- d) TextBox

Set Q

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Max. Marks: 40 Time: 10:00 AM To 12:00 PM				
Instr	uctio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.		
Q.2	Expl	ain multiple catch block with example?	10	
Q.3	Expl	ain list box and combo box with example.	10	
		OR ain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10	
Q.4	Atte a)	mpt any four of the following questions. Explain while and do while loops in VB.net.	20	
	b)	Explain type casting in VB.NET.		
	c)	Explain User Defined function with example.		
	d)	Explain MSIL?		
	e)	Explain radio button control events.		

	book.	snould L	be solved in first 20 minutes in ansi			
	2) Figures to the right indicate	full marl	KS.			
	MCQ/Objective	Type	Questions			
ion: 2	20 Minutes	i ype v	Marks			
Cho 1)	ose the correct alternatives from the options and rewrite the sentence. Which of the following access modifier specifies that a function or Get accessor is an iterator?					
	a) In c) Key	b) d)	Iterator Module			
2)	allows custom items of information about a program element to be stored with an assembly's metadata.					
	a) Properties c) Methods	b) d)	Attributes Classes			
3)	AGUI a) uses buttons, menus, and icons b) should be easy for a user to manipulate c) both (a) and (b) d) stands for Graphic Use Interaction					
4)	Which does the solution explorer a) Form Properties c) Form File	not disp b) d)	lay? Reference Folder Assemble File			
5)	The member "clear" of the Array of to zero, false or null reference is a a) Shared c) Class	a				
6)	An object is composed of a) properties c) Events	- b) d)	Methods All of the above			
7)	The CancelButton property belon a) Form c) Label	gs to wł b) d)	nich object? Button TextBox			
8)	Which is not a property of the Co a) Font	mmon c b)	ontrol class? Show			

Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Marks: 10

10

SLR-FM-195

No.

Duration:

Q.1

Seat

4)

- 5) array elements
- 6)
- 7)
- 8)

 - c) ForeColor d) BackColor
- 9) VB.Net is ___ ____.
 - a) Platform Independent c) Forward compatibale
- **Compiler Language** b)
- Backward compatible d)

- Max. Marks: 50
- Set R



- Which of the following property of Array class in VB.NET checks whetherthe Array has a fixed size?a) IsFixedSizeb) IsStatic 10)

 - c) Length

- d) None of the above.

Set R

Seat	
No.	

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Max. Mar Time: 10:00 AM To 12:00 PM				
Instructions: 1) Attempt all the questions. 2) Figures to the right indicate full marks.				
Q.2	Expl	lain multiple catch block with example?	10	
Q.3	Expl	lain list box and combo box with example.	10	
	OR Explain single dimensional array in VB.NET. Write a program to implement 10 bubble sort.			
Q.4	Atte a)	mpt any four of the following questions. Explain while and do while loops in VB.net.	20	
	b)	Explain type casting in VB.NET.		
	c)	Explain User Defined function with example.		
	d)	Explain MSIL?		
	e)	Explain radio button control events.		

C)	Events	d)	All of the above		
The a) c)	e CancelButton property belongs Form Label	to wh b) d)	ich object? Button TextBox		
Wh a) c)	ich is not a property of the Comm Font ForeColor	ion co b) d)	ontrol class? Show BackColor		
a)	Net is Platform Independent Forward compatibale	b) d)	Compiler Language Backward compatible		
the	ich of the following property of Ar Array has a fixed size? IsFixedSize Length	ray cl b) d)	ass in VB.NET checks whether IsStatic None of the above.		
Which of the following access modifier specifies that a function or Get accessor is an iterator? a) In b) Iterator					
c)	Кеу	d)	Module		
allows custom items of information about a program element to be stored with an assembly's metadata. a) Properties b) Attributes					
C)	Methods	d)	Classes		

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

MCQ/Objective Type Questions

Electronics Engineering PROGRAMMING IN VB NET

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer

- The member "clear" of the Array class that sets a range of array elements 1)

2) Figures to the right indicate full marks.

- to zero, false or null reference is a method.
- a) Shared Method b)
- c) Class d) Object
- An object is composed of _____. 2)
 - a) properties b) Methods -.... ń
 - All of the above
- 3)
- 4)
- 5)
- 6)
- 7)
- 8)
 - C) Methods Classes u)

SLR-FM-195

Max. Marks: 50

Set S

Seat No.

Day & Date: Thursday, 28-11-2019

book.

Time: 10:00 AM To 12:00 PM

Duration: 20 Minutes

Marks: 10

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

SLR-FM-195 Set S

9) AGUI _____.

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- c) both (a) and (b)
- d) stands for Graphic Use Interaction
- 10) Which does the solution explorer not display?a) Form Propertiesb) Ref
 - b) Reference Folder
 - c) Form File
- d) Assemble File

Seat No.

Set S

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

-	Day & Date: Thursday, 28-11-2019 Max. Ma Time: 10:00 AM To 12:00 PM			
Instructions: 1) Attempt all the questions. 2) Figures to the right indicate full marks.				
Q.2	Expl	ain multiple catch block with example?	10	0
Q.3	Expl	ain list box and combo box with example.	10	0
OR				
	Explain single dimensional array in VB.NET. Write a program to implement bubble sort.			0
Q.4	Atte a)	mpt any four of the following questions. Explain while and do while loops in VB.net.	20	0
	b)	Explain type casting in VB.NET.		
	c)	Explain User Defined function with example.		
	d)	Explain MSIL?		
	e)	Explain radio button control events.		

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS					
	Day & Date: Friday, 22-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM				
Instructio	ions: 1) Q. No. 1 is compulsory and should be solved in book.2) Figures to the right indicate full marks.	first 30 minutes in answer			
	3) Assume suitable data if necessary.				
Duration:	mCQ/Objective Type Questions	S Marks: 14			
	noose the correct alternatives from the options and r				
	entence.				
2)	 The time required to create a new thread in an existing a) greater than the time required to create a new process b) less than the time required to create a new process c) equal to the time required to create a new process d) none of the mentioned 	rocess ess			
3)	a) increase CPU utilization b) decrease	CPU utilization			
4)	A situation where several processes access and man data concurrently and the outcome of the execution of particular order in which access takes place is called a) data consistency b) race cond c) Aging d) Starvation	depends on the I ition			
5)	ensure that a circular wait condition can never exist.	orage state			
6)	a) Deadlocks b) not deadlo	ocks le mentioned			
7)	· · · · · · · · · · · · · · · · · · ·	es atleast two eceive message send message			
8)	a) physical address b) absolute a				

Set P

- 9) The address of a page table in memory is pointed by .
 - a) stack pointer

b) page table base register

- c) page register
- ____ is the concept in which a process is copied into main memory 10) from the secondary memory according to the requirement.

d)

- b) Demand paging a) Paging Swapping
- c) Segmentation d)
- _____ is a unique tag, usually a number, identifies the file within the file 11) system.
 - a) File identifier

- b) File name
- None of the mentioned d) c) File type
- The data-in register of I/O port is _____. 12)
 - a) Read by host to get input
 - b) Read by controller to get input
 - c) Written by host to send output
 - d) Written by host to start a command
- The operating system keeps a small table containing information about all 13) open files called
 - a) system table
 - b) open-file table c) file table d) directory table
- 14) If a higher priority process arrives and wants service, the memory manager can swap out the lower priority process to execute the higher priority process. When the higher priority process finishes, the lower priority process is swapped back in and continues execution. This variant of swapping is sometimes called
 - a) priority swapping
- b) pull out, push in

c) roll out, roll in

none of the mentioned d)

- program counter
- SLR-FM-196

Set

Set

Max. Marks: 56

Seat No.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is operating system? Explain the different services provided by operating system.
- **b)** Explain the multiprogramming operating system.
- c) What is a process? Describe the different states of a process state diagram.
- d) Write a short note on critical section problem.
- e) Describe the First Come First Serve scheduling algorithm with an example.

Q.3 Attempt any two.

- a) What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented?
- **b)** What is a scheduler? Describe long term scheduler, short term scheduler and medium term scheduler.
- c) Consider four processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

- i) How will these processes be scheduled according to FCFS and Round Robin scheduling algorithm with a quantum of 3 ms?
- ii) Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt any four.

- a) Explain the different file attributes.
- **b)** What is fragmentation? Explain different types of fragmentation with neat diagram.
- c) Draw and explain kernel I/O subsystem.
- d) Explain demand paging in detail.
- e) For the page reference string.
 - 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 Calculate the page faults applying the FIFO page replacement algorithm for a memory with three frames

16

12



Q.5 Attempt any two.

- a) Why page replacement is needed? Explain LRU and Optimal page replacement algorithms with the help of suitable examples.
- **b)** Define paging. Explain paging hardware implementation.
- c) Explain how swapping mechanism is useful for the multiprogramming operating system.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering OPERATING SYSTEMS**

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer	
book.	

- Figures to the right indicate full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- Which one of the following is the address generated by CPU? 1) a) physical address
 - b) absolute address
 - d) none of the mentioned

2) The address of a page table in memory is pointed by _____

- page table base register a) stack pointer b)
- c) page register d) program counter
- _ is the concept in which a process is copied into main memory 3) from the secondary memory according to the requirement. b) Demand paging
 - a) Paging

c) logical address

- c) Segmentation d) Swapping
- is a unique tag, usually a number, identifies the file within the file 4) system. File name
 - a) File identifier b)
 - c) File type d) None of the mentioned
- 5) The data-in register of I/O port is _____.
 - a) Read by host to get input
 - b) Read by controller to get input
 - c) Written by host to send output
 - d) Written by host to start a command
- 6) The operating system keeps a small table containing information about all open files called
 - open-file table a) system table b)
 - c) file table d) directory table
- 7) If a higher priority process arrives and wants service, the memory manager can swap out the lower priority process to execute the higher priority process. When the higher priority process finishes, the lower priority process is swapped back in and continues execution. This variant of swapping is sometimes called
 - priority swapping b) a)
 - c) roll out, roll in

- pull out, push in
- d) none of the mentioned

Set Q

Max. Marks: 70

SLR-FM-196

Marks: 14

			Set	
	ich of the following is not the stat New Waiting	e of a b) d)	•	
a) b) c)	e time required to create a new th greater than the time required to less than the time required to cr equal to the time required to cre none of the mentioned	o crea eate a	te a new process a new process	
a)	neduling is done so as to increase CPU utilization keep the CPU more idle	,		
A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called a) data consistency b) race condition c) Aging d) Starvation				
ens a)	eadlock avoidance algorithm dyn sure that a circular wait condition resource allocation state operating system	can n	ever exist.	
	unsafe states are Deadlocks	b)	not deadlocks	

All 13)

8)

9)

10)

11)

12)

- a) Deadlocks
- c) Fatal d) none of the mentioned
- An Inter process communication (IPC) facility provides atleast two 14) operations _ .
 - a) write & delete message
 - c) send & delete message
- b) delete & receive message

SLR-FM-196

Q

receive & send message d)

Set C

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is operating system? Explain the different services provided by operating system.
- **b)** Explain the multiprogramming operating system.
- c) What is a process? Describe the different states of a process state diagram.
- d) Write a short note on critical section problem.
- e) Describe the First Come First Serve scheduling algorithm with an example.

Q.3 Attempt any two.

- a) What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented?
- **b)** What is a scheduler? Describe long term scheduler, short term scheduler and medium term scheduler.
- c) Consider four processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

- i) How will these processes be scheduled according to FCFS and Round Robin scheduling algorithm with a quantum of 3 ms?
- ii) Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt any four.

- a) Explain the different file attributes.
- **b)** What is fragmentation? Explain different types of fragmentation with neat diagram.
- c) Draw and explain kernel I/O subsystem.
- d) Explain demand paging in detail.
- e) For the page reference string.
 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
 Calculate the page faults applying the FIFO page replacement algorithm for a memory with three frames

Max. Marks: 56

12

16



Q.5 Attempt any two.

- a) Why page replacement is needed? Explain LRU and Optimal page replacement algorithms with the help of suitable examples.
- b) Define paging. Explain paging hardware implementation.
- c) Explain how swapping mechanism is useful for the multiprogramming operating system.

Set |

Max. Marks: 70

Marks: 14

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Duration: 30 Minutes

Seat

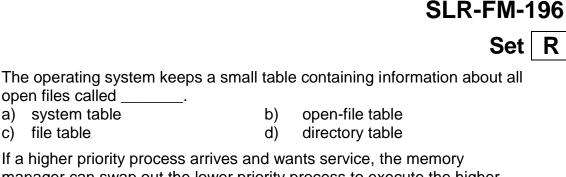
No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options and rewrite the 14 sentence. A deadlock avoidance algorithm dynamically examines the _____ to 1) ensure that a circular wait condition can never exist. a) resource allocation state system storage state b) c) operating system d) resources 2) All unsafe states are . a) Deadlocks b) not deadlocks c) Fatal d) none of the mentioned An Inter process communication (IPC) facility provides atleast two 3) operations ____ a) write & delete message delete & receive message b) c) send & delete message d) receive & send message Which one of the following is the address generated by CPU? 4) a) physical address absolute address b) c) logical address d) none of the mentioned The address of a page table in memory is pointed by ____ 5) page table base register a) stack pointer b) program counter c) page register d) _ is the concept in which a process is copied into main memory 6) from the secondary memory according to the requirement. a) Paging b) Demand paging c) Segmentation d) Swapping 7) is a unique tag, usually a number, identifies the file within the file system. a) File identifier File name b) c) File type d) None of the mentioned The data-in register of I/O port is _____. 8) a) Read by host to get input b) Read by controller to get input c) Written by host to send output d) Written by host to start a command



10) If a higher priority process arrives and wants service, the memory manager can swap out the lower priority process to execute the higher priority process. When the higher priority process finishes, the lower priority process is swapped back in and continues execution. This variant of swapping is sometimes called _

a) priority swapping

open files called a) system table

c) file table

9)

b) pull out, push in

Old

- c) roll out, roll in d) none of the mentioned
- 11) Which of the following is not the state of a process?
 - a) New
 - c) Waiting d) Running
- 12) The time required to create a new thread in an existing process is _____.

b)

- a) greater than the time required to create a new process
- b) less than the time required to create a new process
- c) equal to the time required to create a new process
- d) none of the mentioned

13) Scheduling is done so as to

- increase CPU utilization a) keep the CPU more idle C)
- decrease CPU utilization b) d) None of the mentioned
- 14) A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called
 - a) data consistency
- race condition b)

c) Aging

d) Starvation

Set | F

Max. Marks: 56

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is operating system? Explain the different services provided by operating system.
- **b)** Explain the multiprogramming operating system.
- c) What is a process? Describe the different states of a process state diagram.
- d) Write a short note on critical section problem.
- e) Describe the First Come First Serve scheduling algorithm with an example.

Q.3 Attempt any two.

- a) What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented?
- **b)** What is a scheduler? Describe long term scheduler, short term scheduler and medium term scheduler.
- c) Consider four processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

- i) How will these processes be scheduled according to FCFS and Round Robin scheduling algorithm with a quantum of 3 ms?
- ii) Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt any four.

- a) Explain the different file attributes.
- **b)** What is fragmentation? Explain different types of fragmentation with neat diagram.
- c) Draw and explain kernel I/O subsystem.
- d) Explain demand paging in detail.
- e) For the page reference string.
 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
 Calculate the page faults applying the FIFO page replacement algorithm for a memory with three frames

16

12



Q.5 Attempt any two.

- a) Why page replacement is needed? Explain LRU and Optimal page replacement algorithms with the help of suitable examples.
- b) Define paging. Explain paging hardware implementation.
- c) Explain how swapping mechanism is useful for the multiprogramming operating system.

Set 3

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1

sentence.
1) ______ is the concept in which a process is copied into main memory

from the secondary memory according to the requirement.

Choose the correct alternatives from the options and rewrite the

- a) Paging b)
- c) Segmentation d) Swapping
- _____ is a unique tag, usually a number, identifies the file within the file system.

b)

Demand paging

File name

- a) File identifier
 - c) File type d) None of the mentioned
- 3) The data-in register of I/O port is _____
 - a) Read by host to get input
 - b) Read by controller to get input
 - c) Written by host to send output
 - d) Written by host to start a command

4) The operating system keeps a small table containing information about all open files called _____.

- a) system table b) open-file table
- c) file table d) directory table
- 5) If a higher priority process arrives and wants service, the memory manager can swap out the lower priority process to execute the higher priority process. When the higher priority process finishes, the lower priority process is swapped back in and continues execution. This variant of swapping is sometimes called _____.
 - a) priority swapping b) pull out, push in
 - c) roll out, roll in d) none of the mentioned
- 6) Which of the following is not the state of a process?
 - a) New c) Waiting

- b) Old
- d) Running

Max. Marks: 70

Marks: 14

	SLR-FM-19	96
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7)	 The time required to create a new thread in an existing process is a) greater than the time required to create a new process b) less than the time required to create a new process c) equal to the time required to create a new process d) none of the mentioned 	
8)	Scheduling is done so as toa) increase CPU utilizationb) decrease CPU utilizationc) keep the CPU more idled) None of the mentioned	
9)	 A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called a) data consistency b) race condition c) Aging d) Starvation 	
10)	 A deadlock avoidance algorithm dynamically examines the to ensure that a circular wait condition can never exist. a) resource allocation state b) system storage state c) operating system d) resources 	
11)	All unsafe states area) Deadlocksb) not deadlocksc) Fatald) none of the mentioned	
12)	 An Inter process communication (IPC) facility provides atleast two operations a) write & delete message b) delete & receive message c) send & delete message d) receive & send message 	
13)	Which one of the following is the address generated by CPU?a) physical addressb) absolute addressc) logical addressd) none of the mentioned	
14)	The address of a page table in memory is pointed bya) stack pointerb) page table base registerc) page registerd) program counter	

Max. Marks: 56

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is operating system? Explain the different services provided by operating system.
- **b)** Explain the multiprogramming operating system.
- c) What is a process? Describe the different states of a process state diagram.
- d) Write a short note on critical section problem.
- e) Describe the First Come First Serve scheduling algorithm with an example.

Q.3 Attempt any two.

- a) What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented?
- **b)** What is a scheduler? Describe long term scheduler, short term scheduler and medium term scheduler.
- c) Consider four processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

- i) How will these processes be scheduled according to FCFS and Round Robin scheduling algorithm with a quantum of 3 ms?
- ii) Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt any four.

- a) Explain the different file attributes.
- **b)** What is fragmentation? Explain different types of fragmentation with neat diagram.
- c) Draw and explain kernel I/O subsystem.
- d) Explain demand paging in detail.
- e) For the page reference string.
 - 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 Calculate the page faults applying the FIFO page replacement algorithm for a memory with three frames

16

12



Q.5 Attempt any two.

- a) Why page replacement is needed? Explain LRU and Optimal page replacement algorithms with the help of suitable examples.
- **b)** Define paging. Explain paging hardware implementation.
- c) Explain how swapping mechanism is useful for the multiprogramming operating system.

Set T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering DIGITAL COMMUNICATION**

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks
- 3) Assume suitable data if necessary

MCQ/Objective Type Questions

Duration: 30 Minutes

c)

Seat

No.

Q.1 Choose the correct alternative form the option and rewrite the sentence. 14

- One of the disadvantages of PCM is _ 1)
 - It requires large bandwidth a)
 - Cannot be decoded easily
- b) Very high noise All of the above
- d)
- The error probability of a PCM is _____. 2)
 - Calculated using noise and inter symbol interference a)
 - b) Gaussian noise + error component due to inter symbol interference
 - Calculated using power spectral density c)
 - All of the above d)

3) The factors that cause quantizing error in delta modulation are _____. b) Granular noise

- Slope overload distortion a)
- c) White noise d) Both a and b are correct
- The number of voice channels that can be accommodated for 4) transmission in T1 carrier system is
 - a) 24 32 b) 64
 - C) 56 d)
- The mutual information ____ 5)
 - Is symmetric Always non negative b) a) None of the above
 - C) Both a and b are correct d)
- 6) The memory less source refers to _____.
 - No previous information a)
 - b) No message storage
 - Emitted message is independent of previous message c)
 - None of the above d)
- Impulse noise is caused due to ____ 7)
 - Switching transients b) Lightning strikes a) C)
 - Power line load switching All of the above d)
- For decoding in convolution coding, in a code tree, _____. 8)
 - Diverge upward when a bit is 0 and diverge downward when the bit a) is 1
 - Diverge downward when a bit is 0 and diverge upward when the bit b) is 1
 - Diverge left when a bit is 0 and diverge right when the bit is 1 c)
 - Diverge right when a bit is 0 and diverge left when the bit is 1 d)

Max. Marks: 70

Marks: 14

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	SLR-FM-197
	Set P
9)	Parity bit coding may not be used for a) Error in more than single bit b) Which bit is in error c) Both a & b d) None of the above
10)	$ \begin{array}{ll} \mbox{For hamming distance } d_{min} \mbox{ and number of errors } D, \mbox{ the condition for receiving invalid codeword is } \label{eq:alpha} \\ \mbox{a)} & D \leq d_{min} + 1 & b) & D \leq d_{min} - 1 \\ \mbox{c)} & D \leq 1 - d_{min} & d) & D \leq d_{min} \\ \end{array} $
11)	The number of bits of data transmitted per second is calleda) Data signaling rateb) Modulation ratec) Codingd) None of the above
12)	 QPSK is a modulation scheme where each symbol consists of a) 4 bits b) 2 bits c) 1 bits d) M number of bits, depending upon the requirement
13)	The probability of error of DPSK is than that of BPSK. a) Higher b) Lower c) Same d) Not predictable
14)	Minimum shift keying is similar to

- Continuous phase frequency shift keying Binary phase shift keying Binary frequency shift keying QPSK a)
- b)
- C)
- d)

Seat No. T.E. (Part - II) (Old) (CGF

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section I

Q.2 Attempt any four of the following questions.

- a) What is information theory? How and why it is related to probability theory?
- **b)** Explain a PWM modulator using IC 555.
- C) Explain flat top and natural sampling. Which is better? Why?
- d) How Delta modulation is different from PCM?
- e) Verify the expression I(X;Y)=I(Y;X)

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- **b)** With suitable block diagram explain sigma delta modulator and demodulator.
- c) A zero memory source emits messages x1, x2with probabilities 0.8,0.2 resp. Find the optimum binary code for this source as well as for its 2nd and 3rd Order extension (i.e. N=2 & N=3). Determine code efficiency in each case.

Section –II

Q.4 Attempt any four of the following questions.

- a) Explain generation of ASK from baseband signal.
- **b)** Compare QPSK with OQPSK.
- c) Explain Matched Filter BPSK Detector.
- d) Explain frame synchronization.
- e) For message M = [O 1 O 1] and $g(x)=1+x+x^3$ show a systematic (7,4) cyclic code encoder circuit and stepwise encoding of M.

Q.5 Attempt any two of the following questions.

- a) Discuss with suitable example various synchronizations required in digital communication.
- **b)** The generation matrix for (6,3) block code is given below find all code vectors of this code.



What is the minimum distance between the code vectors? How many errors can be detected? How many errors can be correct?

c) With suitable signal space representation explain QAM.

Max. Marks: 56

12

16

12

16



Set

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering DIGITAL COMMUNICATION**

Day & Date: Saturday, 23-11-2019

Time: 10:00 AM To 01:00 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 - 2) Figures to the right indicates full marks
 - 3) Assume suitable data if necessary

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Marks: 14

14

- Q.1 Choose the correct alternative form the option and rewrite the sentence.
 - For decoding in convolution coding, in a code tree, _____. 1)
 - Diverge upward when a bit is 0 and diverge downward when the bit a) is 1
 - b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
 - c) Diverge left when a bit is 0 and diverge right when the bit is 1
 - Diverge right when a bit is 0 and diverge left when the bit is 1 d)

2) Parity bit coding may not be used for _

- Error in more than single bit Which bit is in error a) b)
- C) Both a & b None of the above d)
- For hamming distance d_{min} and number of errors D, the condition for 3) receiving invalid codeword is ____
 - b) a) $D \le d_{\min} + 1$ $D \le d_{min} - 1$
 - $D \leq d_{min}$ $D \le 1 - d_{\min}$ c) d)
- 4) The number of bits of data transmitted per second is called _____. Modulation rate
 - Data signaling rate a)
 - None of the above C) Coding d)

b)

- QPSK is a modulation scheme where each symbol consists of 5)
 - 4 bits a)
 - 2 bits b)
 - 1 bits c)
 - M number of bits, depending upon the requirement d)
- The probability of error of DPSK is _____ than that of BPSK. 6)
 - Higher a) b) Lower
 - Same d) Not predictable C)
- Minimum shift keying is similar to_ 7)
 - Continuous phase frequency shift keying a)
 - b) Binary phase shift keying
 - Binary frequency shift keying c)
 - d) QPSK



SLR-FM-197

Max. Marks: 70

				5e
8)	One a) c)	of the disadvantages of PCM is _ It requires large bandwidth Cannot be decoded easily	b)	
9)	a) b)	error probability of a PCM is Calculated using noise and inter Gaussian noise + error compone Calculated using power spectral All of the above	ent du	e to inter symbol interference
10)	The a) c)	factors that cause quantizing error Slope overload distortion White noise		Granular noise
11)		number of voice channels that ca smission in T1 carrier system is _ 24 56		accommodated for 32 64
12)	a)	mutual information Is symmetric Both a and b are correct	b) d)	Always non negative None of the above
13)	The a) b) c) d)	memory less source refers to No previous information No message storage Emitted message is independen		revious message

- None of the above d)
- 14)
- Impulse noise is caused due to _____a) Switching transientsc) Power line load switching b) Lightning strikes All of the above d)

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SLR-FM-197

Set Q

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering DIGITAL COMMUNICATION**

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section I

Q.2 Attempt any four of the following questions.

- What is information theory? How and why it is related to probability a) theorv?
- Explain a PWM modulator using IC 555. b)
- Explain flat top and natural sampling. Which is better? Why? C)
- How Delta modulation is different from PCM? d)
- Verify the expression I(X;Y)=I(Y;X)e)

Attempt any two of the following questions. Q.3

- Compare PCM, DPCM, DM and ADM. a)
- With suitable block diagram explain sigma delta modulator and b) demodulator.
- A zero memory source emits messages x1, x2with probabilities 0.8,0.2 C) resp. Find the optimum binary code for this source as well as for its 2nd and 3rd Order extension (i.e. N=2 & N=3). Determine code efficiency in each case.

Section -II

Q.4 Attempt any four of the following questions.

- Explain generation of ASK from baseband signal. a)
- Compare QPSK with OQPSK. b)
- Explain Matched Filter BPSK Detector. C)
- d) Explain frame synchronization.
- For message M = [O1O1] and $g(x)=1+x+x^3$ show a systematic (7.4) e) cyclic code encoder circuit and stepwise encoding of M.

Q.5 Attempt any two of the following questions.

- Discuss with suitable example various synchronizations required in a) digital communication.
- The generation matrix for (6,3) block code is given below find all code b) vectors of this code.



What is the minimum distance between the code vectors? How many errors can be detected? How many errors can be correct?

With suitable signal space representation explain QAM. c)

Max. Marks: 56

12

16

12

16



Set

Seat No.

Electronics Engineering DIGITAL COMMUNICATION Day & Date: Saturday, 23-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicates full marks 3) Assume suitable data if necessary **MCQ/Objective Type Questions Duration: 30 Minutes** Marks: 14 Q.1 Choose the correct alternative form the option and rewrite the sentence. The mutual information _____. 1) Is symmetric Always non negative a) b) Both a and b are correct None of the above d) C) 2) The memory less source refers to _____. No previous information a) b) No message storage Emitted message is independent of previous message c) None of the above d) Impulse noise is caused due to _____ 3) Switching transients Lightning strikes a) b) Power line load switching All of the above d) C) 4) For decoding in convolution coding, in a code tree, Diverge upward when a bit is 0 and diverge downward when the bit a) is 1 b) Diverge downward when a bit is 0 and diverge upward when the bit is 1 c) Diverge left when a bit is 0 and diverge right when the bit is 1 d) Diverge right when a bit is 0 and diverge left when the bit is 1 5) Parity bit coding may not be used for Error in more than single bit a) b) Which bit is in error Both a & b C) d) None of the above For hamming distance d_{min} and number of errors D, the condition for 6) receiving invalid codeword is _____ b) a) $D \le d_{\min} + 1$ $D \le d_{\min} - 1$ $D \le 1 - d_{\min}$ C) d) $D \leq d_{min}$

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019

- The number of bits of data transmitted per second is called _____. 7)
 - Data signaling rate b) Modulation rate a) Coding d) None of the above C)
- 8) QPSK is a modulation scheme where each symbol consists of _____.
 - a) 4 bits
 - 2 bits b)
 - 1 bits c)
 - M number of bits, depending upon the requirement d)

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14

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Seat No.



Set R

- 9) The probability of error of DPSK is _____ than that of BPSK.
 - Higher
 - c) Same d) Not predictable
- 10) Minimum shift keying is similar to____
 - a) Continuous phase frequency shift keying
 - b) Binary phase shift keying
 - c) Binary frequency shift keying
 - d) QPSK

a)

c)

- 11) One of the disadvantages of PCM is _____
 - a) It requires large bandwidth b) Very high noise
 - c) Cannot be decoded easily d) All of the above
- 12) The error probability of a PCM is _____
 - a) Calculated using noise and inter symbol interference
 - b) Gaussian noise + error component due to inter symbol interference

_.

b)

Lower

- c) Calculated using power spectral density
- d) All of the above

13) The factors that cause quantizing error in delta modulation are _____.

- a) Slope overload distortion
- b) Granular noise
 - White noised)Both a and b are correct
- 14) The number of voice channels that can be accommodated for transmission in T1 carrier system is _____.
 - a) 24 b) 32 c) 56 d) 64

Seat No. T.E. (Part - II) (Old) (CG

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section I

Q.2 Attempt any four of the following questions.

- a) What is information theory? How and why it is related to probability theory?
- b) Explain a PWM modulator using IC 555.
- C) Explain flat top and natural sampling. Which is better? Why?
- d) How Delta modulation is different from PCM?
- e) Verify the expression I(X;Y)=I(Y;X)

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- **b)** With suitable block diagram explain sigma delta modulator and demodulator.
- c) A zero memory source emits messages x1, x2with probabilities 0.8,0.2 resp. Find the optimum binary code for this source as well as for its 2nd and 3rd Order extension (i.e. N=2 & N=3). Determine code efficiency in each case.

Section –II

Q.4 Attempt any four of the following questions.

- a) Explain generation of ASK from baseband signal.
- b) Compare QPSK with OQPSK.
- c) Explain Matched Filter BPSK Detector.
- d) Explain frame synchronization.
- e) For message M = [O 1 O 1] and $g(x)=1+x+x^3$ show a systematic (7,4) cyclic code encoder circuit and stepwise encoding of M.

Q.5 Attempt any two of the following questions.

- a) Discuss with suitable example various synchronizations required in digital communication.
- **b)** The generation matrix for (6,3) block code is given below find all code vectors of this code.



What is the minimum distance between the code vectors? How many errors can be detected? How many errors can be correct?

c) With suitable signal space representation explain QAM.

Max. Marks: 56

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12

16

12



T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019					
Electronics Engineering DIGITAL COMMUNICATION					
Day & Date: Saturday, 23-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM					
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer					
book. 2) Figures to the right indicates full marks 3) Assume suitable data if necessary					
MCQ/Objective Type Questions					
Duration: 30 Minutes Marks: 14					
Q.1 Cho 1)	ose the correct alternative form the option and rewrite the sentence.14For hamming distance dmin and number of errors D, the condition for receiving invalid codeword is14				
	$ \begin{array}{ll} \text{a)} & D \leq d_{\min} + 1 & \text{b)} & D \leq d_{\min} - 1 \\ \text{c)} & D \leq 1 - d_{\min} & \text{d)} & D \leq d_{\min} \end{array} $				
2)	The number of bits of data transmitted per second is calleda) Data signaling rateb) Modulation ratec) Codingd) None of the above				
3)	 QPSK is a modulation scheme where each symbol consists of a) 4 bits b) 2 bits c) 1 bits d) M number of bits, depending upon the requirement 				
4)	The probability of error of DPSK is than that of BPSK. a) Higher b) Lower c) Same d) Not predictable				
5)	 Minimum shift keying is similar to a) Continuous phase frequency shift keying b) Binary phase shift keying c) Binary frequency shift keying d) QPSK 				
6)	One of the disadvantages of PCM is a) It requires large bandwidth b) Very high noise c) Cannot be decoded easily d) All of the above				
7)	 The error probability of a PCM is a) Calculated using noise and inter symbol interference b) Gaussian noise + error component due to inter symbol interference c) Calculated using power spectral density d) All of the above 				
8)	The factors that cause quantizing error in delta modulation area)Slope overload distortionb)Granular noisec)White noised)Both a and b are correct				

Seat

No.

SLR-FM-197

Set S

9) The number of voice channels that can be accommodated for transmission in T1 carrier system is _____.

- a) 24 b) 32 c) 56 d) 64
- 10) The mutual information ____
 - a) Is symmetric b)
 - c) Both a and b are correct d)
- 11) The memory less source refers to _____
 - a) No previous information
 - b) No message storage
 - c) Emitted message is independent of previous message
 - d) None of the above

C)

- 12) Impulse noise is caused due to _____
 - a) Switching transients
 - Power line load switching d) All of the above
- 13) For decoding in convolution coding, in a code tree, _____.
 - a) Diverge upward when a bit is 0 and diverge downward when the bit is 1

b)

- b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
- c) Diverge left when a bit is 0 and diverge right when the bit is 1
- d) Diverge right when a bit is 0 and diverge left when the bit is 1
- 14) Parity bit coding may not be used for _
 - a) Error in more than single bit b) Which bit is in error
 - c) Both a & b d) None of the above

Page **11** of **12**

Set 3

Always non negative

None of the above

Lightning strikes

T.E. (Part - II) (Old) (CGPA) E

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section I

Q.2 Attempt any four of the following questions.

- a) What is information theory? How and why it is related to probability theory?
- b) Explain a PWM modulator using IC 555.
- C) Explain flat top and natural sampling. Which is better? Why?
- d) How Delta modulation is different from PCM?
- e) Verify the expression I(X;Y)=I(Y;X)

Q.3 Attempt any two of the following questions.

- a) Compare PCM, DPCM, DM and ADM.
- **b)** With suitable block diagram explain sigma delta modulator and demodulator.
- c) A zero memory source emits messages x1, x2with probabilities 0.8,0.2 resp. Find the optimum binary code for this source as well as for its 2nd and 3rd Order extension (i.e. N=2 & N=3). Determine code efficiency in each case.

Section –II

Q.4 Attempt any four of the following questions.

- a) Explain generation of ASK from baseband signal.
- b) Compare QPSK with OQPSK.
- c) Explain Matched Filter BPSK Detector.
- d) Explain frame synchronization.
- e) For message M = [O 1 O 1] and $g(x)=1+x+x^3$ show a systematic (7,4) cyclic code encoder circuit and stepwise encoding of M.

Q.5 Attempt any two of the following questions.

- a) Discuss with suitable example various synchronizations required in digital communication.
- **b)** The generation matrix for (6,3) block code is given below find all code vectors of this code.



What is the minimum distance between the code vectors? How many errors can be detected? How many errors can be correct?

c) With suitable signal space representation explain QAM.

Max. Marks: 56

12

16

12

16



Set

Seat No.

book. 2) Figures to the right indicate full marks. 3) Assume suitable data wherever necessary. MCQ/Objective Type Questions Choose the correct alternatives from the options and rewrite the sentence. 8051 has _____ parallel I/O ports. 2 b) 3 a) 4 c) d) 5 How many timers are available in 8051? 2 b) 3 a) 5 c) d) 4 Which of the following instruction will move the number 10H to Accumulator? b) MOV A, 10H MOV A, #10H a) MOV A, P10 d) MOV A, @10H4 C) MOVC instruction uses following operands. PC only b) A and A + PC a) A and Ri + PC d) A and Ri + DPTR c) In 8051 which interrupt has highest priority? a) IE1 b) TF0 IE0 d) TF1 c) To transfer a data serially by using TXD pin of 8051, the data must be placed in a) SCON b) SMOD SBUF d) PCON C)

Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering MICROCONTROLLERS**

Duration: 30 Minutes

Day & Date: Monday, 25-11-2019

Seat

No.

Q.1 1)

2)

3)

4)

- 5)
- 6)
- 7) What is the address range of SFR Register bank in 8051?
 - 00H-77H b) 40H-80H a)
 - d) 80H-FFH C) 80H-7FH
- The PIC 16F877 has on chip flash program memory. 8)
 - 4K x 8 bytes b) 4K x 14 words a) d) 8K x 14 words 8K x 8 bytes c)
- 9) The PIC 16F877 has _____ I/O ports.
 - 4 b) 5 a)
 - d) 3 6 c)
- The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack. 10)
 - 8, 13 b) 13, 8 a) C) 8, 12 d) 12,8

SLR-FM-198



Max. Marks: 70

Marks: 14

- Set P
- What is the address of the last location of on-chip flash program memory 11) for PIC 16F877? b) 1FFF h
 - a) 0FFF h FFFF h
 - d) 7FFF h
- The instruction "movlw D'200" loads the W register with _____. 12)
 - a) 200h b) C8h
 - d) 11011000 c) 8C h
- In PIC 16F877 the _____ module is with prescaler and postscaler. 13)
 - Timer 0 a)

Timer 1

Timer 2 b)

Timer 3

- d)
- The PIC 16F877 has _____ bytes on chip EEPROM data memory. 14)
 - 192 a)

C)

C)

368 C)

- b) 128
- d) 256

Seat	it l	Set P			
No.					
	T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS				
	Day & Date: Monday, 25-11-2019 Max. Marks: 56 Time: 10:00 AM To 01:00 PM Max. Marks: 56				
Instr	ructions: 1) All questions are compulsory.2) Figures to right indicate full marks.3) Assume suitable data whenever necessary.				
	Section – I				
Q.2	 Attempt any four of the following questions. a) Differentiate between microprocessor and microcontrol b) Write a program to add five BCD numbers. c) Discuss 8051 addressing modes with example. d) Draw and explain port structure in 8051. e) Explain modes of serial communication on 8051 	16 oller.			
Q.3	 a) Interface DAC 0808 to 8051. Write an ALP or C prograsquare wave if switch is pressed else generate triangu b) Explain interrupts in 8051 with their vector addresses, affected, and priorities. c) Interface LCD to 8051. Write an ALP or C program to second line. 	ılar wave. causes, flags			
Section – II					
Q.4	 Attempt any four of the following questions. a) Draw and explain memory organization in PIC 16F877 b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC c) Explain addressing modes in PIC 16F877. d) Write PIC program to clear memory location 20 h to 21 addressing mode. Also explain meaning of each used e) Explain operation of Timer 2 in PIC 16F877 	C. F h with indirect			
Q.5	 Attempt any two of the following question. a) Explain the following instructions with their syntax and 1) BTFSS 2) DECFSZ 3) RETLW 4) IORWF 	12 suitable example.			
	 b) How do you use the PORT D as PSP? Explain the difference and flags used in PSP communication. c) Interface DAC to PIC 16F877 and write a program to grave and triangular wave. 	-			

book. 2) Figures to the right indicate full marks. 3) Assume suitable data wherever necessary. MCQ/Objective Type Questions Marks: 14 The PIC 16F877 has _____ on chip flash program memory. 4K x 8 bytes b) 4K x 14 words a) d) 8K x 14 words 8K x 8 bytes C) The PIC 16F877 has _____ I/O ports. a) 4 b) 5 d) 3 C) 6 The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack. b) 13.8 a) 8.13 8, 12 d) 12.8 C) What is the address of the last location of on-chip flash program memory for PIC 16F877? a) 0FFF h b) 1FFF h FFFF h d) 7FFF h C) The instruction "movlw D'200" loads the W register with 200h a) b) C8h 8Ch d) 11011000 C) In PIC 16F877 the _____ module is with prescaler and postscaler. Timer 0 b) Timer 2 a) C) Timer 1 d) Timer 3 The PIC 16F877 has _____ bytes on chip EEPROM data memory. a) 192 b) 128 368 256 C) d) 8051 has _____ parallel I/O ports. a) 2 b) 3 4 d) 5 c)

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering MICROCONTROLLERS**

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)

7)

- 8)
- How many timers are available in 8051? 9)
 - a) 2 b) 3 5 d) 4 c)
- Which of the following instruction will move the number 10H to 10) Accumulator?
 - a) MOV A, #10H

C)

MOV A, P10

- b) MOV A, 10H
- d) MOV A, @10H4



Set | Q

Max. Marks: 70

Set Q

- 11) MOVC instruction uses following operands.
 - a) PC only
- b) A and A + PC
- c) A and Ri + PC d) A and Ri + DPTR
- 12) In 8051 which interrupt has highest priority?
 - a) IE1 b) TF0
 - c) IE0 d) TF1
- 13) To transfer a data serially by using TXD pin of 8051, the data must be placed in _____.
 - a) SCON b) SMOD
 - c) SBUF d) PCON
- 14) What is the address range of SFR Register bank in 8051?
 - a) 00H-77H
 - c) 80H-7FH

b) 40H-80H d) 80H-FFH

Set

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** MICROCONTROLLERS

Day & Date: Monday, 25-11-2019 Max. Marks: 56 Time: 10:00 AM To 01:00 PM Instructions: 1) All questions are compulsory. 2) Figures to right indicate full marks. 3) Assume suitable data whenever necessary. Section – I Q.2 Attempt any four of the following questions. 16 a) Differentiate between microprocessor and microcontroller. b) Write a program to add five BCD numbers. c) Discuss 8051 addressing modes with example. d) Draw and explain port structure in 8051. e) Explain modes of serial communication on 8051 Q.3 Attempt any two of the following questions. 12 a) Interface DAC 0808 to 8051. Write an ALP or C program to generate square wave if switch is pressed else generate triangular wave. b) Explain interrupts in 8051 with their vector addresses, causes, flags affected, and priorities. Interface LCD to 8051. Write an ALP or C program to display "OK" on c) second line. Section – II Q.4 Attempt any four of the following questions. 16 a) Draw and explain memory organization in PIC 16F877. b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC. c) Explain addressing modes in PIC 16F877. d) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions. Explain operation of Timer 2 in PIC 16F877 e) Q.5 Attempt any two of the following question. 12 a) Explain the following instructions with their syntax and suitable example. 1) BTFSS 2) DECFSZ 3) RETLW

- 4) IORWF
- b) How do you use the PORT D as PSP? Explain the different control signals and flags used in PSP communication.
- C) Interface DAC to PIC 16F877 and write a program to generate a square wave and triangular wave.

Seat No.

Sea No.	t	Set R			
T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering					
_		MICROCONTROLLERS			
	Day & Date: Monday, 25-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM				
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer					
book. 2) Figures to the right indicate full marks.					
	3) Assume suitable data wherever necessary.				
MCQ/Objective Type Questions					
Duration: 30 MinutesMarks: 14Q.1Choose the correct alternatives from the options and rewrite the sentence.14					
Q .1	1)	In 8051 which interrupt has highest priority?			
		a) IE1 b) TF0 c) IE0 d) TF1			
	2)	To transfer a data serially by using TXD pin of 8051, the data must be			
		placed in a) SCON b) SMOD			
		c) SBUF d) PCON			
	3)	What is the address range of SFR Register bank in 8051? a) 00H-77H b) 40H-80H			
		c) 80H-7FH d) 80H-FFH			
	4)	The PIC 16F877 has on chip flash program memory.			
		a) 4K x 8 bytes b) 4K x 14 words c) 8K x 8 bytes d) 8K x 14 words			
	5)	The PIC 16F877 has I/O ports.			
		a) 4 b) 5 c) 6 d) 3			
	6)	The PIC 16F877 has a level deep x bit wide hardware stack.			
		a) 8, 13 b) 13, 8 c) 8, 12 d) 12, 8			
	7)	What is the address of the last location of on-chip flash program memory			
		for PIC 16F877? a) 0FFF h b) 1FFF h			
		c) FFFF h d) 7FFF h			
	8)	The instruction "movlw D'200" loads the W register with a) 200h b) C8h			
		a) 200h b) C8h c) 8C h d) 11011000			
	9)	In PIC 16F877 the module is with prescaler and postscaler.			
		a) Timer 0 b) Timer 2 c) Timer 1 d) Timer 3			

- Set R
- The PIC 16F877 has _____ bytes on chip EEPROM data memory. 10)
 - a) 192 b) 128
 - 368 d) 256 C)
- 8051 has _____ parallel I/O ports. 11)
 - b) 3 a) 2
 - c) 4 d) 5

How many timers are available in 8051? 12)

- b) 3 a) 2
 - 5 c) d) 4
- 13) Which of the following instruction will move the number 10H to Accumulator? b) MOV A, 10H
 - MOV A, #10H a)
 - MOV A, P10 d) MOV A, @10H4 C)
- 14) MOVC instruction uses following operands.
 - b) A and A + PC a) PC only
 - A and Ri + PC d) A and Ri + DPTR c)

Sea		Set R
No.		
	T.E. (Part - II) (Old) (CGPA) Examination Nov/De Electronics Engineering MICROCONTROLLERS	ec-2019
	& Date: Monday, 25-11-2019 e: 10:00 AM To 01:00 PM	Max. Marks: 56
Instr	ructions: 1) All questions are compulsory.2) Figures to right indicate full marks.3) Assume suitable data whenever necessary.	
	Section – I	
Q.2	 Attempt any four of the following questions. a) Differentiate between microprocessor and microcontroller. b) Write a program to add five BCD numbers. c) Discuss 8051 addressing modes with example. d) Draw and explain port structure in 8051. e) Explain modes of serial communication on 8051 	16
Q.3	 a) Interface DAC 0808 to 8051. Write an ALP or C program to g square wave if switch is pressed else generate triangular way b) Explain interrupts in 8051 with their vector addresses, causes affected, and priorities. c) Interface LCD to 8051. Write an ALP or C program to display second line. 	ve. s, flags
	Section – II	
Q.4	 Attempt any four of the following questions. a) Draw and explain memory organization in PIC 16F877. b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC. c) Explain addressing modes in PIC 16F877. d) Write PIC program to clear memory location 20 h to 2F h with addressing mode. Also explain meaning of each used instruct e) Explain operation of Timer 2 in PIC 16F877 	
Q.5	 Attempt any two of the following question. a) Explain the following instructions with their syntax and suitab 1) BTFSS 2) DECFSZ 3) RETLW 4) IORWF 	12 le example.
	 b) How do you use the PORT D as PSP? Explain the different of and flags used in PSP communication. c) Interface DAC to PIC 16F877 and write a program to generate wave and triangular wave. 	

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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

MICROCONTROLLERS

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

a)

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack. 1)
 - 8, 13 b) 13.8 a) 8, 12 d) 12, 8 C)
- 2) What is the address of the last location of on-chip flash program memory for PIC 16F877?
 - a) 0FFF h b) 1FFF h
 - FFFF h d) 7FFF h c)
- The instruction "movlw D'200" loads the W register with . 3)
 - 200h b) C8h a)
 - d) 11011000 8C h C)
- In PIC 16F877 the _____ module is with prescaler and postscaler. 4)
 - Timer 0 b) Timer 2
 - c) Timer 1 d) Timer 3
- 5) The PIC 16F877 has _____ bytes on chip EEPROM data memory.
 - 192 b) 128 a) 368 256 c) d)
- 8051 has _____ parallel I/O ports. 6)
 - b) a) 2
 - c) 4 d) 5

How many timers are available in 8051? 7)

- a) 2 b) 3 5 4 c) d)
- Which of the following instruction will move the number 10H to 8) Accumulator?
 - MOV A, #10H b) MOV A, 10H a)
 - MOV A, P10 MOV A, @10H4 C) d)

9) MOVC instruction uses following operands.

- b) A and A + PC PC only a)
- A and Ri + PC d) A and Ri + DPTR c)
- In 8051 which interrupt has highest priority? 10)
 - a) IE1 b) TF0 c) IE0 d) TF1

Seat No.

Set

Max. Marks: 70

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3

Marks: 14



Set S

- 11) To transfer a data serially by using TXD pin of 8051, the data must be placed in _ ____.
 - a) SCON SBUF
- b) SMOD d) PCON
- 12) What is the address range of SFR Register bank in 8051?
 - 00H-77H b) 40H-80H
 - d) 80H-FFH C) 80H-7FH
- The PIC 16F877 has _____ on chip flash program memory. 13)
 - 4K x 8 bytes a)
- b) 4K x 14 words
- 8K x 8 bytes C)
- d) 8K x 14 words
- The PIC 16F877 has _____ I/O ports. 14)
 - a) 4
 - 6 C)

C)

a)

- b) 5
- d) 3

Seat No.		Set S			
	T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROCONTROLLERS				
	Date: Monday, 25-11-2019 Max. I 10:00 AM To 01:00 PM	Marks: 56			
Instru	 actions: 1) All questions are compulsory. 2) Figures to right indicate full marks. 3) Assume suitable data whenever necessary. 				
	Section – I				
	 Attempt any four of the following questions. a) Differentiate between microprocessor and microcontroller. b) Write a program to add five BCD numbers. c) Discuss 8051 addressing modes with example. d) Draw and explain port structure in 8051. e) Explain modes of serial communication on 8051 	16			
	 Attempt any two of the following questions. a) Interface DAC 0808 to 8051. Write an ALP or C program to generate square wave if switch is pressed else generate triangular wave. b) Explain interrupts in 8051 with their vector addresses, causes, flags affected, and priorities. c) Interface LCD to 8051. Write an ALP or C program to display "OK" on second line. 	12			
	Section – II				
	 Attempt any four of the following questions. a) Draw and explain memory organization in PIC 16F877. b) Explain W, FSR, INDF, PCL, PCLATH registers in PIC. c) Explain addressing modes in PIC 16F877. d) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions. e) Explain operation of Timer 2 in PIC 16F877 	16			
	 Attempt any two of the following question. a) Explain the following instructions with their syntax and suitable example 1) BTFSS 2) DECFSZ 3) RETLW 4) IORWF 				
	 b) How do you use the PORT D as PSP? Explain the different control sign and flags used in PSP communication. c) Interface DAC to PIC 16F877 and write a program to generate a square wave and triangular wave. 				

Dura	ation: 3	30 Minutes Marks: 14	
Q.1			
	1)	 To protect thyristor from large di/dt during turn on a) RC circuit is connected across it b) Inductor is connected in series with it c) diode is connected in series d) RC circuit with diode across it 	
	2)	Thyristor is a device.a) latchingb) bilateralc) latch proofd) voltage controlled	
	3)	 The type of commutation when the load is commutated by transferring its load current to another incoming thyristor is a) class A or load commutation b) class B or resonant commutation c) class C or complementary commutation d) class D or impulse commutation 	
	4)	The average load current supplied by a thyristor depends ona) firing angleb) firing frequencyc) magnitude of gate currentd) all above	
	5)	Average value of output voltage for single phase fully controlled bridge converter with inductive load when α is zero. a) $\frac{Vm}{\sqrt{2}}$ b) $\frac{2Vm}{\pi}$ c) $0.707Vm$ d) both a & c	
	6)	DIAC & TRIAC both area) AC switchb) DC switchc) Mechanical switchd) None of above	
	7)	The temperature coefficient of resistivity of an IGBT is a) Negative b) Positive c) Flat d) Both a& b	
	8)	The combined package of LED & photodiode is known as a) optocouper b) optoisolator c) opticaly coupled isolator d) all above	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INDUSTRIAL ELECTRONICS**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate maximum marks

MCQ/Objective Type Questions

SLR-FM-199

Set

Max. Marks: 70

Seat No.

Duration: 30 Minutes

Marks: 14

Set P

9) The UJT may be used as _____.

- a) A amplifier
- c) A rectifier d) None of the above
- 10) Which of the following PNPN device has two gate terminal?
 - a) SCS b) SUS
 - c) LASCR d) PUT
- 11) A SMPS operating at 20KHz to 100KHz range uses main switching power device _____.
 - a) SCR

Thyristor

c)

- b) Transistor
- d) MOSFET
- 12) The output voltage of buck converter is ____
 - a) Less than input b) Greater than input
 - c) Equal to input d) None of above
- 13) In _____, the heating is uniform throughout workpiece.
 - a) Dielectric heatingc) Resistance heating
- b) Induction heating

b) A sawtooth generator

- d) Infrared heating
- 14) In flyback converter, energy is transformed to transformer secondary _____.
 - a) during a time when transistor is OFF
 - b) during a time when transistor is ON
 - c) during a time when core is saturated
 - d) at all time

12

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions.

- Explain switching characteristics of thyristors during its turn on & turn off a) process.
- Explain working of Class C commutation. Sketch associated waveforms. b)
- A single phase semiconverter is to supply dc power in to load of 20Ω . If c) converter is supplied by 350V single phase, 50Hz AC supply and output voltage across load is 40% of maximum dc voltage.
 - 1) What is firing angle to be maintained for converter?
 - Calculate RMS out voltage. 2)
- Explain working of single phase dual converter for non circulating current d) mode.
- Sketch the cross sectional view of N channel E-MOSFET, explain its e) operation and characteristics.

Q.3 Attempt any two of the following questions.

- Explain following methods of over voltage protections circuits. a)
 - 1) Snubber circuits for dv/dt suppression
 - Non linear surge suppressor 2)
 - Electronic crowbar circuits 3)
- b) Explain the Single phase fully controlled bridge converter with inductive load. Derive an expression for average load voltage and RMS load voltage. Draw neat waveform for $\alpha = 60^{\circ}$
- With help of structural diagram explain operation and switching c) characteristics of GTO. And explain how GTO differ from conventional thyristor.

Section – II

Q.4 Attempt any four of the following questions.

- Explain PUT as a relaxation oscillator. Derive an expression for frequency a) of oscillation.
- b) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR.
- With suitable block diagram explain working of OFF line UPS. c)
- Explain working of automatic street lighting system. d)
- Explain working of burglar alarm system. e)

Attempt any two of the following questions. Q.5

- Explain microcontroller based firing scheme for single phase controlled a) converters with flow chart.
- Draw a neat block diagram of AC servo controlled voltage stabilizer and b) explain its working.
- Explain principle of Dielectric heating. Describe application of dielectric c) heating.

16

16

12

Set

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Seat No.

Seat No. T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 26-11-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

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- 2) Assume suitable data if required
- 3) Figures to the right indicate maximum marks

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

Q.1 Choose correct alternatives from the options and rewrite the sentences. The combined package of LED & photodiode is known as . 1)

optocouper a) c) opticaly coupled isolator

The UJT may be used as _____.

b) optoisolator

d) all above

- a) A amplifier b) A sawtooth generator c) A rectifier
 - d) None of the above
- Which of the following PNPN device has two gate terminal? 3)
 - b) SUS SCS a)
 - c) LASCR d) PUT
- A SMPS operating at 20KHz to 100KHz range uses main switching power 4) device
 - SCR a) Transistor b) MOSFET d)
 - c) Thyristor
- The output voltage of buck converter is 5)
 - a) Less than input Greater than input b) c) Equal to input
 - d) None of above
- In , the heating is uniform throughout workpiece. 6)
 - a) Dielectric heating b) Induction heating
 - d) Infrared heating c) Resistance heating

7) In flyback converter, energy is transformed to transformer secondary _____.

- during a time when transistor is OFF a)
- b) during a time when transistor is ON
- during a time when core is saturated C)
- at all time d)
- To protect thyristor from large $\frac{di}{dt}$ during turn on _____. 8)
 - RC circuit is connected across it a)
 - b) Inductor is connected in series with it
 - diode is connected in series c)
 - RC circuit with diode across it d)

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Max. Marks: 70

Marks: 14

14

9) Thyristor is a <u>device</u>.

- a) latching
- c) latch proof d) voltage controlled
- 10) The type of commutation when the load is commutated by transferring its load current to another incoming thyristor is _____.

b) bilateral

- a) class A or load commutation
- b) class B or resonant commutation
- c) class C or complementary commutation
- d) class D or impulse commutation

11) The average load current supplied by a thyristor depends on _____.

- a) firing angle b) firing frequency
- c) magnitude of gate current d) all above
- 12) Average value of output voltage for single phase fully controlled bridge converter with inductive load when α is zero.
 - a) $\frac{Vm}{\sqrt{2}}$ b)
 - c) 0.707*Vm* d) both a & c
- 13) DIAC & TRIAC both are _____.
 - a) AC switch b) DC switch
 - c) Mechanical switch d) None of above
- 14) The temperature coefficient of resistivity of an IGBT is _____.
 - a) Negative c) Flat
- b) Positive

2Vm

π

d) Both a& b



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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions.

- a) Explain switching characteristics of thyristors during its turn on & turn off process.
- **b)** Explain working of Class C commutation. Sketch associated waveforms.
- c) A single phase semiconverter is to supply dc power in to load of 20Ω. If converter is supplied by 350V single phase, 50Hz AC supply and output voltage across load is 40% of maximum dc voltage.
 - 1) What is firing angle to be maintained for converter?
 - 2) Calculate RMS out voltage.
- d) Explain working of single phase dual converter for non circulating current mode.
- e) Sketch the cross sectional view of N channel E-MOSFET, explain its operation and characteristics.

Q.3 Attempt any two of the following questions.

- a) Explain following methods of over voltage protections circuits.
 - 1) Snubber circuits for dv/dt suppression
 - 2) Non linear surge suppressor
 - 3) Electronic crowbar circuits
- b) Explain the Single phase fully controlled bridge converter with inductive load. Derive an expression for average load voltage and RMS load voltage. Draw neat waveform for $\alpha = 60^{\circ}$
- c) With help of structural diagram explain operation and switching characteristics of GTO. And explain how GTO differ from conventional thyristor.

Section – II

Q.4 Attempt any four of the following questions.

- a) Explain PUT as a relaxation oscillator. Derive an expression for frequency of oscillation.
- **b)** With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR.
- c) With suitable block diagram explain working of OFF line UPS.
- d) Explain working of automatic street lighting system.
- e) Explain working of burglar alarm system.

Q.5 Attempt any two of the following questions.

- a) Explain microcontroller based firing scheme for single phase controlled converters with flow chart.
- **b)** Draw a neat block diagram of AC servo controlled voltage stabilizer and explain its working.
- c) Explain principle of Dielectric heating. Describe application of dielectric heating.

Set

16

12

12

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Seat	
No.	

16

Instr	book.					
	2) Assume suitable data if required					
		3) Figures to the right indicate maximum marks				
		MCQ/Objective Type Questions				
Dura	tion: 3	30 Minutes Marks: 14				
Q.1	1) Average value of output voltage for single phase fully controlled bridge					
		converter with inductive load when α is zero. a) $\frac{Vm}{\sqrt{2}}$ b) $\frac{2Vm}{\pi}$				
		c) 0.707Vm d) both a & c				
	2)	DIAC & TRIAC both area) AC switchb) DC switchc) Mechanical switchd) None of above				
	3)	The temperature coefficient of resistivity of an IGBT isa) Negativeb) Positivec) Flatd) Both a& b				
	4)	The combined package of LED & photodiode is known asa) optocouperb) optoisolatorc) optically coupled isolatord) all above				
	5)	The UJT may be used asa) A amplifierb) A sawtooth generatorc) A rectifierd) None of the above				
	6)	Which of the following PNPN device has two gate terminal?a)SCSb)SUSc)LASCRd)PUT				
	7)	 A SMPS operating at 20KHz to 100KHz range uses main switching power device a) SCR b) Transistor c) Thyristor d) MOSFET 				
	8)	The output voltage of buck converter is a) Less than input b) Greater than input c) Equal to input d) None of above				

Electronics Engineering INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

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Max. Marks: 70

- Equal to input d) None of above C)
- ____, the heating is uniform throughout workpiece. 9) In _
 - Dielectric heating a) C)
- Induction heating b)
- Resistance heating d) Infrared heating

Set R

Set R

- 10) In flyback converter, energy is transformed to transformer secondary _____.
 - a) during a time when transistor is OFF
 - b) during a time when transistor is ON
 - c) during a time when core is saturated
 - d) at all time
- 11) To protect thyristor from large $\frac{di}{dt}$ during turn on _____.
 - a) RC circuit is connected across it
 - b) Inductor is connected in series with it
 - c) diode is connected in series
 - d) RC circuit with diode across it
- 12) Thyristor is a <u>device</u>.
 - a) latching

- b) bilateral
- c) latch proof
- d) voltage controlled
- 13) The type of commutation when the load is commutated by transferring its load current to another incoming thyristor is _____.
 - a) class A or load commutation
 - b) class B or resonant commutation
 - c) class C or complementary commutation
 - d) class D or impulse commutation
- 14) The average load current supplied by a thyristor depends on _____.
 - a) firing angle

- b) firing frequency
- c) magnitude of gate current
- d) all above

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions.

- Explain switching characteristics of thyristors during its turn on & turn off a) process.
- Explain working of Class C commutation. Sketch associated waveforms. b)
- A single phase semiconverter is to supply dc power in to load of 20Ω . If c) converter is supplied by 350V single phase, 50Hz AC supply and output voltage across load is 40% of maximum dc voltage.
 - 1) What is firing angle to be maintained for converter?
 - Calculate RMS out voltage. 2)
- Explain working of single phase dual converter for non circulating current d) mode.
- Sketch the cross sectional view of N channel E-MOSFET, explain its e) operation and characteristics.

Q.3 Attempt any two of the following questions.

- Explain following methods of over voltage protections circuits. a)
 - 1) Snubber circuits for dv/dt suppression
 - Non linear surge suppressor 2)
 - Electronic crowbar circuits 3)
- b) Explain the Single phase fully controlled bridge converter with inductive load. Derive an expression for average load voltage and RMS load voltage. Draw neat waveform for $\alpha = 60^{\circ}$
- With help of structural diagram explain operation and switching c) characteristics of GTO. And explain how GTO differ from conventional thyristor.

Section – II

Q.4 Attempt any four of the following questions.

- Explain PUT as a relaxation oscillator. Derive an expression for frequency a) of oscillation.
- b) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR.
- With suitable block diagram explain working of OFF line UPS. c)
- Explain working of automatic street lighting system. d)
- Explain working of burglar alarm system. e)

Attempt any two of the following questions. Q.5

- Explain microcontroller based firing scheme for single phase controlled a) converters with flow chart.
- Draw a neat block diagram of AC servo controlled voltage stabilizer and b) explain its working.
- Explain principle of Dielectric heating. Describe application of dielectric c) heating.

12

16

Seat No.

12

16

Set

SLR-FM-199

Seat T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

INDUSTRIAL ELECTRONICS

- 2) Assume suitable data if required
- Figures to the right indicate maximum marks

MCQ/Objective Type Questions

Duration: 30 Minutes

a)

C)

a)

No.

Q.1 Choose correct alternatives from the options and rewrite the sentences. 14

- Which of the following PNPN device has two gate terminal? 1)
 - a) SCS b) SUS
 - d) PUT LASCR C)
- A SMPS operating at 20KHz to 100KHz range uses main switching power 2) device
 - SCR a) b) Transistor MOSFET
 - C) Thyristor d)

The output voltage of buck converter is 3) Less than input Greater than input

- 4) In _____, the heating is uniform throughout workpiece.
 - a) Dielectric heating

Equal to input

b) Induction heating d) Infrared heating

d) None of above

- c) Resistance heating
- In flyback converter, energy is transformed to transformer secondary _____. 5)

b)

- a) during a time when transistor is OFF
- during a time when transistor is ON b)
- during a time when core is saturated C)
- d) at all time
- To protect thyristor from large $\frac{di}{dt}$ during turn on _____. 6)
 - RC circuit is connected across it a)
 - Inductor is connected in series with it b)
 - diode is connected in series C)
 - RC circuit with diode across it d)
- 7) Thyristor is a _____ device. latching

 - latch proof c)
- b) bilateral
- d) voltage controlled

SLR-FM-199

Max. Marks: 70

Set

Marks: 14

- 8) The type of commutation when the load is commutated by transferring its load current to another incoming thyristor is _____.
 - a) class A or load commutation
 - b) class B or resonant commutation
 - c) class C or complementary commutation
 - d) class D or impulse commutation
- 9) The average load current supplied by a thyristor depends on _____.
 - firing angle b) firing frequency
 - c) magnitude of gate current d) all above
- 10) Average value of output voltage for single phase fully controlled bridge converter with inductive load when α is zero.
 - a) $\frac{Vm}{2}$ b) $\frac{2Vm}{2}$
 - c) 0.707Vm d) both a & c
- 11) DIAC & TRIAC both are _____

a) AC switch

a)

c)

- b) DC switch
- Mechanical switch d) None of above

12) The temperature coefficient of resistivity of an IGBT is _____.

- a) Negative b) Positive
- c) Flat d) Both a& b
- 13) The combined package of LED & photodiode is known as _____.
 - a) optocouper

- b) optoisolator
- c) opticaly coupled isolator
- d) all above
- 14) The UJT may be used as _____.
 - a) A amplifier
 - c) A rectifier

- b) A sawtooth generator
- d) None of the above

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** INDUSTRIAL ELECTRONICS

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions.

- Explain switching characteristics of thyristors during its turn on & turn off a) process.
- Explain working of Class C commutation. Sketch associated waveforms. b)
- A single phase semiconverter is to supply dc power in to load of 20Ω . If c) converter is supplied by 350V single phase, 50Hz AC supply and output voltage across load is 40% of maximum dc voltage.
 - 1) What is firing angle to be maintained for converter?
 - Calculate RMS out voltage. 2)
- d) Explain working of single phase dual converter for non circulating current mode.
- Sketch the cross sectional view of N channel E-MOSFET, explain its e) operation and characteristics.

Q.3 Attempt any two of the following questions.

- Explain following methods of over voltage protections circuits. a)
 - 1) Snubber circuits for dv/dt suppression
 - Non linear surge suppressor 2)
 - Electronic crowbar circuits 3)
- b) Explain the Single phase fully controlled bridge converter with inductive load. Derive an expression for average load voltage and RMS load voltage. Draw neat waveform for $\alpha = 60^{\circ}$
- With help of structural diagram explain operation and switching c) characteristics of GTO. And explain how GTO differ from conventional thyristor.

Section – II

Q.4 Attempt any four of the following questions.

- Explain PUT as a relaxation oscillator. Derive an expression for frequency a) of oscillation.
- b) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR.
- With suitable block diagram explain working of OFF line UPS. c)
- Explain working of automatic street lighting system. d)
- Explain working of burglar alarm system. e)

Attempt any two of the following questions. Q.5

- Explain microcontroller based firing scheme for single phase controlled a) converters with flow chart.
- Draw a neat block diagram of AC servo controlled voltage stabilizer and b) explain its working.
- Explain principle of Dielectric heating. Describe application of dielectric c) heating.

Max. Marks: 56

16

12

16

12



Set

Seat

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering VLSI DESIGN

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - 1) A test bench is used ____
 - a) Verify the functionality of a design
 - b) To generate primitives
 - c) To generate net list
 - d) None of above
 - The vhdl statement clk<= not clk after 5 ns generates a clk with duty cycle _____.
 - a) 5%
 - c) 95 % d) None of these
 - 3) Which of the following is a valid signal declaration?
 - a) signal x : std_logic ='2'
 b) signal x<=5;
 c) signal x :=5;
 d) signal x : std_logic:='1';
 - 4) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?

50 %

b)

- a) Generate b) Attribute
- c) Generics d) Signals
- 5) When the following signal assignment statement executes at 5 ns, the new value will be assigned to signal at what time?
 - X<= 4 after 5 ns; a) 10 ns;
 - a) 10 ns; c) 5 ns b) $10 ns + \Delta$ d) $5 ns + \Delta$
- 6) The weak 1 is represented in IEEE 1164, 9 valued logic is represented by
 - a) 'W' b) 'H' c) 'X' d) 'l'
- 7) Assuming the left operand as BIT vector, "1001010" s11 2 is _____.
 a) "0101010"
 b) "0101000"
 - c) "0101011" d) None of these
- 8) The CPLD contains several PLD blocks and _____.
 - a) AND-OR arrays
 - b) A language compiler
 - c) Field programmable switches
 - d) A global interconnect matrix

SLR-FM-200

Set

Max. Marks: 70

Marks: 14

Set P

9) No. of flip-flops / CLB in FPGA XC4000 is _____.

a)	4	b)	2
c)	6	d)	1

CMOS logic consists of _____. 10)

- a) Pull up network b) pull down network
- c) Both a) and b) d) None of above

11) Noise margin of CMOS inverter is not function of

- a) W/L of MOS b) B_n/B_p d) all of above
- c) t_{ox}
- Boundary Scan technique consists of ____ 12)
 - b) Test Access port a) Scan path testing port
 - Both a and b c) d) None of above
- In a CMOS inverter with Vtn < Vin < VDD / 2, the states of p-device and 13) n-device are _____.
 - saturated, nonsaturated a)
 - nonsaturated, cutoff c)
- b) nonsaturated, saturated
- d) none of these

14) Input of synthesis process are _____.

- a) RTL VHDL description
- b) Circuit constraints are attributes design
- c) Technology library
- d) All of above

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics** Engineering

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- Explain with suitable example different forms of wait statement. What is a) the significance of wait for 0 ns?
- b) Explain the transport and inertial delays in VHDL.
- Write VHDL code for 6 bit parity checker circuit. c)
- Explain following statement of VHDL with suitable exampled)
 - 1) Loop statements
 - 2) When else
- Write VHDL code for JK flip flop with asynchronous reset. e)

Q.3 Solve any two of the following question.

- What are the major differences between VHDL functions and VHDL a) procedure? Write VHDL function for 8 bit parity generator.
- Write VHDL code for 4:1 multiplexer with structural architecture. Also write b) the test bench for testing it.
- Write VHDL code for a Moore FSM to detect the sequence 110 at the c) input. It should produce output z equal to 1 whenever the sequence is detected on input x.

Section – II

Q.4 Solve any four of the following question.

- Explain the architecture of macrocell in Xilinx 9500 series CPLD. a)
- Explain place and route process of EDA tools. b)
- Explain the CMOS noise margin in detail. c)
- Explain path sensitizing. Obtain the complete test set for circuit shown d) below using path sensitizing.

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Draw and explain the schematic arrangement for testing sequential e) circuits.

Attempt any two of the following question. Q.5

w₂ -

- Draw and Explain Xilinx Spartan 4000 FPGA architecture. a)
- Explain in detail simulation steps in RTL simulation. b)
- Draw and Explain DC characteristics of CMOS Inverter. c)

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Max. Marks: 56

SLR-FM-200

VLSI DESIGN



Set

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN** Max. Marks: 70 Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The CPLD contains several PLD blocks and _ _ _ . 1)
 - a) AND-OR arrays
 - b) A language compiler
 - c) Field programmable switches
 - d) A global interconnect matrix

No. of flip-flops / CLB in FPGA XC4000 is _ 2)

4 b) 2 a) c) 6 d) 1

3) CMOS logic consists of _____.

- a) Pull up network
- b) pull down network c) Both a) and b) d) None of above
- Noise margin of CMOS inverter is not function of . 4)
 - a) W/L of MOS b) B_n/B_p
 - d) all of above c) t_{ox}
- Boundary Scan technique consists of _ 5)
 - Scan path testing port Test Access port a) b) d) None of above
 - Both a and b C)
- In a CMOS inverter with Vtn < Vin < VDD / 2, the states of p-device and 6) n-device are .
 - saturated, nonsaturated a) nonsaturated, cutoff c)
- b) nonsaturated, saturated d) none of these
- Input of synthesis process are _____. 7)
 - a) RTL VHDL description
 - Circuit constraints are attributes design b)
 - Technology library c)
 - d) All of above

A test bench is used _____. 8)

- a) Verify the functionality of a design
- To generate primitives b)
- To generate net list c)
- None of above d)

SLR-FM-200

Set

Marks: 14



Duration: 30 Minutes

 The vhdl statement clk<= not clk after 5 ns generates a clk with duty cycle _____.

a) 5 % c) 95 %

- b) 50 %
- d) None of these
- 10) Which of the following is a valid signal declaration?
 - a) signal x : std_logic ='2'
- b) signal x<=5;
- c) signal x :=5;d) signal x : std_logic:='1';
- 11) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?
 - a) Generate b) Attribute
 - c) Generics d) Signals
- 12) When the following signal assignment statement executes at 5 ns, the new value will be assigned to signal at what time?
 - X<= 4 after 5 ns;
 - a) 10 ns; b) $10 ns + \Delta$
 - c) 5 ns d) $5 \text{ ns} + \Delta$
- 13) The weak 1 is represented in IEEE 1164, 9 valued logic is represented by

a)	·₩'	b)	'H'
c)	'X'	d)	'ľ'

14) Assuming the left operand as BIT – vector, "1001010" s11 2 is _____.

a) "0101010"

.

b) "0101000"

c) "0101011"

d) None of these

Page 5 of 12

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Set Q

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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering VLSI DESIGN

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
- b) Explain the transport and inertial delays in VHDL.
- c) Write VHDL code for 6 bit parity checker circuit.
- d) Explain following statement of VHDL with suitable example-
 - 1) Loop statements
 - 2) When else
- e) Write VHDL code for JK flip flop with asynchronous reset.

Q.3 Solve any two of the following question.

- a) What are the major differences between VHDL functions and VHDL procedure? Write VHDL function for 8 bit parity generator.
- b) Write VHDL code for 4:1 multiplexer with structural architecture. Also write the test bench for testing it.
- c) Write VHDL code for a Moore FSM to detect the sequence 110 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.

Section – II

Q.4 Solve any four of the following question.

- a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
- b) Explain place and route process of EDA tools.
- c) Explain the CMOS noise margin in detail.
- d) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.

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e) Draw and explain the schematic arrangement for testing sequential circuits.

Q.5 Attempt any two of the following question.

 $w_2 =$

- a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
- b) Explain in detail simulation steps in RTL simulation.
- c) Draw and Explain DC characteristics of CMOS Inverter.

Max. Marks: 56

16

12

16

SLR-FM-200

Set

Seat No.

		MCQ/Objective Type Questions			
Dura	Duration: 30 Minutes Marks:				
Q.1	Choo 1)	e the correct alternatives from the options and rewrite the sentence then the following signal assignment statement executes at 5 ns, the ne alue will be assigned to signal at what time? <= 4 after 5 ns; 10 ns; b) 10 ns + Δ			
		5 ns d) $5 ns + \Delta$			
	2)	ne weak 1 is represented in IEEE 1164, 9 valued logic is represented b	у		
	3)	ssuming the left operand as BIT – vector, "1001010" s11 2 is "0101010" b) "0101000" "0101011" d) None of these			
	4)	ne CPLD contains several PLD blocks and AND-OR arrays A language compiler Field programmable switches A global interconnect matrix			
	5)	 o. of flip-flops / CLB in FPGA XC4000 is 4 b) 2 6 d) 1 			
	6)	MOS logic consists ofPull up networkb) pull down networkBoth a) and b)d) None of above			
	7)	oise margin of CMOS inverter is not function of W/L of MOS b) B _n /B _p t _{ox} d) all of above			
	8)	oundary Scan technique consists of Scan path testing port b) Test Access port Both a and b d) None of above			
	9)	a CMOS inverter with Vtn < Vin < VDD / 2, the states of p-device and			

b) nonsaturated, saturated

d) none of these

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

n-device are ____

a)

C)

. saturated, nonsaturated

nonsaturated, cutoff

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

book. 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN**

Seat No.

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Set R

14

14

Max. Marks: 70

SLR-FM-200 Set R

- 10) Input of synthesis process are _____.
 - **RTL VHDL description** a)
 - Circuit constraints are attributes design b)
 - c) Technology library
 - All of above d)
- A test bench is used _____. 11)
 - a) Verify the functionality of a design
 - b) To generate primitives
 - To generate net list c)
 - None of above d)
- The vhdl statement clk<= not clk after 5 ns generates a clk with duty 12) cycle ___
 - a) 5 % 95 %

c)

a)

- b) 50 %
- d) None of these
- 13) Which of the following is a valid signal declaration?
 - b) signal $x \le 5$;
 - signal x : std_logic ='2' signal x :=5; c)
 - d) signal x : std logic:='1';
- 14) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?
 - a) Generate b) Attribute
 - c) Generics d) Signals

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering VLSI DESIGN

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
- b) Explain the transport and inertial delays in VHDL.
- c) Write VHDL code for 6 bit parity checker circuit.
- d) Explain following statement of VHDL with suitable example-
 - 1) Loop statements
 - 2) When else
- e) Write VHDL code for JK flip flop with asynchronous reset.

Q.3 Solve any two of the following question.

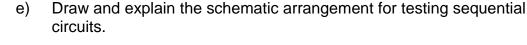
- a) What are the major differences between VHDL functions and VHDL procedure? Write VHDL function for 8 bit parity generator.
- b) Write VHDL code for 4:1 multiplexer with structural architecture. Also write the test bench for testing it.
- c) Write VHDL code for a Moore FSM to detect the sequence 110 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.

Section – II

Q.4 Solve any four of the following question.

- a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
- b) Explain place and route process of EDA tools.
- c) Explain the CMOS noise margin in detail.
- d) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.

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Q.5 Attempt any two of the following question.

 $w_2 = -$

- a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
- b) Explain in detail simulation steps in RTL simulation.
- c) Draw and Explain DC characteristics of CMOS Inverter.

12

Set R

SLR-FM-200

Max. Marks: 56

16

12

16

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering VLSI DESIGN** Max. Marks: 70 Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

book. 2) Figures to the right indicate full marks. **MCQ/Objective Type Questions** Marks: 14 Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 CMOS logic consists of _____. 1) a) Pull up network b) pull down network c) Both a) and b) d) None of above 2) Noise margin of CMOS inverter is not function of _____. a) W/L of MOS b) B_n/B_n d) all of above c) t_{ox} 3) Boundary Scan technique consists of _ Scan path testing port b) Test Access port a) d) None of above C) Both a and b In a CMOS inverter with Vtn < Vin < VDD / 2, the states of p-device and 4) n-device are saturated, nonsaturated a) b) nonsaturated, saturated c) nonsaturated, cutoff d) none of these Input of synthesis process are _____. 5) a) RTL VHDL description Circuit constraints are attributes design b) Technology library c) d) All of above A test bench is used _____ 6) Verify the functionality of a design a) To generate primitives b) To generate net list c) None of above d) 7) The vhdl statement clk<= not clk after 5 ns generates a clk with duty cycle _____. a) 5% b) 50 % d) None of these c) 95 % Which of the following is a valid signal declaration? 8) signal x : std logic ='2' b) signal x<=5; a) d) signal x : std logic:='1'; c) signal x := 5; 9) Which of the following feature can be used to specify the parameters for a component at the time of instantiation? a) Attribute

Day & Date: Wednesday, 27-11-2019

Time: 10:00 AM To 01:00 PM

Duration: 30 Minutes

- Generate b)
- Generics c) d) Signals

Set

SLR-FM-200

SLR-FM-200 Set S

10) When the following signal assignment statement executes at 5 ns, the new value will be assigned to signal at what time? $X \le 4$ after 5 ns;

10 ns; a)

a)

- b) $10 \text{ ns} + \Delta$ c) 5 ns d) $5 \text{ ns} + \Delta$
- 11) The weak 1 is represented in IEEE 1164, 9 valued logic is represented by

a)	'W'	b)	'H'
C)	'X'	d)	ʻl'

- Assuming the left operand as BIT vector, "1001010" s11 2 is _____. 12)
 - b) "0101000" "0101010"
 - "0101011" d) None of these C)
- The CPLD contains several PLD blocks and _____. 13)
 - a) AND-OR arrays
 - b) A language compiler
 - c) Field programmable switches
 - d) A global interconnect matrix
- No. of flip-flops / CLB in FPGA XC4000 is _____. 14)
 - b) 2 a) 4
 - d) 1 C) 6

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

VLSI DESIGN

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four of the following question.

- a) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
- b) Explain the transport and inertial delays in VHDL.
- c) Write VHDL code for 6 bit parity checker circuit.
- d) Explain following statement of VHDL with suitable example-
 - 1) Loop statements
 - 2) When else
- e) Write VHDL code for JK flip flop with asynchronous reset.

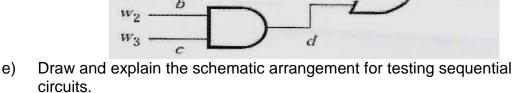
Q.3 Solve any two of the following question.

- a) What are the major differences between VHDL functions and VHDL procedure? Write VHDL function for 8 bit parity generator.
- b) Write VHDL code for 4:1 multiplexer with structural architecture. Also write the test bench for testing it.
- c) Write VHDL code for a Moore FSM to detect the sequence 110 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.

Section – II

Q.4 Solve any four of the following question.

- a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
- b) Explain place and route process of EDA tools.
- c) Explain the CMOS noise margin in detail.
- d) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.



Q.5 Attempt any two of the following question.

- a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
- b) Explain in detail simulation steps in RTL simulation.
- c) Draw and Explain DC characteristics of CMOS Inverter.

12

SLR-FM-200

Set S

Max. Marks: 56

12

16

16

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering AUTOMOTIVE ELECTRONICS**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The transmission,
 - a) converts rotary to linear motion
 - optimizes the transfer of engine power to the drivetrain b)
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 2) What does a microcomputer use to interface with other systems?
 - a) parallel interface analog-to-digital converter b)
 - c) digital-to-analog converter d) all of the above
- What advantages does digital signal processing have over analog signal 3) processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 4) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 5) A thermistor is
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 6) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 7) 'Star' and 'Delta' are types of _
 - a) rotor winding
 - c) field winding

- stator winding
- b) d)
 - Regulator winding

Max. Marks: 50

Marks: 10

- 8) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b)
 - c) their long life d) all of the above
- 9) The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 10) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque

that they produce whiter light

Set P

Seat T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

Electronics Engineering AUTOMOTIVE ELECTRONICS Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

No.

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- Write a note on electronic engine control system b)
- Write a note on temperature sensor used in automotive. c)
- Write a note on selection of appropriate sensor for various auto d) parameters.

Q.3 Attempt any one of the following question.

- Explain the working of engines with major components and neat sketch. a)
- Write a note on steps of Analog-to-Digital Converter b)

Section – II

Attempt any three of the following question. Q.4

- Explain digital instrumentation system in automobile. a)
- Draw basic drive circuits for pneumatic actuator and explain it in brief. b)
- What is basic wiring system and multiplex wiring system used in c) automobile?
- d) What are the modern trends in automotive diagnostics system?
- Explain transmission control system related to automobile engine. e)

Q.5 Attempt any one:

- What is anti-lock braking system? Draw block diagram of ABS and a) describe its working.
- What are the types of communication buses used in automobile? Describe b) any one in detail.



80

12

Max. Marks: 40

12

80

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 2) 'Star' and 'Delta' are types of _____
 - a) rotor winding b) stator winding
 - c) field winding d) Regulator winding
- The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours availableb)c) their long lifed)
 - ours available b) that they produce whiter light d) all of the above
- 4) The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 5) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 6) The transmission, _____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 7) What does a microcomputer use to interface with other systems?
 - a) parallel interfacec) digital-to-analog converter
- b) analog-to-digital converterd) all of the above

Max. Marks: 50

Marks: 10



- 8) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 9) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 10) A thermistor is _
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor

Seat No. T.E. (Part – II) (Old) (CGPA) Exal

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- b) Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.





Max. Marks: 40

12

80

12

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100
 - c) 1.280 d) 1.500
- 2) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 3) The transmission, ____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 4) What does a microcomputer use to interface with other systems?
 - a) parallel interface b) analog-to-digital converter
 - c) digital-to-analog converter d) all of the above
- 5) What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 6) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver

Max. Marks: 50

Marks: 10

R

- 7) A thermistor is _____.
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 8) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 9) 'Star' and 'Delta' are types of _____
 - a) rotor winding

c) field winding

- b) stator winding
- d) Regulator winding
- 10) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b)
 - c) their long life

that they produce whiter light

SLR-FM-201

Set R

d) all of the above

Seat <u>No.</u> T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Electronics Engineering AUTOMOTIVE ELECTRONICS

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- **b)** Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.

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Max. Marks: 40

80

12

12

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- What advantages does digital signal processing have over analog signal processing?
 - a) digital is more precise
 - b) digital doesn't drift with time and temperature
 - c) the same digital hardware can be used in many filters
 - d) all of the above
- 2) What does a sensor do?
 - a) it selects transmission gear ratio
 - b) it measures some variable
 - c) it is an output device
 - d) it sends signals to the driver
- 3) A thermistor is _
 - a) a semiconductor temperature sensor
 - b) a device for regulating engine temperature
 - c) a temperature control system for the passenger
 - d) a new type of transistor
- 4) The purpose of a rectifier in an alternator is to _____.
 - a) change AC to DC voltage
 - b) Control alternator output current
 - c) change DC to AC voltage
 - d) control alternator output voltage
- 5) 'Star' and 'Delta' are types of _____.
 - a) rotor winding b) stator winding
 - c) field winding d) Regulator winding
- 6) The main advantage of using light emitting diodes (LEDs) in vehicle lighting is _____.
 - a) the variety of colours available b) that they produce whiter light
 - c) their long life d) all of the above
- The electrolyte for a fully charged lead-acid battery has a relative density of approximately _____.
 - a) 1.000 b) 1.100 c) 1.280 d) 1.500

Set

Max. Marks: 50



- 8) A window lift motor drives through a worm gear because this: _____.
 - a) increases speed and torque
 - b) reduces speed and torque
 - c) increases speed and reduces torque
 - d) reduces speed and increases torque
- 9) The transmission, ____
 - a) converts rotary to linear motion
 - b) optimizes the transfer of engine power to the drivetrain
 - c) has four forward speeds and one reverse
 - d) automatically selects the highest gear ratio
- 10) What does a microcomputer use to interface with other systems?
 - a) parallel interface
- b) analog-to-digital converterd) all of the above
- c) digital-to-analog converter d) all of th

Seat No. T.E. (Part – II) (Old) (CGPA)

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering AUTOMOTIVE ELECTRONICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions:1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following question.

- a) Discuss the advantages of digital over analog.
- **b)** Write a note on electronic engine control system
- c) Write a note on temperature sensor used in automotive.
- d) Write a note on selection of appropriate sensor for various auto parameters.

Q.3 Attempt any one of the following question.

- a) Explain the working of engines with major components and neat sketch.
- b) Write a note on steps of Analog-to-Digital Converter

Section – II

Q.4 Attempt any three of the following question.

- a) Explain digital instrumentation system in automobile.
- **b)** Draw basic drive circuits for pneumatic actuator and explain it in brief.
- c) What is basic wiring system and multiplex wiring system used in automobile?
- d) What are the modern trends in automotive diagnostics system?
- e) Explain transmission control system related to automobile engine.

Q.5 Attempt any one:

- a) What is anti-lock braking system? Draw block diagram of ABS and describe its working.
- **b)** What are the types of communication buses used in automobile? Describe any one in detail.



12

80

Max. Marks: 40

12

Seat No.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ROBOTICS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to right indicate maximum marks.
- 3) Assume suitable data wherever necessary.

Q.1 Attempt any four.

- a) What are the different key issues for locomotion in mobile robots?
- **b)** Explain spray painting application of robot with neat diagram.
- c) With neat sketch explain working of vision-based sensors.
- d) List down the types of end effectors. Discuss mechanical gripper with neat diagram.
- e) List different robot programming methods.

Q.2 Attempt any three.

- a) With neat sketch explain wheeled mobile robots.
- **b)** Describe the steps involved in preventive maintenance.
- c) Describe operations and functions of machine vision in detail.
- d) Classify robots based on control methods. Explain non servo controlled robots.

Max. Marks: 50

30



T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS INSTRUMENTATION**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer

book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Q.1

Marks: 10 Choose the correct alternatives from the options and rewrite the sentence. 10

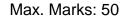
Low frequencies

- 1) In signal generators,
 - a) Energy is created
 - b) Energy is generated
 - c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency
 - d) All the above
- 2) Period measurement is done in frequency meters for achieving high accuracy in the case b) Medium frequencies
 - a) High frequencies
 - d) c) DC
- 3) Which of the below is not a building block of frequency measurement? a) Gates
 - Shift registers b)
 - c) Counters d) Schmitt trigger
- 4) is used to scale down the input gains so as to match the input signal level of the device.
 - a) Amplifier Attenuator b)
 - c) Converter d) Multiplexer
- The degree of closeness of a measurement compared to the expected 5) value is
 - a) measurement b) resolution
 - c) Precision
- Take odd man out speed, fidelity, sensitivity, lag 6)
 - Speed fidelity a) b) c) sensitivity d) lag
- is a measure of signal impurity. 7)
 - Fidelity a) b)
 - distortion c) Error d) power

The instrument used to study relationship of many signals at one glance 8)

- ___ analyzer. is
- logic b) FFT a)
- distortion c) Spectrum d)

Set Ρ



- d) accuracy

Seat No.

SLR-FM-203 Set P

- The ultrasonic transmitter uses ______ effect. 9) a) piezoelectric
 - reverse piezoelectric b)
 - c) load-cell d) hall
- Which of below is a part of typical DAS _____? 10)
 - a) transducer
- signal conditioning all of these b)
 - d)

c) Buffer

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

80

12

12

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019					
Electronics Engineering ELECTRONICS INSTRUMENTATION					
Dav	& Date	e: Thursday, 28-11-2019	NO	Max. Marks: 50	
		0 AM To 12:00 PM			
Instr	uctio	ns: 1) Q. No. 1 is compulsory and sho book.	uld b	e solved in first 20 minutes in answer	
		2) Figures to the right indicates ful3) Assume suitable data if necess		rks.	
		MCQ/Objective Ty	vpe (Questions	
Dura	tion: 2	20 Minutes		Marks: 10	
Q.1		ose the correct alternatives from th	-		
	1)	Take odd man out - speed, fidelity, s a) Speed	b)	fidelity	
		c) sensitivity	d)	lag	
	2)	is a measure of signal impur	• .	distortion	
		a) Fidelity c) Error	b) d)	distortion power	
	3)	The instrument used to study relation is analyzer.	nship	of many signals at one glance	
		a) logic c) Spectrum	b) d)	FFT distortion	
	4)	The ultrasonic transmitter uses			
		a) piezoelectric c) load-cell	b) d)	reverse piezoelectric hall	
	5)	Which of below is a part of typical D			
		a) transducer c) Buffer	b) d)	signal conditioning all of these	
	6)	 In signal generators, a) Energy is created b) Energy is generated c) Energy is converted from a simple specific frequency d) All the above 	ole d.	c. source into a.c. energy at some	
	7)	Period measurement is done in frequ	Jency	/ meters for achieving high	
	,	accuracy in the case a) High frequencies c) DC	b) d)		
	8)	Which of the below is not a building			
		a) Gates c) Counters	b) d)	Shift registers Schmitt trigger	
		of Oounters	u)		

Set Q

Seat No.

9) _____ is used to scale down the input gains so as to match the input signal level of the device.

a) Amplifier

b) Attenuator

SLR-FM-203

Set Q

- c) Converter d) Multiplexer
- 10) The degree of closeness of a measurement compared to the expected value is _____.
 - a) measurement

b) resolution

c) Precision

d) accuracy

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

08

12

12

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) The ultrasonic transmitter uses effect.
 - a) piezoelectric b)
 - reverse piezoelectric c) load-cell d) hall
- Which of below is a part of typical DAS 2)
 - signal conditioning a) transducer b) Buffer c)
 - all of these d)

?

3) In signal generators,

- a) Energy is created
- b) Energy is generated
- c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency
- All the above d)
- 4) Period measurement is done in frequency meters for achieving high accuracy in the case _____
 - High frequencies a)
- b) Medium frequencies Low frequencies d)
- 5) Which of the below is not a building block of frequency measurement?
 - a) Gates Shift registers b)
 - c) Counters d) Schmitt trigger
- is used to scale down the input gains so as to match the input 6) signal level of the device.
 - a) Amplifier

DC

C)

- b) Attenuator
- c) Converter d) Multiplexer
- 7) The degree of closeness of a measurement compared to the expected value is
 - a) measurement b) resolution
 - d) c) Precision accuracy
- Take odd man out speed, fidelity, sensitivity, lag _____. 8)
 - a) Speed c) sensitivity
- b) fidelity d) lag

SLR-FM-203



R

Set

Max. Marks: 50

Marks: 10

SLR-FM-203 Set R

- 9) _____ is a measure of signal impurity.
 - a) Fidelity b)
 - c) Error d) power
- 10) The instrument used to study relationship of many signals at one glance
 - is _____ analyzer.
 - a) logic

b) FFT d) disto

c) Spectrum

distortion

distortion

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

80

12

08

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

- 2) Figures to the right indicates full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Which of the below is not a building block of frequency measurement? 1)
 - a) Gates
- is used to scale down the input gains so as to match the input 2) signal level of the device.
 - Amplifier a)

c) Counters

- b) Attenuator
- Converter d) Multiplexer c)
- The degree of closeness of a measurement compared to the expected 3) value is
 - b) a) measurement resolution
 - c) Precision d) accuracy

Take odd man out - speed, fidelity, sensitivity, lag 4)

- a) Speed b) fidelity
- c) sensitivity d) lag
- is a measure of signal impurity. 5)
 - a) Fidelity b) distortion c) Error d) power
- 6) The instrument used to study relationship of many signals at one glance is _____ analyzer.
 - a) logic FFT b) d) distortion
 - c) Spectrum
- 7) The ultrasonic transmitter uses _____ effect. a) piezoelectric b) reverse piezoelectric
 - c) load-cell hall d)
- ? 8) Which of below is a part of typical DAS
 - signal conditioning a) transducer b) c) Buffer d) all of these

Set



Marks: 10

- Shift registers
- b) d) Schmitt trigger

- In signal generators, _____. 9)
 - a) Energy is created
 - b) Energy is generated
 - c) Energy is converted from a simple d.c. source into a.c. energy at some specific frequency
 - d) All the above
- 10) Period measurement is done in frequency meters for achieving high accuracy in the case _____.
 - a) High frequencies
- b) Medium frequencies

c) DC

- d) Low frequencies

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS INSTRUMENTATION

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any one.

- a) With suitable example show working of universal counter.
- b) What are the different static errors that may occur in measurements?

Q.3 Solve any three.

- a) Comment on standard deviation and its significance in measurements.
- **b)** For a DC output of a strain gauge what type of signal conditioning you recommend?
- c) How to protect from electrostatic discharge?
- d) Draw and explain digital pH meter.

Section – II

Q.4 Solve any one.

- a) Draw and explain FFT analyzer.
- b) Suggest (block diagram) a set up for measurement of blood flow.

Q.5 Solve any three.

- a) Comment on desirable characteristics of data logger.
- b) Differentiate between a sensor and smart sensor.
- c) What is radiometric conversion?
- d) How to plot instantaneous relationship between two signals- X and Y?



Max. Marks: 40

08

12

12

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Electronics Engineering

PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10
 - 1) AGUI

a)

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- c) both (a) and (b)

.

Form Properties

- d) stands for Graphic Use Interaction
- Which does the solution explorer not display? 2)
 - b) **Reference Folder**
 - c) Form File d) Assemble File

The member "clear" of the Array class that sets a range of array elements 3) to zero, false or null reference is a method.

- a) Shared Method b)
- c) Class d) Object
- 4) An object is composed of _____.
 - b) a) properties c) Events
 - d)
- The CancelButton property belongs to which object? 5)
 - Form **Button** a) b)
 - c) Label d) TextBox
- 6) Which is not a property of the Common control class?
 - a) Font b) Show
 - c) ForeColor BackColor d)
- 7) VB.Net is .
 - a) Platform Independent
 - c) Forward compatibale
 - Which of the following property of Array class in VB.NET checks whether

b)

d)

- 8) the Array has a fixed size?
 - a) IsFixedSize c) Length

- b) IsStatic
- d) None of the above.

Compiler Language

Backward compatible

Max. Marks: 50

Marks: 10

Set

All of the above

Methods

Set P

SLR-FM-204

- 9) Which of the following access modifier specifies that a function or Get accessor is an iterator?
 - a) In b) Iterator
 - c) Key

- d) Module
- 10) _____ allows custom items of information about a program element to be stored with an assembly's metadata.
 - a) Properties

b) Attributes

c) Methods

d) Classes

Set P

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

	Day & Date: Thursday, 28-11-2019 Max. Marks: 4 Time: 10:00 AM To 12:00 PM				
Inst	ructio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.			
Q.2	Exp	lain multiple catch block with example?	10		
Q.3	Exp	lain list box and combo box with example.	10		
		OR lain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10		
Q.4	Atte a)	empt any four of the following questions. Explain while and do while loops in VB.net.	20		
	b)	Explain type casting in VB.NET.			
	c)	Explain User Defined function with example.			
	d)	Explain MSIL?			
	e)	Explain radio button control events.			

b) c) d)	should be easy for a user to man both (a) and (b) stands for Graphic Use Interacti		ite			
Wh	ich does the solution explorer not	t displ	ay?			
a)	Form Properties	b)	Reference Folder			
c)	Form File	d)	Assemble File			
	The member "clear" of the Array class that sets a range of array elements to zero, false or null reference is a method.					
a)	Shared	b)	Method			
c)	Class	d)	Object			

Page 4 of 12

Set

Seat No.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering PROGRAMMING IN VB NET**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

Which is not a property of the Common control class? 1)

- a) Font
- c) ForeColor
- 2) VB.Net is
 - a) Platform Independent
 - c) Forward compatibale
- Which of the following property of Array class in VB.NET checks whether 3) the Array has a fixed size?
 - a) IsFixedSize
 - b) IsStatic c) Length d) None of the above.
- 4) Which of the following access modifier specifies that a function or Get accessor is an iterator?
 - b) Iterator a) In d) Module
 - c) Key
- _ allows custom items of information about a program element to be 5) stored with an assembly's metadata.
 - a) Properties b) Attributes
 - c) Methods d) Classes
- 6) AGUI

8)

- a) uses buttons, menus, and icons
- b) should be
- c) both (a) ar
- d) stands for
- Which does the 7)
 - Form Prop a)
 - Form File C)

SLR-FM-204



Marks: 10

Max. Marks: 50

- Backward compatible d)
- b) Compiler Language

- b) Show d) BackColor

Q

SLR-FM-204 Set Q

- 9) An object is composed of _____.
 - a) properties c) Events
- b) Methods
- d) All of the above
- 10) The CancelButton property belongs to which object?
 - a) Form
 - c) Label

- b) Button
- d) TextBox

Set Q

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

	Day & Date: Thursday, 28-11-2019 Max. Marks: 4 Time: 10:00 AM To 12:00 PM				
Instr	uctio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.			
Q.2	Ехр	lain multiple catch block with example?	10		
Q.3	Ехр	lain list box and combo box with example.	10		
	-	OR lain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10		
Q.4	Atte a)	mpt any four of the following questions. Explain while and do while loops in VB.net.	20		
	b)	Explain type casting in VB.NET.			
	c)	Explain User Defined function with example.			
	d)	Explain MSIL?			
	e)	Explain radio button control events.			

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering PROGRAMMING IN VB NET**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

Which of the following access modifier specifies that a function or Get 1) accessor is an iterator?

a)	In	b)	Iterator
c)	Key	d)	Module

- 2) allows custom items of information about a program element to be stored with an assembly's metadata.
 - a) Properties Attributes b)
 - c) Methods d) Classes
- AGUI 3)

Duration: 20 Minutes

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- both (a) and (b) c)
- d) stands for Graphic Use Interaction

Which does the solution explorer not display? 4)

- Form Properties **Reference Folder** a) b)
- Form File d) Assemble File c)
- The member "clear" of the Array class that sets a range of array elements 5) to zero, false or null reference is a method.
 - a) Shared Method b)
 - c) Class d) Object
- An object is composed of ____ 6)
 - a) properties b) Methods c) Events d)
 - All of the above
- The CancelButton property belongs to which object? 7)
 - Form b) Button a)
 - c) Label d) **TextBox**
- 8) Which is not a property of the Common control class?
 - a) Font Show b) BackColor
 - c) ForeColor d)
- 9) VB.Net is ____
 - a) Platform Independent c) Forward compatibale
- **Compiler Language** b)
- **Backward compatible** d)

Max. Marks: 50

R

Set



- Which of the following property of Array class in VB.NET checks whetherthe Array has a fixed size?a) IsFixedSizeb) IsStatic 10)

 - c) Length

- d) None of the above.

Set R

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Max. Ma Time: 10:00 AM To 12:00 PM			Max. Marks: 40
Instr	ructio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.	
Q.2	Ехр	lain multiple catch block with example?	10
Q.3	Ехр	lain list box and combo box with example.	10
	-	OR lain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10
Q.4	Atte a) b)	empt any four of the following questions. Explain while and do while loops in VB.net. Explain type casting in VB.NET.	20
	c) d) e)	Explain User Defined function with example. Explain MSIL? Explain radio button control events.	

a)	Form	b)	Button	
C)	Label	d)	TextBox	
Wh	Which is not a property of the Common control class?			
a)	Font	b)	Show	
C)	ForeColor	d)	BackColor	
VB	.Net is			
a)	Platform Independent	b)	Compiler Language	
C)	Forward compatibale	d)	Backward compatible	
	hich of the following property of Ar Array has a fixed size?	ray cl	ass in VB.NET checks whether	
a)	IsFixedSize	b)	IsStatic	
c)́	Length	d)	None of the above.	
Which of the following access modifier specifies that a function or Get accessor is an iterator?				
a)	In	b)	Iterator	
C)	Кеу	d)	Module	
allows custom items of information about a program element to be stored with an assembly's metadata.				
a)	Properties	b)	Attributes	
C)	Methods	d)	Classes	

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. The member "clear" of the Array class that sets a range of array elements 1) to zero, false or null reference is a method.

- MCQ/Objective Type Questions **Duration: 20 Minutes**

Day & Date: Thursday, 28-11-2019 Max. Marks: 50 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering PROGRAMMING IN VB NET**

2) Figures to the right indicate full marks.

b)

d)

b)

d)

Marks: 10

SLR-FM-204

Set S

Seat No.

10

All of the above

Method

Object

Methods

The CancelButton property belongs to which object?

4)

5)

a) Shared

a) properties

c) Events

An object is composed of ____

c) Class

2)

3)

6)

- 7)
- 8)

SLR-FM-204 Set S

9) AGUI _____.

- a) uses buttons, menus, and icons
- b) should be easy for a user to manipulate
- c) both (a) and (b)
- d) stands for Graphic Use Interaction
- 10) Which does the solution explorer not display?a) Form Propertiesb) Ref
 - b) Reference Folder
 - c) Form File
- d) Assemble File

Set S

Seat	
No.	

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PROGRAMMING IN VB NET

Day & Date: Thursday, 28-11-2019 Max. Ma Time: 10:00 AM To 12:00 PM			Max. Marks: 40
Instr	uctio	ns: 1) Attempt all the questions.2) Figures to the right indicate full marks.	
Q.2	Ехр	lain multiple catch block with example?	10
Q.3	Ехр	lain list box and combo box with example.	10
	-	OR lain single dimensional array in VB.NET. Write a program to imple ble sort.	ement 10
Q.4	a)	empt any four of the following questions. Explain while and do while loops in VB.net.	20
	b)	Explain type casting in VB.NET.	
	c)	Explain User Defined function with example.	
	d)	Explain MSIL?	
	e)	Explain radio button control events.	

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS Max. Marks: 70

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 In Morgans chopper toN = _____. 1)
 - b) $\pi \sqrt{\frac{c}{l}}$ a) d) *πLC* $\pi\sqrt{LC}$ C)
 - A step up chopper has input voltage 110 V and output voltage 150 V. The 2) value of duty cycle is _____.
 - 0.32 b) 0.67 a)
 - C) 0.45 d) 0.266
 - 3) In a 3 phase half wave controlled rectifier, when firing angle is less than 90 degree, then the average dc output voltage becomes _____ a) Positive
 - b) Negative c) Zero d) None of these
 - 4) A Three phase full converter operating with three phase 440V, 60Hz. The I₁ is continuous & ripple free is equal to 120A. RMS value of load current is
 - 69.28A a)
 - c) 169.7A
 - Three phase half wave controlled rectifier is connected to a 3Ø 440V, 5) 50 Hz AC source. Output ripple frequency will be _____
 - 50 Hz 150 Hz a) b)
 - 300 Hz d) 25 Hz c)
 - Commutation, charged capacitor is switched by an auxiliary 6) In SCR to commutate main SCR.
 - Voltage a) b) Current d) all above
 - Load c)
 - A Cycloconverters is a _____. 7)
 - a) Frequency converter Amplitude converter c)
 - d) None of above

b)

b) 84.85A

120A

d)

- In a circuit high reactive power compared to true power indicates _____. 8)
 - Low power factor a) Low efficiency c)
- b) High power factor

AC voltage converter

d) High efficiency

SLR-FM-205



Marks: 14



- 9) In three phase bridge inverter if fundamental output frequency is 50 Hz, then frequencies of other components in the output voltage wave in Hz, would be
 - 50, 250, 350, 550, high frequencies a)
 - b) 50,150, 250, 350, 450
 - 50, 100, 150, 200 C)
 - 50Hz d)

10) Sinusoidal pwm technique eliminates _

- b) number of harmonic at a time only one harmonic at a time a)
- c) only even harmonics d) even and odd harmonics
- 11) In _____ inverter output frequency is independent of commutating component.
 - Parallel a)

c)

a)

- b) Series
- c) Modified series inverter d) Both b & c
- 12) Speed control of DC motor can be obtained from _
 - Step down Chopper a) Jones chopper
- b) Four quadrant chopper
- d) All above
- 13) Speed control of three phase AC motor can be obtained from_____.
 - Single phase Cycloconveter b) Single phase bridge Inverter
 - Three phase bridge inverter d) Three phase controlled rectifier c)
- 14) A single phase bridge inverter has dc input voltage Vs= 70V.Then amplitude of square wave is
 - b) 70V a) 140
 - d) $70/\sqrt{2}$ c) 46.67V

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Solve any four

- a) A Three phase controlled bridge converter is connected to 414V (rms), 3φ, 60Hz mains. The load consists of 250V battery in series with resistor of 10Ω. The output current of converter is 15A ripple free. Estimate average output voltage of converter, delay angle & ratings of SCRs.
- **b)** Show that fundamental rms value of per phase output voltage for m phase cycloconverter is $E_{0r} = E_{ph} \frac{m}{\pi} sin(\frac{\pi}{m})$
- c) Explain operation of single phase bridge type cycloconverter with resistive load. The frequency is $f_0/f_s = 1/4$. Sketch associated waveforms.
- d) Derive an expression for average dc voltage for three phase semiconverter with resistive load for discontinuous conduction mode. Draw voltage waveforms for α = 120⁰
- e) Explain working of class E chopper with suitable circuit diagram.

Q.3 Solve Any two

- a) Explain working of Jones chopper with associated voltage and current waveform as function of time.
- **b)** Explain operation of dual converter with circulating current mode with suitable waveforms. Derive an expression for circulating current.
- c) Describe DSP based firing scheme for three phase controlled rectifiers with suitable flow chart.

Section – II

Q.4 Solve any four

- a) What is power factor corrector? Explain any one method for improvement of power factor.
- **b)** Explain single pulse width modulation technique. Derive an expression for rms output voltage.
- c) Derive an expression of RMS value of nth harmonic component for single phase full bridge square wave inverter.
- d) Explain harmonics reduction techniques using stepped wave inverter.
- e) With suitable diagram explain working of three phase cycloconverter drive.

SLR-FM-205

Max. Marks: 56

16

12

16

Set

Seat No.



Q.5 Attempt any two

- a) Explain working of 180[°] conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage with help of mathematical analysis.
- **b)** Explain working of microcontroller based four quadrant closed loop control of induction motor for two different cases.
 - 1) Control action below reference speed
 - 2) Control action above reference speed
- c) Explain with suitable block diagram the speed control of DC drive using fuzzy logic controller.

Set

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

c)

a)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- In a circuit high reactive power compared to true power indicates . 1)
 - Low power factor a) Low efficiency
- b) High power factor d) High efficiency
- 2) In three phase bridge inverter if fundamental output frequency is 50 Hz, then frequencies of other components in the output voltage wave in Hz, would be
 - 50, 250, 350, 550, high frequencies a)
 - b) 50,150, 250, 350, 450
 - 50, 100, 150, 200 c)
 - 50Hz d)
- 3) Sinusoidal pwm technique eliminates
 - only one harmonic at a time b) number of harmonic at a time
 - only even harmonics d) even and odd harmonics c)
- 4) In inverter output frequency is independent of commutating component.
 - a) Parallel b) Series
 - c) Modified series inverter d) Both b & c
- Speed control of DC motor can be obtained from _____ 5) a) Step down Chopper
 - b) Four quadrant chopper d) All above
 - Jones chopper c)
- Speed control of three phase AC motor can be obtained from 6) a)
 - b) Single phase bridge Inverter Single phase Cycloconveter
 - Three phase bridge inverter Three phase controlled rectifier d) c)
- A single phase bridge inverter has dc input voltage Vs= 70V. Then 7) amplitude of square wave is ____
 - a) 140 b) 70V 46.67V d) $70/\sqrt{2}$ c)

In Morgans chopper ton = _ 8)

- b) π a)
- c) $\pi\sqrt{LC}$ d) πLC

Seat

No.

Max. Marks: 70

Marks: 14

Set Q

- 9) A step up chopper has input voltage 110 V and output voltage 150 V. The value of duty cycle is _____.
 - 0.32 a)

C)

C)

- b) 0.67
- 0.45 d) 0.266
- In a 3 phase half wave controlled rectifier, when firing angle is less than 90 10) degree, then the average dc output voltage becomes _____.
 - Positive b) Negative a) Zero c)
 - None of these d)
- A Three phase full converter operating with three phase 440V, 60Hz. The 11) $I_{\scriptscriptstyle L}$ is continuous & ripple free is equal to 120A. RMS value of load current is
 - 69.28A a)

- b) 84.85A d) 120A
- 169.7A
- Three phase half wave controlled rectifier is connected to a 3Ø 440V. 12) 50 Hz AC source. Output ripple frequency will be _____.
 - b) 150 Hz
 - 50 Hz a) 300 Hz d) 25 Hz c)
- In _____ Commutation, charged capacitor is switched by an auxiliary 13) SCR to commutate main SCR.
 - a) Voltage
 - c) Load

- b) Current
- d) all above
- 14) A Cycloconverters is a ____
 - a) Frequency converter
 - Amplitude converter C)
- b) AC voltage converter
- d) None of above

Seat No.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Solve any four

- a) A Three phase controlled bridge converter is connected to 414V (rms), 3φ, 60Hz mains. The load consists of 250V battery in series with resistor of 10Ω. The output current of converter is 15A ripple free. Estimate average output voltage of converter, delay angle & ratings of SCRs.
- b) Show that fundamental rms value of per phase output voltage for m phase cycloconverter is $E_{0r} = E_{ph} \frac{m}{\pi} sin(\frac{\pi}{m})$
- c) Explain operation of single phase bridge type cycloconverter with resistive load. The frequency is $f_o/f_s = 1/4$. Sketch associated waveforms.
- d) Derive an expression for average dc voltage for three phase semiconverter with resistive load for discontinuous conduction mode. Draw voltage waveforms for α = 120⁰
- e) Explain working of class E chopper with suitable circuit diagram.

Q.3 Solve Any two

- a) Explain working of Jones chopper with associated voltage and current waveform as function of time.
- **b)** Explain operation of dual converter with circulating current mode with suitable waveforms. Derive an expression for circulating current.
- c) Describe DSP based firing scheme for three phase controlled rectifiers with suitable flow chart.

Section – II

Q.4 Solve any four

- a) What is power factor corrector? Explain any one method for improvement of power factor.
- **b)** Explain single pulse width modulation technique. Derive an expression for rms output voltage.
- c) Derive an expression of RMS value of nth harmonic component for single phase full bridge square wave inverter.
- d) Explain harmonics reduction techniques using stepped wave inverter.
- e) With suitable diagram explain working of three phase cycloconverter drive.

Max. Marks: 56

16

Set

SLR-FM-205

16



Q.5 Attempt any two

- a) Explain working of 180[°] conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage with help of mathematical analysis.
- **b)** Explain working of microcontroller based four quadrant closed loop control of induction motor for two different cases.
 - 1) Control action below reference speed
 - 2) Control action above reference speed
- c) Explain with suitable block diagram the speed control of DC drive using fuzzy logic controller.

Set

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Three phase half wave controlled rectifier is connected to a 3Ø 440V. 1) 50 Hz AC source. Output ripple frequency will be
 - a) 50 Hz b) 150 Hz
 - c) 300 Hz d) 25 Hz
- In _____ Commutation, charged capacitor is switched by an auxiliary 2) SCR to commutate main SCR.
 - a) Voltage
 - C) Load
- A Cycloconverters is a ____ 3)
 - a) Frequency converter
 - Amplitude converter C)
- b) AC voltage converter
- d) None of above

b) Current

d) all above

- In a circuit high reactive power compared to true power indicates _____. 4)
 - Low power factor a) c) Low efficiency
- b) High power factor d) High efficiency
- In three phase bridge inverter if fundamental output frequency is 50 Hz, 5) then frequencies of other components in the output voltage wave in Hz, would be
 - 50, 250, 350, 550, high frequencies a)
 - b) 50,150, 250, 350, 450
 - 50, 100, 150, 200 C)
 - 50Hz d)
- 6) Sinusoidal pwm technique eliminates _ b) number of harmonic at a time
 - only one harmonic at a time a)
 - c) only even harmonics d) even and odd harmonics
- inverter output frequency is independent of commutating 7) ln ____ component.
 - Parallel b) Series a)
 - Modified series inverter d) Both b & c c)
- Speed control of DC motor can be obtained from _ 8)
 - Step down Chopper a) Jones chopper c)
- b) Four quadrant chopper
- d) All above

Max. Marks: 70

Marks: 14

Set R

- 9) Speed control of three phase AC motor can be obtained from
 - Single phase Cycloconveter b) Single phase bridge Inverter
 - Three phase bridge inverter d) Three phase controlled rectifier
 - C)
- A single phase bridge inverter has dc input voltage Vs= 70V. Then 10) amplitude of square wave is ____
 - b) 70V a) 140
 - 46.67V c) d) $70/\sqrt{2}$
 - In Morgans chopper t_{ON}= _____. b) $\pi \sqrt{\frac{c}{l}}$ a) π c) $\pi\sqrt{LC}$ d) πLC
- A step up chopper has input voltage 110 V and output voltage 150 V. The 12) value of duty cycle is _____.
 - 0.32 b) 0.67 a)
 - c) 0.45 d) 0.266
- 13) In a 3 phase half wave controlled rectifier, when firing angle is less than 90 degree, then the average dc output voltage becomes _____.
 - a) Positive c) Zero
- b) Negative d) None of these
- A Three phase full converter operating with three phase 440V, 60Hz. The 14) I_L is continuous & ripple free is equal to 120A. RMS value of load current is _
 - 69.28A b) 84.85A a)
 - 169.7A c)

a)

11)

d) 120A

Page 10 of 16

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Solve any four

Seat

No.

- a) A Three phase controlled bridge converter is connected to 414V (rms), 3φ, 60Hz mains. The load consists of 250V battery in series with resistor of 10Ω. The output current of converter is 15A ripple free. Estimate average output voltage of converter, delay angle & ratings of SCRs.
- **b)** Show that fundamental rms value of per phase output voltage for m phase cycloconverter is $E_{0r} = E_{ph} \frac{m}{\pi} sin(\frac{\pi}{m})$
- c) Explain operation of single phase bridge type cycloconverter with resistive load. The frequency is $f_0/f_s = 1/4$. Sketch associated waveforms.
- d) Derive an expression for average dc voltage for three phase semiconverter with resistive load for discontinuous conduction mode. Draw voltage waveforms for α = 120⁰
- e) Explain working of class E chopper with suitable circuit diagram.

Q.3 Solve Any two

- a) Explain working of Jones chopper with associated voltage and current waveform as function of time.
- **b)** Explain operation of dual converter with circulating current mode with suitable waveforms. Derive an expression for circulating current.
- c) Describe DSP based firing scheme for three phase controlled rectifiers with suitable flow chart.

Section – II

Q.4 Solve any four

- a) What is power factor corrector? Explain any one method for improvement of power factor.
- **b)** Explain single pulse width modulation technique. Derive an expression for rms output voltage.
- c) Derive an expression of RMS value of nth harmonic component for single phase full bridge square wave inverter.
- d) Explain harmonics reduction techniques using stepped wave inverter.
- e) With suitable diagram explain working of three phase cycloconverter drive.

SLR-FM-205

Set R

Max. Marks: 56

16

16

Set R

Q.5 Attempt any two

- a) Explain working of 180[°] conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage with help of mathematical analysis.
- **b)** Explain working of microcontroller based four quadrant closed loop control of induction motor for two different cases.
 - 1) Control action below reference speed
 - 2) Control action above reference speed
- c) Explain with suitable block diagram the speed control of DC drive using fuzzy logic controller.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1)

- Sinusoidal pwm technique eliminates ____ only one harmonic at a time a)
 - b) number of harmonic at a time d) even and odd harmonics

.

b) Series

d) All above

- only even harmonics c)
- 2) In _____ inverter output frequency is independent of commutating component.
 - Parallel a)
 - Modified series inverter d) Both b & c c)
- 3) Speed control of DC motor can be obtained from
 - b) Four quadrant chopper
 - a) Step down Chopper Jones chopper c)
- 4) Speed control of three phase AC motor can be obtained from_____.
 - Single phase Cycloconveter a) b) Single phase bridge Inverter d) Three phase controlled rectifier
 - Three phase bridge inverter c)
- A single phase bridge inverter has dc input voltage Vs= 70V. Then 5) amplitude of square wave is ____
 - a) 140 b) 70V c) 46.67V d) $70/\sqrt{2}$
- 6) In Morgans chopper t_{ON}= _____.

a)	$\pi \sqrt{\frac{L}{c}}$	b)	$\pi \sqrt{\frac{c}{l}}$
c)	$\pi\sqrt{LC}$	d)	πLC

- A step up chopper has input voltage 110 V and output voltage 150 V. The 7) value of duty cycle is _____.
 - a) 0.32 b) 0.67 0.45 d) 0.266 C)
- 8) In a 3 phase half wave controlled rectifier, when firing angle is less than 90 degree, then the average dc output voltage becomes _____.
 - a) Positive b) Negative d) None of these c) Zero
- 9) A Three phase full converter operating with three phase 440V, 60Hz. The I_L is continuous & ripple free is equal to 120A. RMS value of load current is _
 - b) 84.85A 69.28A a)
 - c) 169.7A d) 120A



SLR-FM-205

Max. Marks: 70

Marks: 14

Set S

- Three phase half wave controlled rectifier is connected to a 3Ø 440V, 10) 50 Hz AC source. Output ripple frequency will be _____.
 - a) 50 Hz

b) 150 Hz

C) 300 Hz

- d) 25 Hz
- In _____ Commutation, charged capacitor is switched by an auxiliary 11) SCR to commutate main SCR.
 - a) Voltage

c)

- Load C)
- b) Current
- d) all above
- A Cycloconverters is a _____. 12)
 - a) Frequency converter
- b) AC voltage converter
- d) None of above Amplitude converter
- In a circuit high reactive power compared to true power indicates _____. 13)
 - Low power factor a) c)
- b) High power factor
- Low efficiency d) High efficiency
- In three phase bridge inverter if fundamental output frequency is 50 Hz, 14) then frequencies of other components in the output voltage wave in Hz, would be
 - 50, 250, 350, 550, high frequencies a)
 - b) 50,150, 250, 350, 450
 - 50, 100, 150, 200 C)
 - d) 50Hz

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Solve any four

- a) A Three phase controlled bridge converter is connected to 414V (rms), 3φ, 60Hz mains. The load consists of 250V battery in series with resistor of 10Ω.The output current of converter is 15A ripple free. Estimate average output voltage of converter, delay angle & ratings of SCRs.
- **b)** Show that fundamental rms value of per phase output voltage for m phase cycloconverter is $E_{0r} = E_{ph} \frac{m}{\pi} sin(\frac{\pi}{m})$
- c) Explain operation of single phase bridge type cycloconverter with resistive load. The frequency is $f_0/f_s = 1/4$. Sketch associated waveforms.
- d) Derive an expression for average dc voltage for three phase semiconverter with resistive load for discontinuous conduction mode. Draw voltage waveforms for α = 120⁰
- e) Explain working of class E chopper with suitable circuit diagram.

Q.3 Solve Any two

- a) Explain working of Jones chopper with associated voltage and current waveform as function of time.
- **b)** Explain operation of dual converter with circulating current mode with suitable waveforms. Derive an expression for circulating current.
- c) Describe DSP based firing scheme for three phase controlled rectifiers with suitable flow chart.

Section – II

Q.4 Solve any four

- a) What is power factor corrector? Explain any one method for improvement of power factor.
- **b)** Explain single pulse width modulation technique. Derive an expression for rms output voltage.
- c) Derive an expression of RMS value of nth harmonic component for single phase full bridge square wave inverter.
- d) Explain harmonics reduction techniques using stepped wave inverter.
- e) With suitable diagram explain working of three phase cycloconverter drive.

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Set

Max. Marks: 56

16

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16

Seat | No.

Set S

Q.5 Attempt any two

- a) Explain working of 180[°] conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage with help of mathematical analysis.
- **b)** Explain working of microcontroller based four quadrant closed loop control of induction motor for two different cases.
 - 1) Control action below reference speed
 - 2) Control action above reference speed
- c) Explain with suitable block diagram the speed control of DC drive using fuzzy logic controller.

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Set

Max. Marks: 70

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering COMPUTER NETWORKS**

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

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No.

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Flow control is needed to prevent
 - Bit error a)
 - Overflow of sender's buffer b)
 - Collision between sender and receiver c)
 - d) Overflow of receiver's buffer

a) I-persistent non-persistent b)

This CSMA shows the best performance _____.

- c) p-persistent d) All mentioned
- NIC (Network Interface Card) is _____ layer device. 3)
 - a) Physical Data Link b)
 - c) Network d) Application
- 4) The data unit in transport layer in TCP/IP is called
 - a) A datagram b) A segment
 - c) frame d) **Bit-string**
- Which IP Class has few hosts per network? 5)
 - Class A b) Class B
 - C) Class C d) Class D
- Error detection at the data link level is achieved by _____. 6)
 - Bit stuffing b) CRC a)
 - Hamming code c) d) Equalization
- 7) In ARQ, if a NAK is received, only the specific damaged or lost frame is retransmitted.
 - a) Stop-and-wait
 - b) Go Back N Stop-and-wait and Go back N Selective repeat d)

d)

- 8) Which one of the following extends a private network across public networks?
 - a) local area network
- b) virtual private network storage area network

None of above

- c) enterprise private network d)
- DHCP (dynamic host configuration protocol) provides _____ to the client. 9) MAC address b)
 - a) IP address
 - Url c)

a)

C)

- 10) Physical or logical arrangement of network is _____
 - a) Topology

b) Routing

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Set P

- c) Networking d) None of the mentioned
- 11) This of the following is not applicable for IP _____.
 - a) Error reporting
 - b) Handle addressing conventions
 - c) Datagram format
 - d) Packet handling conventions
- 12) The data field can carry which of the following _____.
 - a) TCP segment
 - b) UDP segment
 - c) ICMP messages
 - d) None of the mentioned
- 13) Which of the following is false with respect to UDP?
 - a) Connection oriented
- b) Unreliable
- c) Transport layer protocol d) All of the mentioned
- 14) Transparent, spanning tree and hybrid are the examples of _____.
 - a) Routersc) Gateways

b) Bridges

Switches

d)

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Seat	
No.	

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section - I

Q.2 Attempt any four:

- a) What is CRC method for error detection? Find CRC code for data word 1101011011 and divisor 10011.
- **b)** What are various frame making methods?
- c) Discuss the terms, Modems, switches, hubs, bridges?
- d) Discuss the stop and wait protocol in detail?
- e) Give the comparison between different LAN's?

Q.3 Attempt any two:

- a) Discuss the working principle of sliding window protocol mechanism in detail?
- **b)** Illustrate with a neat diagram working of CSMA/CD in detail?
- c) Give the difference between circuit switching and packet switching techniques?

Section - II

Q.4 Attempt any four:

- a) Illustrate with a neat diagram working of TCP/IP in detail.
- b) Give comparison between virtual circuit & datagram approach.
- c) Discuss the term Internet protocol ver. 4 (IPv4) in detail with its different types of notations.
- d) Give the difference between TCP/IP and UDP/IP.
- e) With a neat diagram discuss UDP header.

Q.5 Attempt any two:

- a) Explain three way handshakes in TCP. What is the use of VER, HELN and TTL fields in case of IP?
- **b)** Discuss TCP/IP header format, also describe how each field is used during communication?
- c) Discuss the routing protocol with reference to shortest path algorithm.

Max. Marks: 56

Set

12

16

16

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

COMPUTER NETWORKS

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which one of the following extends a private network across public networks? b) virtual private network
 - a) local area network
 - enterprise private network C)
 - storage area network d)
- DHCP (dynamic host configuration protocol) provides _____ to the client. 2)
 - MAC address a) IP address b) Url d) None of above c)
- Physical or logical arrangement of network is ____ 3)
 - Topology Routing a) b)
 - Networking None of the mentioned c) d)
- 4) This of the following is not applicable for IP .
 - a) Error reporting
 - b) Handle addressing conventions
 - Datagram format C)
 - d) Packet handling conventions

The data field can carry which of the following ... 5)

- a) TCP segment
- b) UDP segment
- c) ICMP messages
- d) None of the mentioned

Which of the following is false with respect to UDP? 6)

- Connection oriented b) Unreliable a)
- Transport layer protocol d) All of the mentioned C)
- Transparent, spanning tree and hybrid are the examples of _____. 7)
 - **Bridges** Routers b) a)
 - Gateways Switches d) C)
- 8) Flow control is needed to prevent_____
 - a) Bit error
 - b) Overflow of sender's buffer
 - c) Collision between sender and receiver
 - d) Overflow of receiver's buffer

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Max. Marks: 70

Marks: 14

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- 9) This CSMA shows the best performance
 - a) I-persistent b) non-persistent
 - c) p-persistent d) All mentioned
- 10) NIC (Network Interface Card) is _____ layer device.
 - a) Physical b) Data Link
 - c) Network d) Application

11) The data unit in transport layer in TCP/IP is called _

- a) A datagram b) A segment
 - c) frame d) Bit-string
- 12) Which IP Class has few hosts per network?
 - a) Class A b) Class B
 - c) Class C d) Class D

13) Error detection at the data link level is achieved by _____.

- a) Bit stuffing b) CRC
- c) Hamming code d) Equalization
- 14) In _____ ARQ, if a NAK is received, only the specific damaged or lost frame is retransmitted.
 - a) Stop-and-wait
 - c) Selective repeat
- b) Go Back N

.

d) Stop-and-wait and Go back N

Seat	
No.	

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) All questions are compulsory.

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- 3) Assume suitable data if necessary.

Section - I

Q.2 Attempt any four:

- a) What is CRC method for error detection? Find CRC code for data word 1101011011 and divisor 10011.
- **b)** What are various frame making methods?
- c) Discuss the terms, Modems, switches, hubs, bridges?
- d) Discuss the stop and wait protocol in detail?
- e) Give the comparison between different LAN's?

Q.3 Attempt any two:

- a) Discuss the working principle of sliding window protocol mechanism in detail?
- **b)** Illustrate with a neat diagram working of CSMA/CD in detail?
- c) Give the difference between circuit switching and packet switching techniques?

Section - II

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- **b**) Give comparison between virtual circuit & datagram approach.
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- d) Give the difference between TCP/IP and UDP/IP.
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- a) Explain three way handshakes in TCP. What is the use of VER, HELN and TTL fields in case of IP?
- **b)** Discuss TCP/IP header format, also describe how each field is used during communication?
- c) Discuss the routing protocol with reference to shortest path algorithm.

Max. Marks: 56

12

16

12

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

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- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which IP Class has few hosts per network?
 - Class A Class B a) b)
 - Class C d) c) Class D
- 2) Error detection at the data link level is achieved by .
 - a) Bit stuffing b)
 - c) Hamming code d) Equalization
- In ARQ, if a NAK is received, only the specific damaged or lost 3) frame is retransmitted.
 - Stop-and-wait b) Go Back N a)
 - Selective repeat Stop-and-wait and Go back N d) c)
- 4) Which one of the following extends a private network across public networks?
 - a) local area network

CRC

- DHCP (dynamic host configuration protocol) provides _____ to the client. 5) MAC address b)
 - a) IP address C) Url
 - d) None of above

Physical or logical arrangement of network is 6)

- Topology b) Routing a)
- Networking None of the mentioned d) c)
- 7) This of the following is not applicable for IP .
 - a) Error reporting
 - b) Handle addressing conventions
 - Datagram format C)
 - d) Packet handling conventions
- The data field can carry which of the following ... 8)
 - a) TCP segment
 - b) UDP segment
 - c) ICMP messages
 - d) None of the mentioned

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Max. Marks: 70

Marks: 14

virtual private network

- storage area network
- b)
- c) enterprise private network d)

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9)	Wh a) c)	iich of the following is false with r Connection oriented Transport layer protocol	b)	Unreliable		
10)	Tra a) c)	insparent, spanning tree and hyb Routers Gateways	rid ar b) d)	e the examples of Bridges Switches		
11)	a)	w control is needed to prevent Bit error Overflow of sender's buffer Collision between sender and re Overflow of receiver's buffer	eceive	er		
12)		is CSMA shows the best perform I-persistent p-persistent	iance b) d)	 non-persistent All mentioned		
13)	NI a) c)	C (Network Interface Card) is Physical Network	la b) d)	iyer device. Data Link Application		
14)	The a) c)	e data unit in transport layer in TC A datagram frame	CP/IP b) d)			

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No.	

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

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- 3) Assume suitable data if necessary.

Section - I

Q.2 Attempt any four:

- a) What is CRC method for error detection? Find CRC code for data word 1101011011 and divisor 10011.
- **b)** What are various frame making methods?
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- d) Discuss the stop and wait protocol in detail?
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Section - II

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- **b**) Give comparison between virtual circuit & datagram approach.
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- d) Give the difference between TCP/IP and UDP/IP.
- e) With a neat diagram discuss UDP header.

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- a) Explain three way handshakes in TCP. What is the use of VER, HELN and TTL fields in case of IP?
- **b)** Discuss TCP/IP header format, also describe how each field is used during communication?
- c) Discuss the routing protocol with reference to shortest path algorithm.



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12

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

Electronics Engineering COMPUTER NETWORKS

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- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Physical or logical arrangement of network is _
 - a) Topology b) Routing
 - c) Networking d) None of the mentioned
- 2) This of the following is not applicable for IP _____.
 - a) Error reporting
 - b) Handle addressing conventions
 - c) Datagram format
 - d) Packet handling conventions
- 3) The data field can carry which of the following _____.
 - a) TCP segment
 - b) UDP segment
 - c) ICMP messages
 - d) None of the mentioned
- 4) Which of the following is false with respect to UDP?
 - a) Connection oriented b) Unreliable
 - c) Transport layer protocol d) All of the mentioned
- 5) Transparent, spanning tree and hybrid are the examples of _____.
 - a) Routers b) Bridges
 - c) Gateways d) Switches
- 6) Flow control is needed to prevent_____
 - a) Bit error
 - b) Overflow of sender's buffer
 - c) Collision between sender and receiver
 - d) Overflow of receiver's buffer

7) This CSMA shows the best performance _____

- a) I-persistent b) non-persistent
 - c) p-persistent d) All mentioned
- 8) NIC (Network Interface Card) is _____ layer device.
 - a) Physicalc) Network

- b) Data Link
 - d) Application

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Set

Marks: 14

Max. Marks: 70



Set S

- 9) The data unit in transport layer in TCP/IP is called _
 - a) A datagram

A segment b)

c) frame

- d) Bit-string
- Which IP Class has few hosts per network? 10)
 - Class A b) Class B a)
 - Class C d) Class D C)

11) Error detection at the data link level is achieved by _____.

- a) Bit stuffing CRC b)
- c) Hamming code d) Equalization
- In _____ ARQ, if a NAK is received, only the specific damaged or lost 12) frame is retransmitted.
 - Stop-and-wait a) Selective repeat
- b) Go Back N
- Stop-and-wait and Go back N d)
- 13) Which one of the following extends a private network across public networks?
 - a) local area network
- b) virtual private network storage area network
- c) enterprise private network d)
- DHCP (dynamic host configuration protocol) provides _____ to the client. 14)
 - a) IP address c) Url

C)

- MAC address b)
- d) None of above

Seat No.

B.E. (Part -I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02.30 PM To 05.30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
 - 3) Assume suitable data if necessary.

Section - I

Q.2 Attempt any four:

- a) What is CRC method for error detection? Find CRC code for data word 1101011011 and divisor 10011.
- **b)** What are various frame making methods?
- c) Discuss the terms, Modems, switches, hubs, bridges?
- d) Discuss the stop and wait protocol in detail?
- e) Give the comparison between different LAN's?

Q.3 Attempt any two:

- a) Discuss the working principle of sliding window protocol mechanism in detail?
- **b)** Illustrate with a neat diagram working of CSMA/CD in detail?
- c) Give the difference between circuit switching and packet switching techniques?

Section - II

Q.4 Attempt any four:

- a) Illustrate with a neat diagram working of TCP/IP in detail.
- **b**) Give comparison between virtual circuit & datagram approach.
- c) Discuss the term Internet protocol ver. 4 (IPv4) in detail with its different types of notations.
- d) Give the difference between TCP/IP and UDP/IP.
- e) With a neat diagram discuss UDP header.

Q.5 Attempt any two:

- a) Explain three way handshakes in TCP. What is the use of VER, HELN and TTL fields in case of IP?
- **b)** Discuss TCP/IP header format, also describe how each field is used during communication?
- c) Discuss the routing protocol with reference to shortest path algorithm.

Max. Marks: 56

Set

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16

12

Seat No. B.F. (Part – I) (New) (CB

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

d)

Slow

Different

- Small scale fading describes the ______ fluctuations of the amplitude, phases of signal.
 - a) Rapid
 - c) Instantaneous
- 2) _____ range covers maximum geographical range of all.
 - a) Transmission b) Detection c) Interference d) Handover
- 3) Training Sequence and Equalization are solutions for _____ interference.
 - a) inter symbol b) co channel
 - c) adjacent channel d) Noise
- 4) Why neighbouring stations are assigned different group of channels in cellular system?
 - a) To minimize interference
 - b) To minimize area
 - c) To maximize throughput
 - d) To maximize capacity of each cell
- 5) What is a cell in cellular system?
 - a) A small geographical area
 - b) A group of subscribers
 - c) A group of cells
 - d) A large group of mobile systems
- 6) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
 - a) S=k*N b) S=k/N
 - c) S=N/k

7)

- d) S=k^N
- _____ are used to resolve and combine multipath components.
 - a) Equalizer

- b) Registers
- c) RAKE receiver d) Frequency divider

___ 9

Set

Max. Marks: 70

Marks: 14

8) Which of below is true for a Walsh Code? a) They are orthogonal b) They are used in CDMA c) Their Inner Product with self is maximum d) All of above In IEEE 802.11 DSSS spreading is achieved using _____. 9) a) Walsh Code b) Training sequence c) Barker Sequence d) None of above 10) Agent discovery & solicitation terms are associated with layer. a) mobile network b) mobile IP c) transport d) all of above In a IEEE 802.11 MAC packet structure, first two bytes are _____. 11) a) frame control b) duration ID c) preamble d) sequence number A Bluetooth network is called _____. 12) b) WAN a) Wireless Network c) Piconet d) LAN A wireless network interface controller can work in . 13) a) infrastructure mode b) ad-hoc mode c) both infrastructure mode and ad-hoc mode d) none of the mentioned 14) What is the access point (AP) in wireless LAN? Device that allows wireless devices to connect to wired network a) b) wireless devices itself

- c) both device that allows wireless devices to connect to a wired network and wireless devices itself
- d) none of the mentioned

SLR-FM-207

Set P

Seat No.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering MOBILE TECHNOLOGY

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** Compare Wireless and fixed network.
- c) CSMA/CD MAC in used wired network but it fails in wireless network. Justify the statement.
- d) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.
- e) How the mobile originated call in GSM?

Q.3 Attempt any two.

- a) Channel interference is one of the limitation of cellular system specify what are their type, sources and techniques to resolve them?
- b) Justify how cell sectoring can increase user capacity?
- c) Base Station uses the reverse link channels in IS95, describe that channels in brief.

Section – II

Q.4 Attempt any four.

- a) What are the requirements for a Mobile IP?
- **b)** With suitable example explain master, slave, parked & standby modes.
- c) Define mobile computing. Describe mobile computing function.
- d) Describe ad-hoc architecture for WLAN.
- e) What is agent solicitation? Why it is required?

Q.5 Attempt any two.

- a) Specify the radio transmission with DSSS PHY frame structure for IEEE 802.11.
- **b)** Explain with example Data transfer on SCO and ACL links for Bluetooth.
- c) With suitable diagram explain how a packet is sent from a fixed node to a mobile node which is presently in foreign network?

Max. Marks: 56

Set

16

12

16

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat No.

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of below is true for a Walsh Code?
 - a) They are orthogonal
 - b) They are used in CDMA
 - c) Their Inner Product with self is maximum
 - d) All of above

2) In IEEE 802.11 DSSS spreading is achieved using _____.

- a) Walsh Codeb) Training sequencec) Barker Sequenced) None of above
- 3) Agent discovery & solicitation terms are associated with _____ layer.
 - a) mobile network b) mobile IP
 - c) transport
- d) all of above

4) In a IEEE 802.11 MAC packet structure, first two bytes are _____.

- b) duration ID
- c) preamble d) sequence number
- 5) A Bluetooth network is called _____
 - a) Wireless Network b) WAN
 - c) Piconet d) LAN
- 6) A wireless network interface controller can work in _____.
 - a) infrastructure mode
 - b) ad-hoc mode

a) frame control

- c) both infrastructure mode and ad-hoc mode
- d) none of the mentioned
- 7) What is the access point (AP) in wireless LAN?
 - a) Device that allows wireless devices to connect to wired network
 - b) wireless devices itself
 - c) both device that allows wireless devices to connect to a wired network and wireless devices itself
 - d) none of the mentioned
- 8) Small scale fading describes the _____ fluctuations of the amplitude, phases of signal.
 - a) Rapid b) Slow
 - c) Instantaneous d) Different



Max. Marks: 70

Set Q

SLR-FM-207

- 9) range covers maximum geographical range of all.
 - a) Transmission

b) Detection

c) Interference

- d) Handover
- Training Sequence and Equalization are solutions for _____ interference. 10)
 - a) inter symbol c) adjacent channel
- b) co channel Noise
- d)
- 11) Why neighbouring stations are assigned different group of channels in cellular system?
 - a) To minimize interference
 - b) To minimize area
 - c) To maximize throughput
 - d) To maximize capacity of each cell
- What is a cell in cellular system? 12)
 - a) A small geographical area
 - b) A group of subscribers
 - c) A group of cells
 - d) A large group of mobile systems
- For a cellular system, if there are N cells and each cell is allocated k 13) channel. What is the total number of available radio channels, S?
 - a) S=k*N
 - b) S=k/N $S=k^N$ c) S=N/k d)
- 14) are used to resolve and combine multipath components.
 - a) Equalizer

Registers b)

c) RAKE receiver

Frequency divider d)

Seat No.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering MOBILE TECHNOLOGY

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** Compare Wireless and fixed network.
- c) CSMA/CD MAC in used wired network but it fails in wireless network. Justify the statement.
- d) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.
- e) How the mobile originated call in GSM?

Q.3 Attempt any two.

- a) Channel interference is one of the limitation of cellular system specify what are their type, sources and techniques to resolve them?
- b) Justify how cell sectoring can increase user capacity?
- c) Base Station uses the reverse link channels in IS95, describe that channels in brief.

Section – II

Q.4 Attempt any four.

- a) What are the requirements for a Mobile IP?
- **b)** With suitable example explain master, slave, parked & standby modes.
- c) Define mobile computing. Describe mobile computing function.
- d) Describe ad-hoc architecture for WLAN.
- e) What is agent solicitation? Why it is required?

Q.5 Attempt any two.

- a) Specify the radio transmission with DSSS PHY frame structure for IEEE 802.11.
- **b)** Explain with example Data transfer on SCO and ACL links for Bluetooth.
- c) With suitable diagram explain how a packet is sent from a fixed node to a mobile node which is presently in foreign network?

Max. Marks: 56

16

12

16

Set

Max. Marks: 70

R

Seat	
No.	

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) What is a cell in cellular system?
 - a) A small geographical area
 - b) A group of subscribers
 - c) A group of cells
 - d) A large group of mobile systems
- 2) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
 - a) S=k*N b) S=k/N
 - S=k^N c) S=N/k d)
- ____ are used to resolve and combine multipath components. 3)
 - a) Equalizer c) RAKE receiver

- b) Registers Frequency divider d)
- 4) Which of below is true for a Walsh Code?
 - They are orthogonal a)
 - b) They are used in CDMA
 - c) Their Inner Product with self is maximum
 - d) All of above
- 5) In IEEE 802.11 DSSS spreading is achieved using _____.
 - a) Walsh Code b) Training sequence
 - c) Barker Sequence
- Agent discovery & solicitation terms are associated with _____ layer. 6)
 - mobile IP a) mobile network b)
 - transport d) all of above c)
- In a IEEE 802.11 MAC packet structure, first two bytes are _____. 7) a) frame control
 - duration ID b)
 - c) preamble sequence number d)
- 8) A Bluetooth network is called _____
 - a) Wireless Network b) d) LAN
 - c) Piconet

WAN

- d) None of above

9) A wireless network interface controller can work in _____.

- a) infrastructure mode
- b) ad-hoc mode
- c) both infrastructure mode and ad-hoc mode
- d) none of the mentioned
- 10) What is the access point (AP) in wireless LAN?
 - a) Device that allows wireless devices to connect to wired network
 - b) wireless devices itself
 - c) both device that allows wireless devices to connect to a wired network and wireless devices itself
 - d) none of the mentioned
- 11) Small scale fading describes the _____ fluctuations of the amplitude, phases of signal.
 - a) Rapid

- b) Slow
- c) Instantaneous d) Different
- 12) _____ range covers maximum geographical range of all.
 - a) Transmission c) Interference

b) Detection

SLR-FM-207

Set R

d) Handover

Noise

- 13) Training Sequence and Equalization are solutions for _____ interference.
 - a) inter symbol b) co channel
 - c) adjacent channel d)
- 14) Why neighbouring stations are assigned different group of channels in cellular system?
 - a) To minimize interference
 - b) To minimize area
 - c) To maximize throughput
 - d) To maximize capacity of each cell

Seat No.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering MOBILE TECHNOLOGY

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** Compare Wireless and fixed network.
- c) CSMA/CD MAC in used wired network but it fails in wireless network. Justify the statement.
- d) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.
- e) How the mobile originated call in GSM?

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- a) Channel interference is one of the limitation of cellular system specify what are their type, sources and techniques to resolve them?
- b) Justify how cell sectoring can increase user capacity?
- c) Base Station uses the reverse link channels in IS95, describe that channels in brief.

Section – II

Q.4 Attempt any four.

- a) What are the requirements for a Mobile IP?
- **b)** With suitable example explain master, slave, parked & standby modes.
- c) Define mobile computing. Describe mobile computing function.
- d) Describe ad-hoc architecture for WLAN.
- e) What is agent solicitation? Why it is required?

Q.5 Attempt any two.

- a) Specify the radio transmission with DSSS PHY frame structure for IEEE 802.11.
- **b)** Explain with example Data transfer on SCO and ACL links for Bluetooth.
- c) With suitable diagram explain how a packet is sent from a fixed node to a mobile node which is presently in foreign network?

Max. Marks: 56

Set

16

12

12

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Agent discovery & solicitation terms are associated with layer.
 - a) mobile network

c) transport

- mobile IP b) d) all of above
- 2) In a IEEE 802.11 MAC packet structure, first two bytes are _____.
 - a) frame control b)
 - c) preamble
- 3) A Bluetooth network is called
 - WAN a) Wireless Network b)
 - c) Piconet d) LAN
- 4) A wireless network interface controller can work in _____.
 - a) infrastructure mode
 - b) ad-hoc mode
 - c) both infrastructure mode and ad-hoc mode
 - d) none of the mentioned
- What is the access point (AP) in wireless LAN? 5)
 - Device that allows wireless devices to connect to wired network a)
 - b) wireless devices itself
 - c) both device that allows wireless devices to connect to a wired network and wireless devices itself
 - d) none of the mentioned
- Small scale fading describes the _____ fluctuations of the amplitude, 6) phases of signal.
 - a) Rapid Slow b)
 - d) Different c) Instantaneous
- 7) range covers maximum geographical range of all.
 - a) Transmission Detection b)
 - d) Handover c) Interference
- Training Sequence and Equalization are solutions for _____ interference. 8) b) co channel
 - a) inter symbol
 - d) Noise c) adjacent channel

SLR-FM-207



Max. Marks: 70

Marks: 14

- duration ID
- d) sequence number

9) Why neighbouring stations are assigned different group of channels in cellular system?

- a) To minimize interference
- b) To minimize area
- c) To maximize throughput
- d) To maximize capacity of each cell
- 10) What is a cell in cellular system?
 - a) A small geographical area
 - b) A group of subscribers
 - c) A group of cells
 - d) A large group of mobile systems
- 11) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
 - a) S=k*N b) S=k/N
 - c) S=N/k d) $S=k^N$
- 12) _____ are used to resolve and combine multipath components.
 - a) Equalizer

- b) Registers
- c) RAKE receiver
- d) Frequency divider

SLR-FM-207

Set

- 13) Which of below is true for a Walsh Code?
 - a) They are orthogonal
 - b) They are used in CDMA
 - c) Their Inner Product with self is maximum
 - d) All of above
- 14) In IEEE 802.11 DSSS spreading is achieved using _____
 - a) Walsh Code
 - c) Barker Sequence
- b) Training sequence
- d) None of above

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronic Engineering

Day & Date: Thursday,12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

MOBILE TECHNOLOGY

Q.2 Attempt any four.

Seat No.

- a) How signal spreading is achieved using FHSS?
- **b)** Compare Wireless and fixed network.
- c) CSMA/CD MAC in used wired network but it fails in wireless network. Justify the statement.
- d) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.
- e) How the mobile originated call in GSM?

Q.3 Attempt any two.

- a) Channel interference is one of the limitation of cellular system specify what are their type, sources and techniques to resolve them?
- b) Justify how cell sectoring can increase user capacity?
- c) Base Station uses the reverse link channels in IS95, describe that channels in brief.

Section – II

Q.4 Attempt any four.

- a) What are the requirements for a Mobile IP?
- **b)** With suitable example explain master, slave, parked & standby modes.
- c) Define mobile computing. Describe mobile computing function.
- d) Describe ad-hoc architecture for WLAN.
- e) What is agent solicitation? Why it is required?

Q.5 Attempt any two.

- a) Specify the radio transmission with DSSS PHY frame structure for IEEE 802.11.
- b) Explain with example Data transfer on SCO and ACL links for Bluetooth.
- c) With suitable diagram explain how a packet is sent from a fixed node to a mobile node which is presently in foreign network?

Max. Marks: 56

16

12

16

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

Electronics Engineering INTERNET OF THINGS

SLR-FM-208

Set

Max. Marks: 70

Marks: 14

14

Ρ

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 Minutes in answer Book.

- 2) Each question carries one mark.
- 3) Figures to the right indicate full mark.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options.

- The Timer is a basic countdown timer that can be used to generate 1) interrupts at regular time intervals, even when the system is in sleep mode. b) Watchdog
 - a) SYSTICK c)
 - Repetitive Interrupt Timer
- The _____ registers are useful for temporarily disabling interrupts in timing-2) critical tasks.

d)

b)

- a) PRIMASK
- c) Both a and b d) None of the above
- To force logic '0' on port pin P0.30, _____ register is used in LPC1768. 3)
 - a) FIO1CLR
 - c) FIO0CLR
- LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM. 4) a) 30,16 b) 128, 32
 - c) 256, 40 d) 512,64
- After the execution of following ARM instruction the content of R0 register 5) will be
 - ADD R0, R1, R1, LSL #3
 - a) R1 + (R1 * 8) R1 + (R1 * 7)b)
 - R1 + (R1 / 8)R1 + (R1 / 7)c) d)

6) Highest priority exception in ARM Cortex-M3 processor is .

- Reset b) Hard fault a)
- C) Bus fault d) NMI

Radio frequency Identification

Radio frequency Identify

d) Random frequency Identity

Random frequency Identification

- 7) What is the value of R1 after MVN R1, #1 is executed?
 - a) 0x00000001 c) 0xFFFFFFC

8)

a)

b)

c)

RFID is an acronym for ____

- b) 0xFFFFFE
- d) 0xFFFFFD

b) FIO2CLR

BASEPRI

None of these

d) FIO3CLR

9) With respect to the IEEE 802.15.4 standard which statement is true?

- It is a low data-rate standard a)
- b) Used for architecting wireless PANs
- Uses only two layers PHY and MAC c)
- All for these d)

In MQTT the central communication point is _ 10)

a) MQTT broker

c) MQTT subscriber

- MQTT publisher b)
- d) None of the above
- Infrastructure-Cloud deals with _ 11)
 - a) Infrastructure-as-a-Service
 - c) Infrastructure-for-Service
- b) Infrastructure-in Cloud

SLR-FM-208

Set P

- d) None of these
- 12) supports a long-range communication.
 - ZigBee a) Bluetooth

- b) GPRS
- d) All of the above
- Class-1 Bluetooth devices have a range of _ 13)
 - a) 1m

c)

c)

100m

- b) 10m
- d) 1000m
- Wireless access points uses_____. 14)
 - a) IEEE 802.15.4 protocol
 - IEEE 802.11 protocol c)
- b) IEEE 802.15.6 protocol
- d) None of the above

Seat No.

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Saturday,14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four.

- a) Discuss the features of built-in nested vectored interrupt controller of Cortex-M3 processor.
- b) What are the architectural layers in a modified OSI model for IoT systems?
- c) Write short notes on ARM Cortex M3 memory map.
- d) List down and discuss the flags available in ARM Processors.
- e) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.

Q.3 Attempt any Two.

- a) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
- **b)** Discuss LDR and STR data moving instructions in details with examples.
- c) Interface a stepper motor to LPC1768 port pins P0.10-P0.13. Write an embedded c program to rotate motor anti-clockwise.

Section – II

Q.4 Attempt any four.

- a) Write short note on IEEE 802.11 modulation and encoding techniques.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) List down and discuss levels of quality of service in MQTT.
- d) What is a Cloud? Discuss SaaS services supported in Cloud.

e) Write short note on RFID tags and RFID controllers.

Q.5 Attempt any two.

- a) With a neat diagram discuss the core components of an RFID system.
- b) With an example discuss the CoAP NON and CON messaging in detail.
- c) Discuss with neat diagram the MQTT publish-subscribe model and topology.

Set P

Max. Marks: 56

12

16

16

Seat	
No.	

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 Minutes in answer Book.

- 2) Each question carries one mark.
- 3) Figures to the right indicate full mark.

MCQ/Objective Type Questions **Duration: 30 Minutes**

Q.1 Choose the correct alternatives from the options.

- 1) RFID is an acronym for
 - Radio frequency Identification a)
 - Random frequency Identification b)
 - Radio frequency Identify C)
 - Random frequency Identity d)
- 2) With respect to the IEEE 802.15.4 standard which statement is true?
 - It is a low data-rate standard a)
 - Used for architecting wireless PANs b)
 - Uses only two layers PHY and MAC c)
 - d) All for these

3) In MQTT the central communication point is _____

- MQTT broker **MQTT** publisher b) a)
- MQTT subscriber d) None of the above c)

Infrastructure-Cloud deals with 4)

- a) Infrastructure-as-a-Service b) Infrastructure-in Cloud
 - c) Infrastructure-for-Service d)

5) _ supports a long-range communication.

- ZigBee b) GPRS a)
- d) All of the above Bluetooth c)

Class-1 Bluetooth devices have a range of 6) 10m b)

- 1m a)
- c) 100m d)
- 7) Wireless access points uses
 - a) IEEE 802.15.4 protocol IEEE 802.11 protocol c)
 - d) None of the above

b)

- 8) The Timer is a basic countdown timer that can be used to generate interrupts at regular time intervals, even when the system is in sleep mode.
 - SYSTICK a) Repetitive Interrupt Timer c)
- Watchdog b)

1000m

d) None of these Max. Marks: 70

Marks: 14

14

IEEE 802.15.6 protocol

- None of these

To force logic '0' on port pin P0.30, _____ register is used in LPC1768. b) FIO2CLR FIO3CLR

SLR-FM-208

Set | Q

- LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM. 11) a) 30,16 b) 128, 32 c) 256, 40 d) 512, 64
- After the execution of following ARM instruction the content of R0 register 12) will be ADD R0, R1, R1, LSL #3 a) R1 + (R1 * 8) R1 + (R1 * 7)b)

The _____ registers are useful for temporarily disabling interrupts in timing-

b)

d)

BASEPRI

d) None of the above

- c) R1 + (R1 / 8)d) R1 + (R1 / 7)
- 13) Highest priority exception in ARM Cortex-M3 processor is _____.
 - a) Reset

critical tasks. a) PRIMASK

c) Both a and b

FIO1CLR c) FIO0CLR

9)

10)

a)

c) Bus fault

- b) Hard fault
- d) NMI
- What is the value of R1 after MVN R1, #1 is executed? 14)
 - a) 0x0000001
 - c) 0xFFFFFFC

- b) 0xFFFFFE
- d) 0xFFFFFD

Seat No.

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Saturday,14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four.

- a) Discuss the features of built-in nested vectored interrupt controller of Cortex-M3 processor.
- b) What are the architectural layers in a modified OSI model for IoT systems?
- c) Write short notes on ARM Cortex M3 memory map.
- d) List down and discuss the flags available in ARM Processors.
- e) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.

Q.3 Attempt any Two.

- a) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
- **b)** Discuss LDR and STR data moving instructions in details with examples.
- c) Interface a stepper motor to LPC1768 port pins P0.10-P0.13. Write an embedded c program to rotate motor anti-clockwise.

Section – II

Q.4 Attempt any four.

- a) Write short note on IEEE 802.11 modulation and encoding techniques.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) List down and discuss levels of quality of service in MQTT.
- d) What is a Cloud? Discuss SaaS services supported in Cloud.e) Write short note on RFID tags and RFID controllers.

e) while short hole of KFID lags and F

Q.5 Attempt any two.

- a) With a neat diagram discuss the core components of an RFID system.
- b) With an example discuss the CoAP NON and CON messaging in detail.
- c) Discuss with neat diagram the MQTT publish-subscribe model and topology.



Max. Marks: 56

12

16

12

Book. MCQ/Objective Type Questions R1 + (R1 * 7)b) d) R1 + (R1 / 7)b) Hard fault d) NMI b) 0xFFFFFE d) 0xFFFFFD Radio frequency Identification Random frequency Identification Radio frequency Identify With respect to the IEEE 802.15.4 standard which statement is true? a) It is a low data-rate standard

- b) Used for architecting wireless PANs
 - Uses only two layers PHY and MAC c)
 - d) All for these
- In MQTT the central communication point is 6)
 - MQTT publisher MQTT broker a) b)
 - MQTT subscriber d) None of the above c)
- Infrastructure-Cloud deals with _ 7)
 - a) Infrastructure-as-a-Service
 - c) Infrastructure-for-Service
- 8) supports a long-range communication.
 - a) ZigBee
 - C) Bluetooth

GPRS b)

d) None of these

b) Infrastructure-in Cloud

d) All of the above

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 Minutes in answer

- 2) Each question carries one mark.
- 3) Figures to the right indicate full mark.

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

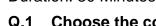
- 1) After the execution of following ARM instruction the content of R0 register will be
 - ADD R0, R1, R1, LSL #3
 - a) R1 + (R1 * 8)
 - c) R1 + (R1/8)
- Highest priority exception in ARM Cortex-M3 processor is _____.
 - a) Reset
 - Bus fault c)
- What is the value of R1 after MVN R1, #1 is executed? 3)
 - a) 0x0000001
 - c) 0xFFFFFFC
 - RFID is an acronym for _____
 - a)
 - b)
 - c)
 - Random frequency Identity d)

Marks: 14

14

Max. Marks: 70

Set R



4)

5)

Seat

No.

Set R

SLR-FM-208

- 9) Class-1 Bluetooth devices have a range of _____
 - a) 1m
- b) 10m d) 1000m
- d) 1
- 10) Wireless access points uses_____
 - a) IEEE 802.15.4 protocol
- b) IEEE 802.15.6 protocol
- c) IEEE 802.11 protocol
- d) None of the above
- 11) The _____Timer is a basic countdown timer that can be used to generate interrupts at regular time intervals, even when the system is in sleep mode.
 a) SYSTICK
 b) Watchdog
 - c) Repetitive Interrupt Timer d) None of these
- 12) The _____ registers are useful for temporarily disabling interrupts in timingcritical tasks.
 - a) PRIMASK

c) 100m

b) BASEPRI

c) Both a and b

- d) None of the above
- 13) To force logic '0' on port pin P0.30, _____ register is used in LPC1768.
 - a) FIO1CLR b) FIO2CLR
 - c) FIO0CLR d) FIO3CLR
- 14) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.
 - a) 30,16
 - c) 256, 40

- b) 128, 32
- d) 512, 64

Seat No.

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Saturday,14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four.

- a) Discuss the features of built-in nested vectored interrupt controller of Cortex-M3 processor.
- b) What are the architectural layers in a modified OSI model for IoT systems?
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- d) List down and discuss the flags available in ARM Processors.
- e) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.

Q.3 Attempt any Two.

- a) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
- **b)** Discuss LDR and STR data moving instructions in details with examples.
- c) Interface a stepper motor to LPC1768 port pins P0.10-P0.13. Write an embedded c program to rotate motor anti-clockwise.

Section – II

Q.4 Attempt any four.

- a) Write short note on IEEE 802.11 modulation and encoding techniques.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) List down and discuss levels of quality of service in MQTT.
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e) Write short note on RFID tags and RFID controllers.

Q.5 Attempt any two.

- a) With a neat diagram discuss the core components of an RFID system.
- b) With an example discuss the CoAP NON and CON messaging in detail.
- c) Discuss with neat diagram the MQTT publish-subscribe model and topology.

Set R

Max. Marks: 56

16

12

12

nd b	d)	None of the above
c '0' on port pin P0.30, R R	b)	register is used in LPC1768. FIO2CLR FIO3CLR
s on-chip KB flash	b)	nory and KB SRAM. 128, 32 512, 64

b) IEEE 802.15.6 protocol

14

Marks: 14

Page 10 of 12

Max. Marks: 70

MCQ/Objective Type Questions **Duration: 30 Minutes** Choose the correct alternatives from the options. In MQTT the central communication point is MQTT publisher MQTT broker b) None of the above MQTT subscriber d) 2) Infrastructure-Cloud deals with a) Infrastructure-as-a-Service Infrastructure-in Cloud b) d) None of these supports a long-range communication.

c) Infrastructure-for-Service

3)

- ZigBee b) GPRS a) Bluetooth d) All of the above c)
- 4) Class-1 Bluetooth devices have a range of _____
 - 1m b) a) 10m
 - c) 100m d) 1000m
- Wireless access points uses____
 - IEEE 802.15.4 protocol a) IEEE 802.11 protocol C)
 - d) None of the above Timer is a basic countdown timer that can be used to generate The
- 6) interrupts at regular time intervals, even when the system is in sleep mode. a) SYSTICK b) Watchdog
 - d) Repetitive Interrupt Timer None of these C)
- 7) The ____ registers are useful for temporarily disabling interrupts in timingcritical tasks. BASEPRI b)
 - PRIMASK a)

c)

- `ام Both a and b -1-1c)
- To force logic 8)
 - a) FIO1CLR c) FIO0CLR
- 9) LPC1768 has a) 30,16

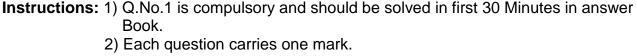
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Day & Date: Saturday, 14-12-2019

Book.

Time: 02:30 PM To 05:30 PM

SLR-FM-208



2) Each question carries one mark. 3) Figures to the right indicate full mark.

Electronics Engineering INTERNET OF THINGS

No. B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

Q.1

1)

a)

c)

10) After the execution of following ARM instruction the content of R0 register will be

ADD R0, R1, R1, LSL #3

- a) R1 + (R1 * 8)
- c) R1 + (R1 / 8)

- R1 + (R1 * 7) b) d) R1 + (R1 / 7)
- Highest priority exception in ARM Cortex-M3 processor is _____. 11)
 - a) Reset Bus fault

- Hard fault b)
- d) NMI
- What is the value of R1 after MVN R1, #1 is executed? 12)
 - a) 0x0000001 c) 0xFFFFFFC

C)

- b) 0xFFFFFE
- d) 0xFFFFFD
- 13) RFID is an acronym for _
 - Radio frequency Identification a)
 - Random frequency Identification b)
 - Radio frequency Identify C)
 - Random frequency Identity d)
- 14) With respect to the IEEE 802.15.4 standard which statement is true?
 - It is a low data-rate standard a)
 - b) Used for architecting wireless PANs
 - C) Uses only two layers - PHY and MAC
 - d) All for these

Seat No.

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Saturday,14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four.

- a) Discuss the features of built-in nested vectored interrupt controller of Cortex-M3 processor.
- b) What are the architectural layers in a modified OSI model for IoT systems?
- c) Write short notes on ARM Cortex M3 memory map.
- d) List down and discuss the flags available in ARM Processors.
- e) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.

Q.3 Attempt any Two.

- a) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
- **b)** Discuss LDR and STR data moving instructions in details with examples.
- c) Interface a stepper motor to LPC1768 port pins P0.10-P0.13. Write an embedded c program to rotate motor anti-clockwise.

Section – II

Q.4 Attempt any four.

- a) Write short note on IEEE 802.11 modulation and encoding techniques.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) List down and discuss levels of quality of service in MQTT.
- d) What is a Cloud? Discuss SaaS services supported in Cloud.
- e) Write short note on RFID tags and RFID controllers.

Q.5 Attempt any two.

- a) With a neat diagram discuss the core components of an RFID system.
- b) With an example discuss the CoAP NON and CON messaging in detail.
- c) Discuss with neat diagram the MQTT publish-subscribe model and topology.

Set S

Max. Marks: 56

12

16

16

MECHATRONIC Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Assume suitable data wherever.

MCQ/Objective Type Questions

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- When _____ contacts are actuated, they interrupt the power supply 1) through them. b) Normally closed type
 - a) Normally open type c)
 - d) None of the above Both a. and b
- 2) _ is doping process whereby dopant ions are introduced into the material of interest to change its property.
 - Etching b) Ion Implantation a)
 - Diffusion c) d) Evaporation
- 3) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.
 - Screw a)
 - b) Compressor C) Piston d) Rod
- 4) MEMS stand for .
 - a) Micro Electromechanical system
 - Mini Electromechanical system b)
 - Micro Electrical Mechanical system c)
 - d) Mini Electrical Mechanical system

_ is process, in which impure material is added to a material of 5) interest.

- a) Etching b) Implantation
- d) Evaporation c) Doping
- Actuators are interfaced with card of the PLC. 6)
 - Memory a) b) C)
 - Output
- 7) In a temperature control system, what represents the output of the system
 - The required temperature a)
 - b) The actual temperature achieved
 - The heat produced by the system c)
 - The heating element d)
- 8) With integral control, the controller output is, _____.
 - Zero when the error changes at a constant rate. i)
 - ii) Increases at a constant rate when the error is constant b) i is true and ii is false
 - Both i and ii are true a)
 - i is false and ii is true C)

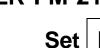
- Input

d) Both i and ii are false

d) Power

14

SLR-FM-210



Max. Marks: 70

Seat No.

Marks: 14

Set P

- The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is _
- 9.76 mV a)

9)

- b) 256 mV
- C) 1.25 mV

- d) 5V
- The basic element of ON/OFF controller is _____. 10)
 - b) Comparator a) Amplifier Oscillator c)
 - d) Differential amplifier
- _ is process, which makes it possible to selectively remove the 11) deposited films or parts of the substrate in order to obtain desired patterns.
 - Etching b) Implantation a)
 - Evaporation C) Doping d)
- 12) In _____ strain gages, change resistance in response to a mechanical strain.
 - Piezo-electric a)
 - c) Piezo-resistive
- b) RTD
- d) None of the above
- For precise measurement, strain gauge must have the following properties . 13) a) High gauge factor
 - b) Low temperature coefficient
 - High resistance C)
- d) All of the above
- Α_ 14) actuator uses a pressurized air to drive a piston.
 - a) Hydraulic

- b) Pneumatic
- None of the above C)
- d) Electric

Seat No.	t	Set	Ρ
	B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-201 Electronics Engineering MECHATRONIC	9	
	& Date: Tuesday,17-12-2019 Ma : 02:30 PM To 05:30 PM	x. Marks	s: 56
Instr	uctions: 1) All questions are compulsory.2) Figure to the right indicates full marks.		
	Section – I		
Q.2	Solve any foura) What is the process stages involved in mechatronics system designb) What are the key elements of Mechatronics system?	?	16
	 c) How displacement can be measured using LVDT? d) Explain the principle of operation of optical encoders. e) Draw and explain pneumatic power supply. 		
Q.3	Solve any Twoa) With suitable example explain Microprocessor based controllers in mechatronics.		12
	 b) Write a short note on 1) Light sensor 2) proximity switches 		
	c) How linear cylinder can be used to produce rotation?		
	Section – II		
Q.4	 Solve any four a) How Gear trains are used to transfer and transform rotational motion b) Draw and explain the mechanisms of Ratchet and Pawl. c) Explain LIGA tooling and replication method. d) Explain working of different micro thermal sensors. e) List down the differences between traditional design approach and mechatronics. 	1.	16
Q.5	 Solve any two a) Illustrate the working of CAMs of different shapes. b) What is wet and dry etching in bulk micromachining? c) Design a mechatronics system for an automatic Car Park Systems? 		12

book. 2) Assume suitable data wherever. **MCQ/Objective Type Questions Duration: 30 Minutes** Choose the correct alternatives from the options. With integral control, the controller output is, _____. 1) i) Zero when the error changes at a constant rate. ii) Increases at a constant rate when the error is constant Both i and ii are true b) i is true and ii is false a) d) Both i and ii are false i is false and ii is true C) 2) bits and an analogue signal input range of 10V is _ a) 9.76 mV b) 256 mV 1.25 mV d) 5V c) The basic element of ON/OFF controller is 3) a) Amplifier b) Comparator c) Oscillator d) Differential amplifier 4) a) Etching b) Implantation Doping Evaporation c) d) 5) strain. a) Piezo-electric b) RTD d) None of the above C) Piezo-resistive 6) b) Low temperature coefficient a) High gauge factor c) High resistance d) All of the above 7) Α___ ____ actuator uses a pressurized air to drive a piston. a) Hvdraulic b) Pneumatic None of the above d) Electric c) 8) through them. Normally open type b) Normally closed type a) d) None of the above C) Both a. and b

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Seat	
No.	

Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Q.1

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering**

MECHATRONIC

Max. Marks: 70

- The resolution of an analogue to digital converter with a word length of 10
- _ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
- In _____ strain gages, change resistance in response to a mechanical

For precise measurement, strain gauge must have the following properties _____.

- When contacts are actuated, they interrupt the power supply
- _ is doping process whereby dopant ions are introduced into the 9) material of interest to change its property. b) Ion Implantation

d)

Evaporation

- Etching a)
- Diffusion c)

SLR-FM-210



Marks: 14



- 10) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.
 - a) Screw

b) Compressor

c) Piston

- d) Rod
- 11) MEMS stand for _____.
 - a) Micro Electromechanical system
 - b) Mini Electromechanical system
 - c) Micro Electrical Mechanical system
 - d) Mini Electrical Mechanical system
- 12) _____ is process, in which impure material is added to a material of interest.
 - a) Etching b) Implantation
 - c) Doping d) Evaporation
- 13) Actuators are interfaced with _____ card of the PLC.
 - a) Memory b) Input
 - c) Output d) Power
- 14) In a temperature control system, what represents the output of the system
 - a) The required temperature
 - b) The actual temperature achieved
 - c) The heat produced by the system
 - d) The heating element

Seat No.	t Se	et Q		
	B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MECHATRONIC			
	& Date: Tuesday,17-12-2019 Max. Ma :: 02:30 PM To 05:30 PM	rks: 56		
Instr	uctions: 1) All questions are compulsory. 2) Figure to the right indicates full marks.			
	Section – I			
Q.2	 Solve any four a) What is the process stages involved in mechatronics system design? b) What are the key elements of Mechatronics system? c) How displacement can be measured using LVDT? d) Explain the principle of operation of optical encoders. e) Draw and explain pneumatic power supply. 	16		
Q.3	 Solve any Two a) With suitable example explain Microprocessor based controllers in mechatronics. b) Write a short note on Light sensor proximity switches c) How linear cylinder can be used to produce rotation? Section – II	12		
Q.4	 Solve any four a) How Gear trains are used to transfer and transform rotational motion. b) Draw and explain the mechanisms of Ratchet and Pawl. c) Explain LIGA tooling and replication method. d) Explain working of different micro thermal sensors. e) List down the differences between traditional design approach and mechatronics. 	16		
Q.5	 Solve any two a) Illustrate the working of CAMs of different shapes. b) What is wet and dry etching in bulk micromachining? 	12		

c) Design a mechatronics system for an automatic Car Park Systems?

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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MECHATRONIC e: Tuesday.17-12-2019 Max. Marks: 70

Day & Date: Tuesday,17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Assume suitable data wherever.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

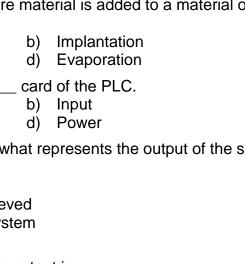
- _____ is process, in which impure material is added to a material of interest.
 a) Etching
 b) Implantation
- c) Dopingd) Evaporation2) Actuators are interfaced with _____ card of the PLC.
 - Actuators are interfaced with _____ card of the PLC.
 a) Memory b) Input
 - a) Memory b) Input c) Output d) Power
- 3) In a temperature control system, what represents the output of the system
 - a) The required temperature
 - b) The actual temperature achieved
 - c) The heat produced by the system
 - d) The heating element
- 4) With integral control, the controller output is, _____.
 - i) Zero when the error changes at a constant rate.
 - ii) Increases at a constant rate when the error is constant
 - a) Both i and ii are true b) i is true and ii is false
 - c) i is false and ii is true d) Both i and ii are false

5) The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is _____.

- a) 9.76 mV b) 256 mV
- c) 1.25 mV d) 5V
- 6) The basic element of ON/OFF controller is _____
 - a) Amplifier b) Comparator
 - c) Oscillator d) Differential amplifier
- 7) _____ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
 - a) Etchingc) Doping
- b) Implantationd) Evaporation
- 8) In _____ strain gages, change resistance in response to a mechanical strain.
 - a) Piezo-electricc) Piezo-resistive
- b) RTDd) None of the above

SLR-FM-210

Set



Seat No.

Marks: 14

14

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Set R

- 9) For precise measurement, strain gauge must have the following properties .
 - a) High gauge factor
- b) Low temperature coefficient
- c) High resistance
- d) All of the above
- Α_ 10) _ actuator uses a pressurized air to drive a piston.
 - a) Hydraulic b) Pneumatic d) Electric
 - None of the above c)
- When _____ contacts are actuated, they interrupt the power supply 11) through them.
 - Normally open type a)
- b) Normally closed type
- Both a. and b d) None of the above c)
- 12) is doping process whereby dopant ions are introduced into the material of interest to change its property.
 - a) Etching
- b) Ion Implantation
- Diffusion d) Evaporation C)
- 13) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.
 - a) Screw

C)

- b) Compressor
- d) Rod
- 14) MEMS stand for ____

Piston

- Micro Electromechanical system a)
- b) Mini Electromechanical system
- Micro Electrical Mechanical system c)
- Mini Electrical Mechanical system d)

Seat No.	t	Set	R		
	B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MECHATRONIC				
	& Date: Tuesday,17-12-2019 :: 02:30 PM To 05:30 PM	Max. Marks	s: 56		
Instr	uctions: 1) All questions are compulse 2) Figure to the right indicate				
	See	ction – I			
Q.2	Solve any four		16		
	-	ured using LVDT? of optical encoders.			
Q.3	Solve any Two		12		
	a) With suitable example explain Microprocessor based controllers in				
	mechatronics.				
	b) Write a short note on				
	1) Light sensor				
	2) proximity switchesc) How linear cylinder can be used	to produce rotation?			
	, ,	ction – II			
		ction – II			
Q.4	 b) Draw and explain the mechanism c) Explain LIGA tooling and replica d) Explain working of different micro 	tion method.	16		
Q.5	 Solve any two a) Illustrate the working of CAMs of b) What is wet and dry etching in b c) Design a mash stranging system for 	•	12		

c) Design a mechatronics system for an automatic Car Park Systems?

SLR-FM-210

MCQ/Objective Type Questions				
Dura	tion: 3	30 Minutes Marks: 1	4	
Q.1	Cho 1)	ose the correct alternatives from the options.1The basic element of ON/OFF controller isa)Amplifierb)Comparatora)Amplifierb)Comparatorc)Oscillatord)Differential amplifier	4	
	2)	is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns. a) Etching b) Implantation c) Doping d) Evaporation		
	3)	In strain gages, change resistance in response to a mechanical strain. a) Piezo-electric b) RTD c) Piezo-resistive d) None of the above		
	4)	For precise measurement, strain gauge must have the following propertiesa) High gauge factorb) Low temperature coefficientc) High resistanced) All of the above	·	
	5)	 A actuator uses a pressurized air to drive a piston. a) Hydraulic b) Pneumatic c) None of the above d) Electric 		
	6)	When contacts are actuated, they interrupt the power supply through them.a) Normally open typeb) Normally closed typec) Both a. and bd) None of the above		
	7)	 is doping process whereby dopant ions are introduced into the material of interest to change its property. a) Etching b) Ion Implantation c) Diffusion d) Evaporation 		
	8)	 A is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure. a) Screw b) Compressor c) Piston d) Rod 		
	9)	MEMS stand for a) Micro Electromechanical system		

Mini Electromechanical system b)

- Micro Electrical Mechanical system C)
- Mini Electrical Mechanical system d)

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering MECHATRONIC**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

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No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Assume suitable data wherever.

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Max. Marks: 70

SLR-FM-210

Set S

- 10) _____ is process, in which impure material is added to a material of interest.
 - a) Etching
- Implantation b)
- c) Doping d) Evaporation
- 11) Actuators are interfaced with _____ card of the PLC.
 - a) Memory b) Input
 - d) Power Output c)
- 12) In a temperature control system, what represents the output of the system
 - The required temperature a)
 - The actual temperature achieved b)
 - The heat produced by the system C)
 - The heating element d)
- 13) With integral control, the controller output is, _____.
 - Zero when the error changes at a constant rate. i)
 - Increases at a constant rate when the error is constant ii)
 - a) Both i and ii are true b) i is true and ii is false
 - c) i is false and ii is true d) Both i and ii are false
- The resolution of an analogue to digital converter with a word length of 10 14) bits and an analogue signal input range of 10V is _____.

b) 256 mV

d) 5V

- 9.76 mV
- a) 1.25 mV C)

Seat No.	t	Set	S	
	B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering MECHATRONIC			
	& Date: Tuesday,17-12-2019 Max. I 2: 02:30 PM To 05:30 PM	Marks	56 56	
Instru	ructions: 1) All questions are compulsory.2) Figure to the right indicates full marks.			
	Section – I			
Q.2	 Solve any four a) What is the process stages involved in mechatronics system design? b) What are the key elements of Mechatronics system? c) How displacement can be measured using LVDT? d) Explain the principle of operation of optical encoders. e) Draw and explain pneumatic power supply. 		16	
Q.3	 Solve any Two a) With suitable example explain Microprocessor based controllers in mechatronics. b) Write a short note on Light sensor proximity switches 		12	
	c) How linear cylinder can be used to produce rotation?			
	Section – II			
Q.4	 Solve any four a) How Gear trains are used to transfer and transform rotational motion. b) Draw and explain the mechanisms of Ratchet and Pawl. c) Explain LIGA tooling and replication method. d) Explain working of different micro thermal sensors. e) List down the differences between traditional design approach and mechatronics. 		16	
Q.5	 Solve any two a) Illustrate the working of CAMs of different shapes. b) What is wet and dry etching in bulk micromachining? 		12	

c) Design a mechatronics system for an automatic Car Park Systems?

SLR-FM-210

Seat	
No.	

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- Which statement is wrong about PRIMARY KEY constraint in SQL? 1)
 - The PRIMARY KEY uniquely identifies each record in a SQL a) database table
 - Primary key can be made based on multiple columns b)
 - Primary key must be made of any single columns C)
 - Primary keys must contain UNIQUE values. d)
- SQL Query to delete all rows in a table without deleting the table 2) (structure, attributes, and indexes)
 - DELETE FROM table name; b) DELETE TABLE table name; a)
 - C) DROP TABLE table_name; d) NONE
- 3) Wrong statement about ORDER BY keyword is
 - Used to sort the result-set in ascending or descending order a)
 - The ORDER BY keyword sorts the records in ascending order by b) default
 - C) To sort the records in ascending order, use the ASC keyword
 - To sort the records in descending order, use the DECENDING d) keyword
- 4) What type of join is needed when you wish to include rows that do not have matching values?
 - Equi-join a)

- b) Natural join
- d) All of the Mentioned Outer join C)

The description of a database is called 5)

- Snap shot b) Schema a)
 - c) Valid state d) None
- 6) The data in the database at a particular moment in time is _____.
 - Schema b) Instances a) d) None of these Both a) and b) c)
- 7) is responsible for authorizing access to the database. DB designers
 - b) End users

DBA C)

a)

d) None of these

Marks: 14

14

Ρ Set

Max. Marks: 70

SLR-FM-212 Set P

- 8) What is purpose of index in sql server?
 - To enhance the query performance a)
 - To provide an index to a record b)
 - To perform fast searches C)
 - All of the mentioned d)
- 9) Which one is not consist in structure of SQL expression .
 - b) Where Select
 - From d) When C)
- Which of the following is not a type of SQL statement? 10)
 - Data Manipulation Language (DML) a)
 - Data Definition Language (DDL) b)
 - Data Control Language (DCL) c)
 - Data Communication Language (DCL) d)

The total participation of an entity in a relationship set indicated by _____. 11)

- Lines a) Diamonds
- b) Dashed line d) Double lines
- 12) index has an index entry for every search key value in the data file.
 - Sparse a)

a)

C)

- b) Dense d) None
- Both a) and b) c)
- A level that describes data stored in a database and the relationships 13) among the data.
 - physical a)

- b) logical
- view C) user d)
- 14) Which of the following is a NoSQL Database Type?
 - a) SQL
 - c) **JSON**

- b) Document databases
- d) All of the mentioned

Seat	
No.	

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four

- a) Define the following terms:
 - 1) Data Abstraction
 - 2) Weak Entity
- **b)** Differentiate between logical data independence and physical data independence? Which one is harder to achieve and Why?
- c) What are database utilities? List a few common functions that the utilities perform.
- d) Explain with diagram 1 :N and M : N relationship types with example.
- e) Differentiate between.
 - 1) Composite and simple Attributes.
 - 2) Stored and Derived Attributes.
- f) Describe the three-schema architecture.

Q.3 Solve any Two

- a) Draw and Explain Notations for ER diagram.
- **b)** Explain the Centralized architecture for DBMS.
- c) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer. teaches(ID, course id, sec id, semester, year)

takes (ID, course id, sec_id, semester, year, grade)

prereq(course id, prereq id)

advisor(s_ID, i_ID)

sec_course(course_id, sec_id, semester, year, timer_slot_id)

sec_class(course_id, sec_id, semester, year, building, room_number)

inst dept(ID, dept_name)

stud_dept(ID, dept_name)

course dept(course_id, dept_name)

Max. Marks: 56

Set

12

Section – II

Q.4 Solve any four

- a) Explain with example Insert and Update commands.
- b) Explain the following join with example in SQL.
 - 1) Inner Join.
 - 2) Full Outer Join.
- c) How do you define big data? And Explain the three V's of characterized big data.
- d) How can hashing be used to construct an index?
- e) Explain secondary index with an example.
- Write SQL statements to do the following on the database schema **f**) Instructor (ID, name, dept_name, salary).
 - 1) Increase salaries of instructors whose salary by a 10%.
 - 2) Retrieve the dept_name and address of all employees who work for the 'Research'.

Q.5 Solve any two

- a) Describe the architecture of Hadoop?
- b) Explain in brief B+ tree Index.
- c) Explain aggregation with example.

16

12

SLR-FM-212 Set P

B.E. (Part – I) (New) (CBCS) Exami

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Duration: 30 Minutes

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options.

- 1) What is purpose of index in sql server?
 - a) To enhance the query performance
 - b) To provide an index to a record
 - c) To perform fast searches
 - d) All of the mentioned
- 2) Which one is not consist in structure of SQL expression _____.
 a) Select
 b) Where
 - c) From d) When
- 3) Which of the following is not a type of SQL statement?
 - a) Data Manipulation Language (DML)
 - b) Data Definition Language (DDL)
 - c) Data Control Language (DCL)
 - d) Data Communication Language (DCL)

4) The total participation of an entity in a relationship set indicated by _____.

- a) Lines b) Dashed line
- c) Diamonds d) Double lines
- 5) _____ index has an index entry for every search key value in the data file.
 - a) Sparse b) Dense
 - c) Both a) and b) d) None
- 6) A level that describes data stored in a database and the relationships among the data.
 - a) physical
 - c) user d) view
- 7) Which of the following is a NoSQL Database Type?
 - a) SQL c) JSON

- b) Document databasesd) All of the mentioned
- d) All of the mentioned

b) logical

SLR-FM-212



Max. Marks: 70

Marks: 14

8) Which statement is wrong about PRIMARY KEY constraint in SQL?

- a) The PRIMARY KEY uniquely identifies each record in a SQL database table
- b) Primary key can be made based on multiple columns
- c) Primary key must be made of any single columns
- d) Primary keys must contain UNIQUE values.
- 9) SQL Query to delete all rows in a table without deleting the table (structure, attributes, and indexes)
 - a) DELETE FROM table_name; b) DELETE TABLE table_name;
 - c) DROP TABLE table_name; d) NONE
- 10) Wrong statement about ORDER BY keyword is _____
 - a) Used to sort the result-set in ascending or descending order
 - b) The ORDER BY keyword sorts the records in ascending order by default
 - c) To sort the records in ascending order, use the ASC keyword
 - d) To sort the records in descending order, use the DECENDING keyword
- 11) What type of join is needed when you wish to include rows that do not have matching values?
 - a) Equi-join

b) Natural join

SLR-FM-212

Set Q

- c) Outer join d) All of the Mentioned
- 12) The description of a database is called _
 - a) Snap shot b) Schema
 - c) Valid state d) None
- 13) The data in the database at a particular moment in time is _____.
 - a) Schema b) Instances
 - Both a) and b) d) None of these
- 14) _____ is responsible for authorizing access to the database.
 - a) DB designers

b) End users

c) DBA

c)

d) None of these

Seat	
No.	

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four

- a) Define the following terms:
 - 1) Data Abstraction
 - 2) Weak Entity
- **b)** Differentiate between logical data independence and physical data independence? Which one is harder to achieve and Why?
- What are database utilities? List a few common functions that the utilities c) perform.
- Explain with diagram 1 :N and M : N relationship types with example. d)
- e) Differentiate between.
 - 1) Composite and simple Attributes.
 - 2) Stored and Derived Attributes.
- Describe the three-schema architecture. **f**)

Q.3 Solve any Two

- a) Draw and Explain Notations for ER diagram.
- Explain the Centralized architecture for DBMS. b)
- c) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer. teaches(ID, course id, sec id, semester, year)

takes (ID, course id, sec id, semester, year, grade)

prereq(course id, prereq_id)

advisor(s ID, i ID)

sec course(course id, sec id, semester, year, timer slot id)

sec_class(course_id, sec_id, semester, year, building, room_number)

inst dept(ID, dept name)

stud dept(ID, dept name)

course dept(course id, dept name)

Max. Marks: 56

Set

Q

16

Section – II

Q.4 Solve any four

- a) Explain with example Insert and Update commands.
- **b)** Explain the following join with example in SQL.
 - 1) Inner Join.
 - 2) Full Outer Join.
- c) How do you define big data? And Explain the three V's of characterized big data.
- d) How can hashing be used to construct an index?
- e) Explain secondary index with an example.
- f) Write SQL statements to do the following on the database schema Instructor (ID, name, dept_name, salary).
 - 1) Increase salaries of instructors whose salary by a 10%.
 - 2) Retrieve the dept_name and address of all employees who work for the 'Research'.

Q.5 Solve any two

- a) Describe the architecture of Hadoop?
- **b)** Explain in brief B+ tree Index.
- c) Explain aggregation with example.

Seat No.					Set	R
B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering DATABASE MANAGEMENT SYSTEMS						
	Day & Date: Tuesday, 17-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM					
 Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. 					swer	
		MCQ/Objec				
Duratio	on: 30 M	inutes			Marks	s: 14
		the correct alternatives for e description of a database Snap shot Valid state	-	 Schema		14
2	2) The a) c)	e data in the database at a Schema Both a) and b)	particular ı b) d)	noment in time is Instances None of these		
3	3) a) c)	is responsible for autho DB designers DBA	orizing acce b) d)			
4	+) Wh a) b) c) d)	at is purpose of index in so To enhance the query pe To provide an index to a To perform fast searches All of the mentioned	erformance record			
5	5) Wh a) c)	ich one is not consist in sti Select From	ructure of S b) d)	QL expression Where When		
6	5) Wh a) b) c) d)	ich of the following is not a Data Manipulation Langu Data Definition Language Data Control Language (Data Communication Lar	iage (DML) ∋ (DDL) DCL)			
7	') The a) c)	e total participation of an er Lines Diamonds	ntity in a re b) d)	lationship set indicated by _ Dashed line Double lines		
8	3) a) c)	index has an index ent Sparse Both a) and b)	ry for every b) d)	v search key value in the dat Dense None	a file.	
9	,	evel that describes data sto ong the data. physical user	bred in a da b) d)	atabase and the relationship logical view	S	

- SLR-FM-212 Set R
- 10) Which of the following is a NoSQL Database Type?
 - a) SQL

- b) Document databasesd) All of the mentioned
- c) JSON
- 11) Which statement is wrong about PRIMARY KEY constraint in SQL?
 - a) The PRIMARY KEY uniquely identifies each record in a SQL database table
 - b) Primary key can be made based on multiple columns
 - c) Primary key must be made of any single columns
 - d) Primary keys must contain UNIQUE values.
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 - a) DELETE FROM table_name;
- b) DELETE TABLE table_name;d) NONE
- c) DROP TABLE table_name;
- 13) Wrong statement about ORDER BY keyword is _____
 - a) Used to sort the result-set in ascending or descending order
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 - c) To sort the records in ascending order, use the ASC keyword
 - d) To sort the records in descending order, use the DECENDING keyword
- 14) What type of join is needed when you wish to include rows that do not have matching values?
 - a) Equi-join

- b) Natural join
- d) All of the Mentioned

c) Outer join

B.E. (Part – I)	(New) (CBCS) Examination Nov/Dec-2019	
Electronics Engineering		

DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four

Seat

No.

- a) Define the following terms:
 - 1) Data Abstraction
 - 2) Weak Entity
- **b)** Differentiate between logical data independence and physical data independence? Which one is harder to achieve and Why?
- c) What are database utilities? List a few common functions that the utilities perform.
- d) Explain with diagram 1 :N and M : N relationship types with example.
- e) Differentiate between.
 - 1) Composite and simple Attributes.
 - 2) Stored and Derived Attributes.
- f) Describe the three-schema architecture.

Q.3 Solve any Two

- a) Draw and Explain Notations for ER diagram.
- **b)** Explain the Centralized architecture for DBMS.
- c) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer. teaches(ID, course id, sec id, semester, year)

takes (ID, course id, sec_id, semester, year, grade)

prereq(course id, prereq id)

advisor(s_ID, i_ID)

sec_course(course_id, sec_id, semester, year, timer_slot_id)

sec_class(course_id, sec_id, semester, year, building, room_number)

inst_dept(ID, dept_name)

stud_dept(ID, dept_name)

course dept(course_id, dept_name)

Max. Marks: 56

Set

R

16

Page **12** of **16**

Section – II

Q.4 Solve any four

- a) Explain with example Insert and Update commands.
- b) Explain the following join with example in SQL.
 - 1) Inner Join.
 - 2) Full Outer Join.
- c) How do you define big data? And Explain the three V's of characterized big data.
- d) How can hashing be used to construct an index?
- e) Explain secondary index with an example.
- Write SQL statements to do the following on the database schema **f**) Instructor (ID, name, dept_name, salary).
 - 1) Increase salaries of instructors whose salary by a 10%.
 - 2) Retrieve the dept_name and address of all employees who work for the 'Research'.

Q.5 Solve any two

- a) Describe the architecture of Hadoop?
- b) Explain in brief B+ tree Index.
- c) Explain aggregation with example.

16

12

SLR-FM-212 Set R

	R E (Part I) (Now) (C
No.	
Seat	

- I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options.

Duration: 30 Minutes

a)

a)

a)

SQL

- Which of the following is not a type of SQL statement? 1)
 - Data Manipulation Language (DML) a)
 - Data Definition Language (DDL) b)
 - Data Control Language (DCL) c)
 - d) Data Communication Language (DCL)

The total participation of an entity in a relationship set indicated by _____. 2)

- b) Dashed line a) Lines
- c) Diamonds d) Double lines
- index has an index entry for every search key value in the data file. 3) Sparse
 - b) Dense
 - Both a) and b) d) None c)
- 4) A level that describes data stored in a database and the relationships among the data.
 - physical b) logical a)
 - d) view C) user
- Which of the following is a NoSQL Database Type? 5)
 - b) Document databases
 - C) JSON d) All of the mentioned
- Which statement is wrong about PRIMARY KEY constraint in SQL? 6)
 - The PRIMARY KEY uniquely identifies each record in a SQL a) database table
 - Primary key can be made based on multiple columns b)
 - Primary key must be made of any single columns c)
 - Primary keys must contain UNIQUE values. d)
- SQL Query to delete all rows in a table without deleting the table 7) (structure, attributes, and indexes)
 - DELETE FROM table name: b) DELETE TABLE table name;
 - DROP TABLE table_name; c)
- d) NONE

Max. Marks: 70

Marks: 14

14

Set



Wrong statement about ORDER BY keyword is .

- a) Used to sort the result-set in ascending or descending order
- b) The ORDER BY keyword sorts the records in ascending order by default
- c) To sort the records in ascending order, use the ASC keyword
- d) To sort the records in descending order, use the DECENDING keyword
- 9) What type of join is needed when you wish to include rows that do not have matching values?
 - a) Equi-join

8)

b) Natural join

c) Outer join

d) All of the Mentioned

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Set S

- 10) The description of a database is called _
 - a) Snap shot b) Schema
 - c) Valid state d) None
- 11) The data in the database at a particular moment in time is _____.
 - a) Schema

DBA

C)

C)

- b) Instances
- d) None of these
- 12) _____ is responsible for authorizing access to the database.
 - a) DB designers

Both a) and b)

- b) End usersd) None of these
- d)
- 13) What is purpose of index in sql server?
 - a) To enhance the query performance
 - b) To provide an index to a record
 - c) To perform fast searches
 - d) All of the mentioned
- 14) Which one is not consist in structure of SQL expression _____.
 - a) Select

b) Where

c) From

d) When

Seat	
No.	

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** DATABASE MANAGEMENT SYSTEMS

Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four

- a) Define the following terms:
 - 1) Data Abstraction
 - 2) Weak Entity
- b) Differentiate between logical data independence and physical data independence? Which one is harder to achieve and Why?
- What are database utilities? List a few common functions that the utilities c) perform.
- Explain with diagram 1 :N and M : N relationship types with example. d)
- e) Differentiate between.
 - 1) Composite and simple Attributes.
 - 2) Stored and Derived Attributes.
- Describe the three-schema architecture. **f**)

Solve any Two Q.3

- a) Draw and Explain Notations for ER diagram.
- b) Explain the Centralized architecture for DBMS.
- c) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer. teaches(ID, course id, sec id, semester, year)

takes (ID, course id, sec id, semester, year, grade)

prereq(course id, prereq_id)

advisor(s ID, i ID)

sec_course(course_id, sec_id, semester, year, timer slot_id)

sec_class(course_id, sec_id, semester, year, building, room_number)

inst dept(ID, dept name)

stud dept(ID, dept name)

course dept(course id, dept name)

Max. Marks: 56

Set

12

12

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Section – II

Q.4 Solve any four

- a) Explain with example Insert and Update commands.
- **b)** Explain the following join with example in SQL.
 - 1) Inner Join.
 - 2) Full Outer Join.
- c) How do you define big data? And Explain the three V's of characterized big data.
- d) How can hashing be used to construct an index?
- e) Explain secondary index with an example.
- f) Write SQL statements to do the following on the database schema Instructor (ID, name, dept_name, salary).
 - 1) Increase salaries of instructors whose salary by a 10%.
 - 2) Retrieve the dept_name and address of all employees who work for the 'Research'.

Q.5 Solve any two

- a) Describe the architecture of Hadoop?
- **b)** Explain in brief B+ tree Index.
- c) Explain aggregation with example.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In a 3 phase fully controlled rectifier the ripple frequency is _____.
 - a) Equal to the input frequency
 - b) Twice the input frequency
 - Three times the input frequency c)
 - d) Six times the input frequency
- In Three phase full converter PIV across any thyristor is _____. 2)
 - a) $\sqrt{2}V_{\rm m}$ b) $\sqrt{3}V_{m}$
 - c) $\sqrt{3}V_{LL}$ $\sqrt{6}V_{LL}$ d)
- In thyristor de chopper _____ type of commutation results in best 3) performance.
 - a) natural commutation current commutation b)
 - c) load commutation d) voltage commutation
- 4) A step up chopper has input dc voltage is 200 V and duty cycle of chopper is 0.667 Then output dc will be
 - 333 a) 300 b)
 - C) 133 d) 600
- When we need to drive a dc motor at different speeds in both directions 5) and also to brake it in both the directions, which one of the following would you use? Class E chopper b)
 - a) Dual Converter
 - c) Jones chopper
- d) Both a & b

DC to AC converter

- 6) A Cyclomultiplier is a _____.
 - a) AC to AC converter
 - c) AC to DC converter **Power Converter** d)
- 7) The number of SCR's required for single phase midpoint cycloconverter and single phase bridge cycloconverter is

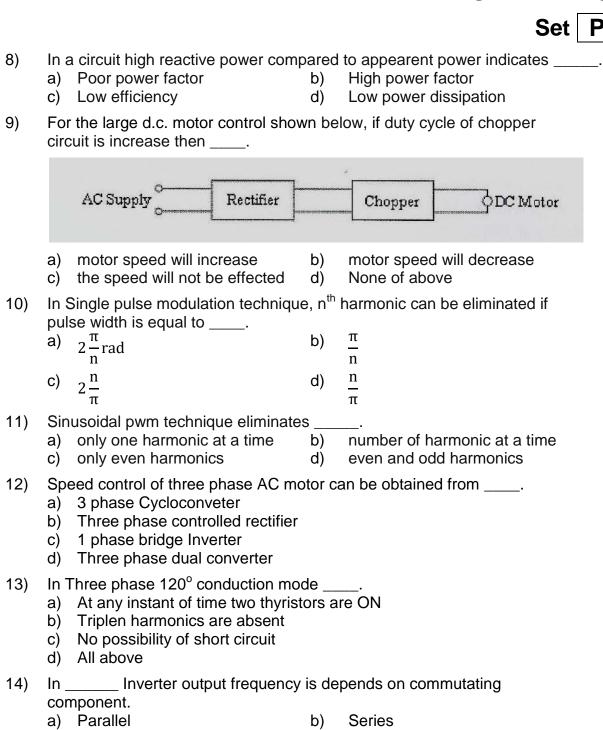
b)

- a) 8.4 b) 2, 4
- c) 4,16 d) 4,8

Set



Max. Marks: 70



c) Improved parallel inverter d) Both a & c

SLR-FM-213

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.

- 2) Figures to right indicate maximum marks.
- 3) Assume suitable data if required.

Section – I

Answer any four of the following question. Q.2

- Explain operation of Three phase semi converter with highly inductive load. a) Derive the expression for V_{dc} Draw neat waveform for $\alpha = 90^{\circ}$
- Prove that for chopper circuit $I_n = \left(\left(\frac{Fr}{nFch}\right)^2\right)$ Justify "Resonance frequency b) is always less than chopping frequency".

Explain working of class D chopper with suitable circuit diagram.

- c) d) Draw and explain the control circuit block diagram for cycloconverter with non circulating current mode.
- Derive an expression for circulating current of three phase dual converter e) & sketch associated waveforms.

Q.3 Answer any two of the following question.

- Explain operation of three phase full controlled bridge converter with a) inductive load. Derive the expression for V_{dc} , I_{dc} . Draw voltage waveform for $\alpha = 60^{\circ}$
- Explain working of Jones chopper with neat circuit diagram. Sketch b) associated voltage and current waveforms
- Explain operation of single phase bridge type step down cycloconverter for C) 5:1 frequency ratio. Sketch associated waveforms for resistive load. State application of cycloconverter.

Section – II

Q.4 Answer any four of the following question.

- Explain operation of single phase full bridge IGBT based voltage source a) inverter with Inductive load. Draw associated waveforms.
- With neat circuit diagram and appropriate waveforms explain working of b) improved parallel inverter with highly inductive load with associated waveforms.
- Explain working of harmonic reduction technique using stepped wave C) inverter
- Explain working of closed loop control of induction motor using stator d) voltage control method
- How a four quadrant operation can be obtained from a chopper fed DC e) drive

16

12

Max. Marks: 56

Q.5 Solve any two of the following questions.

- a) What is power factor corrector? Explain different power factor corrector method.
- b) Explain working of speed control of dc drive using fuzzy logic controller for two different cases
 - Control action below reference speed i)
 - Control action above reference speed ii)
- c) Explain working of single pulse modulation technique. Derive an expression of RMS output voltage. How it eliminates nth harmonic component from output voltage.



Set P

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

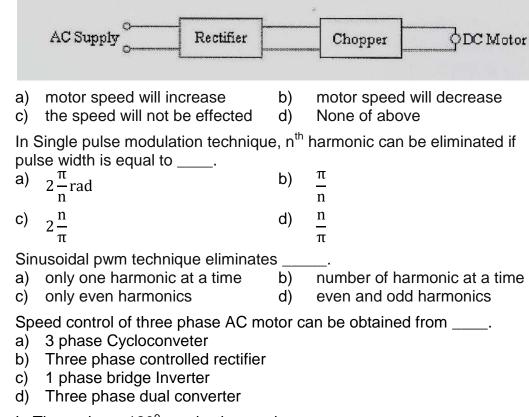
3)

4)

5)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In a circuit high reactive power compared to appearent power indicates .
 - a) Poor power factor c) Low efficiency
- High power factor b)
- Low power dissipation d)
- 2) For the large d.c. motor control shown below, if duty cycle of chopper circuit is increase then



In Three phase 120° conduction mode _____. 6)

- a) At any instant of time two thyristors are ON
- Triplen harmonics are absent b)
- No possibility of short circuit C)
- All above d)

Seat No.

Max. Marks: 70

Marks: 14

SLR-FM-213

Set Q 7) In Inverter output frequency is depends on commutating component. a) Parallel b) Series c) Improved parallel inverter d) Both a & c 8) In a 3 phase fully controlled rectifier the ripple frequency is _____. a) Equal to the input frequency b) Twice the input frequency c) Three times the input frequency d) Six times the input frequency 9) In Three phase full converter PIV across any thyristor is _____. a) $\sqrt{2}V_{m}$ $\sqrt{3}V_{m}$ b) c) $\sqrt{3}V_{LL}$ d) $\sqrt{6}V_{LL}$ In thyristor de chopper _____ type of commutation results in best 10) performance. a) natural commutation b) current commutation c) load commutation d) voltage commutation 11) A step up chopper has input dc voltage is 200 V and duty cycle of chopper is 0.667 Then output dc will be ____ a) 333 b) 300 133 d) 600 C) When we need to drive a dc motor at different speeds in both directions 12) and also to brake it in both the directions, which one of the following would you use? a) Dual Converter Class E chopper b) c) Jones chopper d) Both a & b 13) A Cyclomultiplier is a _____. a) AC to AC converter b) DC to AC converter c) AC to DC converter **Power Converter** d) 14) The number of SCR's required for single phase midpoint cycloconverter and single phase bridge cycloconverter is ____ 2, 4 a) 8,4 b) c) 4, 16 d) 4,8

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Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.

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Section – I

Q.2 Answer any four of the following question.

- a) Explain operation of Three phase semi converter with highly inductive load. Derive the expression for V_{dc} Draw neat waveform for $\alpha = 90^{\circ}$
- **b)** Prove that for chopper circuit $I_n = \left(\left(\frac{Fr}{nFch}\right)^2\right)$ Justify "Resonance frequency is always less than chopping frequency".

c) Explain working of class D chopper with suitable circuit diagram.

- d) Draw and explain the control circuit block diagram for cycloconverter with non circulating current mode.
- e) Derive an expression for circulating current of three phase dual converter & sketch associated waveforms.

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- **b)** Explain working of Jones chopper with neat circuit diagram. Sketch associated voltage and current waveforms
- c) Explain operation of single phase bridge type step down cycloconverter for 5:1 frequency ratio. Sketch associated waveforms for resistive load. State application of cycloconverter.

Section – II

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- **b)** With neat circuit diagram and appropriate waveforms explain working of improved parallel inverter with highly inductive load with associated waveforms.
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- d) Explain working of closed loop control of induction motor using stator voltage control method
- e) How a four quadrant operation can be obtained from a chopper fed DC drive

16

12

Set Q

Max. Marks: 56

Q.5 Solve any two of the following questions.

- a) What is power factor corrector? Explain different power factor corrector method.
- b) Explain working of speed control of dc drive using fuzzy logic controller for two different cases
 - Control action below reference speed i)
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- c) Explain working of single pulse modulation technique. Derive an expression of RMS output voltage. How it eliminates nth harmonic component from output voltage.



Set Q

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

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Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

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- 3) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

When we need to drive a dc motor at different speeds in both directions 1) and also to brake it in both the directions, which one of the following would you use? Class E chopper b)

d)

- a) Dual Converter
- c) Jones chopper
- 2) A Cyclomultiplier is a ____ a) AC to AC converter

c) AC to DC converter

b) DC to AC converter

Both a & b

- d) **Power Converter**
- The number of SCR's required for single phase midpoint cycloconverter 3) and single phase bridge cycloconverter is
 - a) 8,4 b) 2, 4
 - c) 4,16 d) 4, 8
- 4) In a circuit high reactive power compared to appearent power indicates _____.
 - Poor power factor a) c) Low efficiency
- High power factor b) d) Low power dissipation
- For the large d.c. motor control shown below, if duty cycle of chopper 5) circuit is increase then

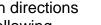
AC Supply	Rectifier	 C1	
C Dabby	2	 Chopper	GDC Moto:

- motor speed will increase b) motor speed will decrease a)
- the speed will not be effected None of above d) c)
- In Single pulse modulation technique, nth harmonic can be eliminated if 6) pulse width is equal to _____.

a)	2 - rad	b)	<u></u>
	n		n
c)	$2\frac{n}{-}$	d)	n
,	<u>2</u> π	,	π

- 7) Sinusoidal pwm technique eliminates
 - a) only one harmonic at a time only even harmonics C)

number of harmonic at a time b) d) even and odd harmonics



Set R

Max. Marks: 70

Marks: 14



- 8) Speed control of three phase AC motor can be obtained from .
 - a) 3 phase Cycloconveter
 - b) Three phase controlled rectifier
 - 1 phase bridge Inverter c)
 - d) Three phase dual converter
- In Three phase 120° conduction mode . 9)
 - a) At any instant of time two thyristors are ON
 - b) Triplen harmonics are absent
 - c) No possibility of short circuit
 - d) All above
- In _____ Inverter output frequency is depends on commutating 10) component.
 - a) Parallel b) Series
 - c) Improved parallel inverter d) Both a & c
- In a 3 phase fully controlled rectifier the ripple frequency is _____. 11)
 - a) Equal to the input frequency
 - b) Twice the input frequency
 - c) Three times the input frequency
 - d) Six times the input frequency

In Three phase full converter PIV across any thyristor is _____. 12)

- $\sqrt{3}V_{m}$ a) $\sqrt{2}V_{m}$ b)
- d) c) $\sqrt{3}V_{LL}$ $\sqrt{6}V_{II}$
- In thyristor de chopper _____ type of commutation results in best 13) performance.
 - a) natural commutation
- b) current commutation
- load commutation d) voltage commutation c)
- 14) A step up chopper has input dc voltage is 200 V and duty cycle of chopper is 0.667 Then output dc will be __
 - a) 333 300 b) c) 133
 - d) 600

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.

- 2) Figures to right indicate maximum marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Answer any four of the following question.

- a) Explain operation of Three phase semi converter with highly inductive load. Derive the expression for V_{dc} Draw neat waveform for $\alpha = 90^{\circ}$
- **b)** Prove that for chopper circuit $I_n = \left(\left(\frac{Fr}{nFch}\right)^2\right)$ Justify "Resonance frequency is always less than chopping frequency".
- c) Explain working of class D chopper with suitable circuit diagram.
- d) Draw and explain the control circuit block diagram for cycloconverter with non circulating current mode.
- e) Derive an expression for circulating current of three phase dual converter & sketch associated waveforms.

Q.3 Answer any two of the following question.

- a) Explain operation of three phase full controlled bridge converter with inductive load. Derive the expression for V_{dc} , I_{dc} . Draw voltage waveform for $\alpha = 60^{\circ}$
- **b)** Explain working of Jones chopper with neat circuit diagram. Sketch associated voltage and current waveforms
- c) Explain operation of single phase bridge type step down cycloconverter for 5:1 frequency ratio. Sketch associated waveforms for resistive load. State application of cycloconverter.

Section – II

Q.4 Answer any four of the following question.

- a) Explain operation of single phase full bridge IGBT based voltage source inverter with Inductive load. Draw associated waveforms.
- **b)** With neat circuit diagram and appropriate waveforms explain working of improved parallel inverter with highly inductive load with associated waveforms.
- c) Explain working of harmonic reduction technique using stepped wave inverter
- d) Explain working of closed loop control of induction motor using stator voltage control method
- e) How a four quadrant operation can be obtained from a chopper fed DC drive

16

R

12

Max. Marks: 56

Q.5 Solve any two of the following questions.

- a) What is power factor corrector? Explain different power factor corrector method.
- **b)** Explain working of speed control of dc drive using fuzzy logic controller for two different cases
 - i) Control action below reference speed
 - ii) Control action above reference speed
- **c)** Explain working of single pulse modulation technique. Derive an expression of RMS output voltage. How it eliminates nth harmonic component from output voltage.



Set R

	$B \in (Part - I) (Old) ($	c
No.		
Seat		

I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

S

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

In Single pulse modulation technique, nth harmonic can be eliminated if 1) pulse width is equal to .

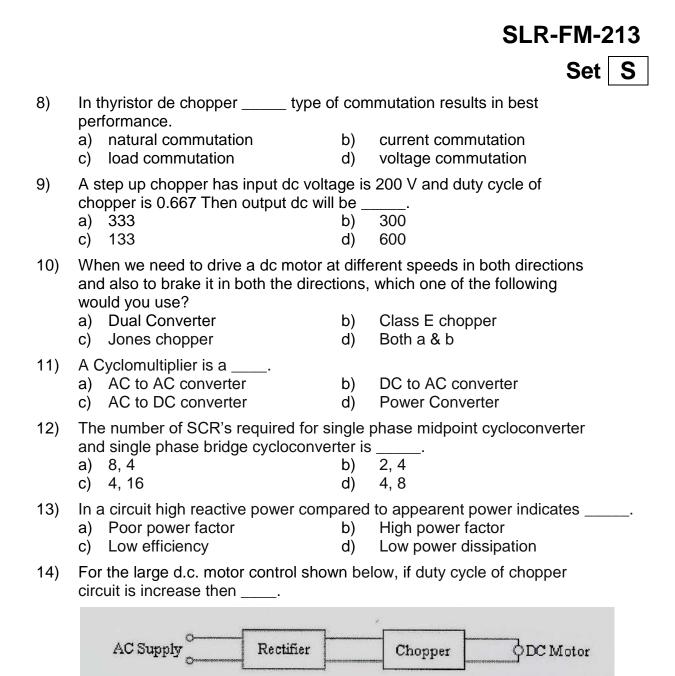
a)	$2\frac{\pi}{-}$ rad	•	 b)	π
ω,	2–rad		~)	—
	n			n
	n		N	n
C)	$2\frac{n}{-}$		d)	
	<u> </u>			_
	TL T			n

2) Sinusoidal pwm technique eliminates

- a) only one harmonic at a time number of harmonic at a time b)
- c) only even harmonics d) even and odd harmonics
- 3) Speed control of three phase AC motor can be obtained from _____.
 - a) 3 phase Cycloconveter
 - b) Three phase controlled rectifier
 - c) 1 phase bridge Inverter
 - d) Three phase dual converter
- In Three phase 120° conduction mode . 4)
 - a) At any instant of time two thyristors are ON
 - b) Triplen harmonics are absent
 - c) No possibility of short circuit
 - d) All above
- 5) In Inverter output frequency is depends on commutating component.
 - a) Parallel b) Series
 - c) Improved parallel inverter d) Both a & c
- In a 3 phase fully controlled rectifier the ripple frequency is _____. 6)
 - a) Equal to the input frequency
 - b) Twice the input frequency
 - c) Three times the input frequency
 - d) Six times the input frequency
- In Three phase full converter PIV across any thyristor is _____. 7)
 - $\sqrt{2}V_{m}$ b) a) $\sqrt{3}V_{m}$
 - c) d) $\sqrt{6}V_{LL}$ $\sqrt{3}V_{LL}$

Max. Marks: 70

Marks: 14



a) motor speed will increase

c)

- ease b) motor speed will decrease
- the speed will not be effected d) None of above

Set

Max. Marks: 56

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering POWER ELECTRONICS

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.

- 2) Figures to right indicate maximum marks.
- 3) Assume suitable data if required.

Section – I

Q.2 Answer any four of the following question.

- a) Explain operation of Three phase semi converter with highly inductive load. Derive the expression for V_{dc} Draw neat waveform for $\alpha = 90^{\circ}$
- **b)** Prove that for chopper circuit $I_n = \left(\left(\frac{Fr}{nFch}\right)^2\right)$ Justify "Resonance frequency is always less than chopping frequency".
- c) Explain working of class D chopper with suitable circuit diagram.
- d) Draw and explain the control circuit block diagram for cycloconverter with non circulating current mode.
- e) Derive an expression for circulating current of three phase dual converter & sketch associated waveforms.

Q.3 Answer any two of the following question.

- a) Explain operation of three phase full controlled bridge converter with inductive load. Derive the expression for V_{dc} , I_{dc} . Draw voltage waveform for $\alpha = 60^{\circ}$
- **b)** Explain working of Jones chopper with neat circuit diagram. Sketch associated voltage and current waveforms
- c) Explain operation of single phase bridge type step down cycloconverter for 5:1 frequency ratio. Sketch associated waveforms for resistive load. State application of cycloconverter.

Section – II

Q.4 Answer any four of the following question.

- a) Explain operation of single phase full bridge IGBT based voltage source inverter with Inductive load. Draw associated waveforms.
- **b)** With neat circuit diagram and appropriate waveforms explain working of improved parallel inverter with highly inductive load with associated waveforms.
- c) Explain working of harmonic reduction technique using stepped wave inverter
- d) Explain working of closed loop control of induction motor using stator voltage control method
- e) How a four quadrant operation can be obtained from a chopper fed DC drive

16

12

Page **16** of **16**

SLR-FM-213

Set S

12

Q.5 Solve any two of the following questions.

- a) What is power factor corrector? Explain different power factor corrector method.
- **b)** Explain working of speed control of dc drive using fuzzy logic controller for two different cases
 - i) Control action below reference speed
 - ii) Control action above reference speed
- **c)** Explain working of single pulse modulation technique. Derive an expression of RMS output voltage. How it eliminates nth harmonic component from output voltage.

Time	: 02:3	30 PM To 05:30 PM				
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.						
2) Figures to the right indicate full marks.						
D		MCQ/Objective Type Questions				
		30 Minutes Marks: 14				
Q.1	Cho 1)	oose the correct alternatives from the options and rewrite the sentence.14Which layer provides the services to user?a)Applicationb)a)Applicationb)Transportc)Physicald)Session				
	2)	Bits are packaged into frames at which layer of the OSI model? a) session layer b) network layer c) data link layer d) application layer				
	3)	Encryption takes place at which layer? a) Application b) presentation c) data link d) physical				
	4)	Packets are found at which layer?a) applicationb) transportc) data linkd) physical				
	5)	In error correction, the receiver corrects errors without requesting retransmission. a) onward b) backward c) forward d) none of given				
	6)	Which device is used to connect two systems, specially two systems uses different protocols? a) hub b) router c) gateway d) bridge				
	7)	Which LAN topology requires central controller or hub? a) star b) bus c) mesh d) ring				
	8)	TCP assigns a sequence number to each segment that is being sent. Thesequence number for each segment is number of the byte carriedin that segment.a) firstb) lastc) centrald) none of mentioned				
	9)	UDP packets have fixed-size header of bytes. a) 8 b) 16 c) 32 d) 64				
	10)	What range of addresses are used in first octet of Class-C IPv4 address? a) 192-233 b) 203-233 c) 1.427				

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics** Engineering **COMPUTER NETWORKS**

Day & Date: Tuesday, 10-12-2019 Tir 02.20

- 192-233 D) 203-233
- 1-127 129-192 C) d)

SLR-FM-214



Max. Marks: 70

Seat No.

Set P

- 11) Which protocol does use _____ operation?
 - a) TCP b) ARP
 - c) ICMP d) UDP
- 12) Packets of data that is transported by IP is called _____.
 - a) segment b) message
 - c) data chunk d) datagram

13) Term that refers to associate a logical address with a physical address is _____.

- a) RARP b) ARP
- c) ICMP d) IGMP
- 14) IPv4 uses _____ bits for addressing.
 - a) 16 b) 8 c) 31 d) 32

12

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any Four.

- a) What are collision oriented, collision less and limited collision MAC protocols? Explain one collision free and one collision oriented MAC protocol.
- **b)** List different networking devices and describe functioning of each device. Discuss stop_and_wait flow control mechanism. Why this mechanism is unsuitable for short distance communication?
- c) What are error correction methods of error control methods? Explain each shortly. Find transmitted data word if a transmitter used CRC mechanism for error control, the data is 110010101 and divisor is 10101.
- **d)** What are different types of stations and different modes of data transfer related to HDLC?
- e) Draw different LAN topologies and compare them on the basis of maintenance and expansion issues.

Q.3 Answer any Two.

- a) Draw different HDLC frame formats and discuss operation of each field. What is extended mode in HDLC?
- **b)** Draw IEEE 802.5 MAC sublayer and describe importance of each field. How data delivery is acknowledged in IEEE 802.5 LAN?
- c) Write different assumptions made in dynamic channel allocation. Discuss bit map and binary countdown protocols in detail.

Section – II

Q.4 Answer any Four.

- a) Draw TCP/IP reference model and explain it in detail. What is encapsulation and decapsulation in TCP/IP?
- b) Draw UDP header format and describe. Why UDP is less reliable?
- c) Write the syntax of network commands-hostname, ping, ipconfig, netstat and traceroute and explain their use.
- **d)** What is the need of ARP? Draw the ARP Message format and discuss significance of each field.
- e) Explain three way handshake process in case of TCP for connection establishment.

Q.5 Attempt any Two.

- a) Draw IPv4 header format and describe each field.
- **b)** What are the issues handled in network layer? Discuss distance vector routing protocol.
- c) Explain the terms MSS, window size and threshold related to TCP congestion control algorithm. Discuss TCP congestion control protocol in detail.

12

16

16

Set

SLR-FM-214

Seat No.

		80 PM To 05:30 PM				
Instr	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.					
	2) Figures to the right indicate full marks.					
		MCQ/Objective Type Questions				
Dura	tion: 3	30 Minutes Marks: 14				
Q.1	Cho 1)	ose the correct alternatives from the options and rewrite the sentence.14TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is number of the byte carried in that segment.a)a)firstb)				
		c) central d) none of mentioned				
	2)	UDP packets have fixed-size header of bytes. a) 8 b) 16 c) 32 d) 64				
	3)	What range of addresses are used in first octet of Class-C IPv4 address?a) 192-233b) 203-233c) 1-127d) 129-192				
	4)	Which protocol does use operation?a) TCPb) ARPc) ICMPd) UDP				
	5)	Packets of data that is transported by IP is calleda) segmentb) messagec) data chunkd) datagram				
	6)	Term that refers to associate a logical address with a physical address isa)RARPb)ARPc)ICMPd)IGMP				
	7)	IPv4 uses bits for addressing. a) 16 b) 8 c) 31 d) 32				
	8)	Which layer provides the services to user?a) Applicationb) Transportc) Physicald) Session				
	9)	Bits are packaged into frames at which layer of the OSI model? a) session layer b) network layer c) data link layer d) application layer				
	10)	Encryption takes place at which layer? a) Application b) presentation c) data link d) physical				

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering COMPUTER NETWORKS**

Day & Date: Tuesday, 10-12-2019

Set Q

Max. Marks: 70

Set Q

- 11) Packets are found at which layer?
 - a) application

- b) transport
- c) data link d) physical
- 12) In _____ error correction, the receiver corrects errors without requesting retransmission.
 - a) onward b) backward
 - c) forward d) none of given
- 13) Which device is used to connect two systems, specially two systems uses different protocols?
 - a) hub

- b) router
- c) gateway d) bridge
- 14) Which LAN topology requires central controller or hub?
 - a) star
 - c) mesh

b) bus d) ring

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any Four.

- a) What are collision oriented, collision less and limited collision MAC protocols? Explain one collision free and one collision oriented MAC protocol.
- **b)** List different networking devices and describe functioning of each device. Discuss stop_and_wait flow control mechanism. Why this mechanism is unsuitable for short distance communication?
- c) What are error correction methods of error control methods? Explain each shortly. Find transmitted data word if a transmitter used CRC mechanism for error control, the data is 110010101 and divisor is 10101.
- **d)** What are different types of stations and different modes of data transfer related to HDLC?
- e) Draw different LAN topologies and compare them on the basis of maintenance and expansion issues.

Q.3 Answer any Two.

- a) Draw different HDLC frame formats and discuss operation of each field. What is extended mode in HDLC?
- **b)** Draw IEEE 802.5 MAC sublayer and describe importance of each field. How data delivery is acknowledged in IEEE 802.5 LAN?
- c) Write different assumptions made in dynamic channel allocation. Discuss bit map and binary countdown protocols in detail.

Section – II

Q.4 Answer any Four.

- a) Draw TCP/IP reference model and explain it in detail. What is encapsulation and decapsulation in TCP/IP?
- b) Draw UDP header format and describe. Why UDP is less reliable?
- c) Write the syntax of network commands-hostname, ping, ipconfig, netstat and traceroute and explain their use.
- **d)** What is the need of ARP? Draw the ARP Message format and discuss significance of each field.
- e) Explain three way handshake process in case of TCP for connection establishment.

Q.5 Attempt any Two.

- a) Draw IPv4 header format and describe each field.
- **b)** What are the issues handled in network layer? Discuss distance vector routing protocol.
- c) Explain the terms MSS, window size and threshold related to TCP congestion control algorithm. Discuss TCP congestion control protocol in detail.

12

16

16

Set

SLR-FM-214

Seat No.

1)	In _	error correction, the receiv		priects errors without requesting	•
	retr a)	ransmission. onward	b)	backward	
	a) C)	forward	d)	none of given	
2)		nich device is used to connect two erent protocols?	,	tems, specially two systems uses	
	a) c)	hub gateway	b) d)	router bridge	
3)	Wh a) c)	hich LAN topology requires centra star mesh	l cor b) d)	ntroller or hub? bus ring	
4)	sec in t	quence number for each segmen hat segment.		h segment that is being sent. The umber of the byte carried	
	a) c)	first central	b) d)	last none of mentioned	
5)	,	P packets have fixed-size heade	,	bytes.	
,	a) c)	•	b) d)	•	
6)	Wh a) c)	0		at octet of Class-C IPv4 address? 203-233 129-192	
7)	Wh a) c)	nich protocol does use op TCP ICMP		ion? ARP UDP	
8)	Pao a) c)	ckets of data that is transported b segment data chunk	by IP b) d)	is called message datagram	
9)	Ter a) c)	rm that refers to associate a logic RARP ICMP	al ao b) d)	ddress with a physical address is ARP IGMP	

Duration: 30 Minutes

book. 2) Figures to the right indicate full marks.

Seat

Q.1

Electronics Engineering COMPUTER NETWORKS

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

MCQ/Objective Type Questions

Choose the correct alternatives from the options and rewrite the sentence.

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

No. B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

SLR-FM-214

Marks: 14

14

Set R

Max. Marks: 70

Set R

- 10) IPv4 uses _____ bits for addressing.
 - 16 b) 8 a)
 - d) 32 C) 31
- 11) Which layer provides the services to user?
 - a) Application b) Transport
 - c) Physical d) Session
- Bits are packaged into frames at which layer of the OSI model? 12)
 - network layer b)
 - application layer d)
- Encryption takes place at which layer? 13)
 - Application a) data link

a) session layer

c)

C)

data link layer

- presentation b)
- d) physical
- 14) Packets are found at which layer?
 - application a)
 - data link c)

- b) transport
- d) physical

12

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any Four.

- a) What are collision oriented, collision less and limited collision MAC protocols? Explain one collision free and one collision oriented MAC protocol.
- **b)** List different networking devices and describe functioning of each device. Discuss stop_and_wait flow control mechanism. Why this mechanism is unsuitable for short distance communication?
- c) What are error correction methods of error control methods? Explain each shortly. Find transmitted data word if a transmitter used CRC mechanism for error control, the data is 110010101 and divisor is 10101.
- **d)** What are different types of stations and different modes of data transfer related to HDLC?
- e) Draw different LAN topologies and compare them on the basis of maintenance and expansion issues.

Q.3 Answer any Two.

- a) Draw different HDLC frame formats and discuss operation of each field. What is extended mode in HDLC?
- **b)** Draw IEEE 802.5 MAC sublayer and describe importance of each field. How data delivery is acknowledged in IEEE 802.5 LAN?
- c) Write different assumptions made in dynamic channel allocation. Discuss bit map and binary countdown protocols in detail.

Section – II

Q.4 Answer any Four.

- a) Draw TCP/IP reference model and explain it in detail. What is encapsulation and decapsulation in TCP/IP?
- b) Draw UDP header format and describe. Why UDP is less reliable?
- c) Write the syntax of network commands-hostname, ping, ipconfig, netstat and traceroute and explain their use.
- **d)** What is the need of ARP? Draw the ARP Message format and discuss significance of each field.
- e) Explain three way handshake process in case of TCP for connection establishment.

Q.5 Attempt any Two.

- a) Draw IPv4 header format and describe each field.
- **b)** What are the issues handled in network layer? Discuss distance vector routing protocol.
- c) Explain the terms MSS, window size and threshold related to TCP congestion control algorithm. Discuss TCP congestion control protocol in detail.

Max. Marks: 56

12

Set

SLR-FM-214

Seat

No.

16

Seat No.	Set S						
	B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering COMPUTER NETWORKS						
	Date: Tuesday, 10-12-2019 Max. Marks: 70 02:30 PM To 05:30 PM						
Instru	ctions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.						
	2) Figures to the right indicate full marks.						
	MCQ/Objective Type Questions						
Duratio	on: 30 Minutes Marks: 14						
Q.1 (Choose the correct alternatives from the options and rewrite the sentence.14)What range of addresses are used in first octet of Class-C IPv4 address?a)a)192-233b)c)1-127d)129-192						
2) Which protocol does use operation? a) TCP b) ARP c) ICMP d) UDP						
3) Packets of data that is transported by IP is called a) segment b) message c) data chunk d) datagram						
4) Term that refers to associate a logical address with a physical address is a) RARP b) ARP c) ICMP d) IGMP						
5) IPv4 uses bits for addressing. a) 16 b) 8 c) 31 d) 32						
(Which layer provides the services to user? a) Application b) Transport c) Physical d) Session 						
7	 Bits are packaged into frames at which layer of the OSI model? a) session layer b) network layer c) data link layer d) application layer 						
8	 B) Encryption takes place at which layer? a) Application b) presentation c) data link d) physical 						
Q	 Packets are found at which layer? a) application b) transport c) data link d) physical 						
	 0) In error correction, the receiver corrects errors without requesting retransmission. a) onward b) backward 						

d) none of given c) forward

SLR-FM-214





- 11) Which device is used to connect two systems, specially two systems uses different protocols?
 - a) hub

- b) router
- c) gateway d) bridge
- 12) Which LAN topology requires central controller or hub?
 - a) star b) bus
 - c) mesh d) ring
- 13) TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is number of the _____ byte carried in that segment.
 - a) first b) last
 - c) central d) none of mentioned
- 14) UDP packets have fixed-size header of _____ bytes.
 - a) 8 b) 16 c) 32 d) 64

12

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering COMPUTER NETWORKS**

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any Four.

- What are collision oriented, collision less and limited collision MAC a) protocols? Explain one collision free and one collision oriented MAC protocol.
- List different networking devices and describe functioning of each device. b) Discuss stop_and_wait flow control mechanism. Why this mechanism is unsuitable for short distance communication?
- What are error correction methods of error control methods? Explain each c) shortly. Find transmitted data word if a transmitter used CRC mechanism for error control, the data is 110010101 and divisor is 10101.
- What are different types of stations and different modes of data transfer d) related to HDLC?
- e) Draw different LAN topologies and compare them on the basis of maintenance and expansion issues.

Q.3 Answer any Two.

- Draw different HDLC frame formats and discuss operation of each field. a) What is extended mode in HDLC?
- Draw IEEE 802.5 MAC sublayer and describe importance of each field. b) How data delivery is acknowledged in IEEE 802.5 LAN?
- Write different assumptions made in dynamic channel allocation. Discuss C) bit map and binary countdown protocols in detail.

Section – II

Q.4 Answer any Four.

- Draw TCP/IP reference model and explain it in detail. What is a) encapsulation and decapsulation in TCP/IP?
- Draw UDP header format and describe. Why UDP is less reliable? b)
- Write the syntax of network commands-hostname, ping, ipconfig, netstat c) and traceroute and explain their use.
- d) What is the need of ARP? Draw the ARP Message format and discuss significance of each field.
- Explain three way handshake process in case of TCP for connection e) establishment.

Q.5 Attempt any Two.

- Draw IPv4 header format and describe each field. a)
- What are the issues handled in network layer? Discuss distance vector b) routing protocol.
- Explain the terms MSS, window size and threshold related to TCP c) congestion control algorithm. Discuss TCP congestion control protocol in detail.

12

Set

SLR-FM-214

Seat

No.

16

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

a)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of these is not true for TDD?
 - a) TDD uses different time slots for transmission and reception paths
 - b) Single radio frequency can be used
 - c) Duplexer is required
 - d) It increases the battery life of mobile phones
- 2) The connectivity from exchange to customer prermises is termed as _____.
 - Data network b) Access Network or Local Loop
 - c) Bridge network d) None of the above
- The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by _____.
 - a) BTS b) BSC
 - c) MSC d) MS
- 4) The CDMA system has a soft capacity limit. That is increasing the number of users will _____ the system performance.
 - a) increases b) decreases
 - c) stabilise d) none of the above
- 5) CDMA base stations consumes _____ power than GSM and also covers a _____ distance.
 - a) more, large b) less, large
 - c) less, less d) none of the above
- 6) The cell size in CDMA is _____ compared to GSM.
 - a) largerb) smallerc) samed) none of the above
- 7) Which of this is the interface between MS & BSS?
 - a) Um b) A
 - c) Abis d) None of the above
- 8) Which of this is the interface between BTS and BSC?
 - a) Um b) A
 - c) Abis d) None of the above

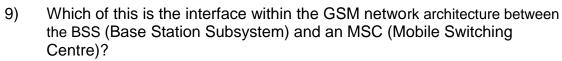
Set P

Max. Marks: 70

Marks: 14



Set



- a) A b) В
- c) C
- d) D
- The smallest inter frame spacing in MAC of 802.11 is _____. 10)
 - a) DIFS PIFS b) c) SIFS
 - d) QIFS
- RFCOMM in a Bluetooth Protocol Stack is a _____ Interface. 11) a) Host Controller
 - b) Link Control
 - c) Serial Line d) Radio Frequency
- 12) Bluetooth is the wireless technology for _
 - local area network a) b)
 - personal area network none of the mentioned d)
- Mostly _____ is used in wireless LAN. 13)
 - a) time division multiplexing
 - b) orthogonal frequency division multiplexing
 - c) space division multiplexing
 - d) none of the mentioned
- IP assigned for a client by DHCP server is _ 14)
 - a) for a limited period

c) both (a) and (b)

- for unlimited period b)
- c) not time dependent
- d) none of the mentioned

Set

Max. Marks: 56

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** With suitable example discuss effect of Δ on handoff.
- c) Explain Blocked Calls Delayed Trunking.
- d) Discuss limitations of CDMA.
- e) With suitable example discuss relationship between number of users, no of cells per cluster and number of clusters.

Q.3 Attempt any two.

- a) Explain wireless MAC Reservation ALOHA. What are its advantages?
- **b)** Explain long code scrambling in forward traffic channel in detail for CDMA-IS95.
- c) Explain TCH/FS, SACCH & FACCH channel coding in GSM signal processing.

Section – II

Q.4 Attempt any four.

- a) Explain its advantages & disadvantages with suitable examples of WLAN.
- **b)** What is DHCP? What are its applications?
- c) What are the characteristics of a mobile environment?
- d) What were the design goals of Bluetooth?
- e) What is encapsulation? Why it is required?

Q.5 Attempt any two.

- a) Describe infrastructure architecture for WLAN. Explain its advantages & disadvantages with suitable examples.
- **b)** With suitable diagram & explain how a scatternet is formed and data can be exchanged between two piconets.
- c) With suitable example and signal diagram; explain optimization in mobile IP.

16

12

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY					
Day & Date: Thursday, 12-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM					
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.					
2) Figures to the right indicate full marks.					
MCQ/Objective Type Questions Duration: 30 Minutes Marks: 14					
Q.1	Choo 1)	se the correct alternatives from the options and rewrite the sentence.14Which of this is the interface between BTS and BSC?a)Umb)Aa)Umb)Ac)Abisd)None of the above			
	2)	Which of this is the interface within the GSM network architecture between the BSS (Base Station Subsystem) and an MSC (Mobile Switching Centre)?			
		a) A b) B c) C d) D			
	3)	The smallest inter frame spacing in MAC of 802.11 is a) DIFS b) PIFS c) SIFS d) QIFS			
	4)	RFCOMM in a Bluetooth Protocol Stack is a Interface.a) Host Controllerb) Link Controlc) Serial Lined) Radio Frequency			
	5)	Bluetooth is the wireless technology fora) local area networkb) personal area networkc) both (a) and (b)d) none of the mentioned			
	6)	 Mostly is used in wireless LAN. a) time division multiplexing b) orthogonal frequency division multiplexing c) space division multiplexing d) none of the mentioned 			
	7)	IP assigned for a client by DHCP server is a) for a limited period b) for unlimited period c) not time dependent d) none of the mentioned			
	8)	 Which of these is not true for TDD? a) TDD uses different time slots for transmission and reception paths b) Single radio frequency can be used c) Duplexer is required d) It increases the battery life of mobile phones 			

Seat

No.

SLR-FM-215

Set Q

- 9) The connectivity from exchange to customer prermises is termed as ____.
 - a) Data network

b) Access Network or Local Loop d) None of the above

- c) Bridge network
- 10) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by _____.
 - a) BTS BSC b) c) MSC
 - d) MS
- 11) The CDMA system has a soft capacity limit. That is increasing the number of users will _____ the system performance.
 - a) increases b) decreases
 - c) stabilise d) none of the above
- CDMA base stations consumes _____ power than GSM and also covers 12) a distance.
 - a) more, large b) less, large c) less, less
 - d) none of the above
- 13) The cell size in CDMA is _____ compared to GSM.
- b) smaller d) none of the above
- Which of this is the interface between MS & BSS? 14)
 - a) Um c) Abis

a) larger

c) same

b)

А

d) None of the above



Set Q

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

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- d) Discuss limitations of CDMA.
- e) With suitable example discuss relationship between number of users, no of cells per cluster and number of clusters.

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- **b)** Explain long code scrambling in forward traffic channel in detail for CDMA-IS95.
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Section – II

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- e) What is encapsulation? Why it is required?

Q.5 Attempt any two.

- a) Describe infrastructure architecture for WLAN. Explain its advantages & disadvantages with suitable examples.
- **b)** With suitable diagram & explain how a scatternet is formed and data can be exchanged between two piconets.
- c) With suitable example and signal diagram; explain optimization in mobile IP.

16

Max. Marks: 56

12

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110.					
		B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY			
		: Thursday, 12-12-2019 Max. Marks: 70 PM To 05:30 PM			
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.					
		2) Figures to the right indicate full marks.			
Dura	tion: 3	MCQ/Objective Type Questions) Minutes Marks: 14			
Q.1	Choo 1)	se the correct alternatives from the options and rewrite the sentence. 14 CDMA base stations consumes power than GSM and also covers 14 a distance. 14 a) more, large b) less, large c) less, less d) none of the above			
	2)	The cell size in CDMA is compared to GSM. a) larger b) smaller c) same d) none of the above			
	3)	Which of this is the interface between MS & BSS? a) Um b) A c) Abis d) None of the above			
	4)	Which of this is the interface between BTS and BSC? a) Um b) A c) Abis d) None of the above			
	5)	Which of this is the interface within the GSM network architecture between the BSS (Base Station Subsystem) and an MSC (Mobile Switching Centre)?a) Ab) Bc) Cd) D			
	6)	The smallest inter frame spacing in MAC of 802.11 is a) DIFS b) PIFS c) SIFS d) QIFS			
	7)	RFCOMM in a Bluetooth Protocol Stack is a Interface. a) Host Controller b) Link Control c) Serial Line d) Radio Frequency			
	8)	Bluetooth is the wireless technology for a) local area network b) personal area network c) both (a) and (b) d) none of the mentioned			
	9)	 Mostly is used in wireless LAN. a) time division multiplexing b) orthogonal frequency division multiplexing c) space division multiplexing 			

Seat No.

SLR-FM-215

Set R

- c) space division multiplexingd) none of the mentioned

10) IP assigned for a client by DHCP server is _____.

- a) for a limited period
- b) for unlimited period
- c) not time dependent
- d) none of the mentioned

SLR-FM-215

Set R

- 11) Which of these is not true for TDD?
 - a) TDD uses different time slots for transmission and reception paths
 - b) Single radio frequency can be used
 - c) Duplexer is required
 - d) It increases the battery life of mobile phones
- 12) The connectivity from exchange to customer prermises is termed as ____
 - a) Data network
- b) Access Network or Local Loop
- c) Bridge network d) None of the above
- 13) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by _____.
 - a) BTS b) BSC
 - c) MSC d) MS
- 14) The CDMA system has a soft capacity limit. That is increasing the number of users will _____ the system performance.
 - a) increases

b) decreases

c) stabilise

d) none of the above

Set

Max. Marks: 56

R

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** With suitable example discuss effect of Δ on handoff.
- c) Explain Blocked Calls Delayed Trunking.
- d) Discuss limitations of CDMA.
- e) With suitable example discuss relationship between number of users, no of cells per cluster and number of clusters.

Q.3 Attempt any two.

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- **b)** Explain long code scrambling in forward traffic channel in detail for CDMA-IS95.
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- c) With suitable example and signal diagram; explain optimization in mobile IP.

16

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Day & Date: Thursday, 12-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Max. Marks: 70			
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicate full marks.			
		MCQ/Objective Type Questions	
Dura	tion: 3	D Minutes Marks:	14
Q.1	Cho 1)	se the correct alternatives from the options and rewrite the sentence.The smallest inter frame spacing in MAC of 802.11 isa) DIFSb) PIFSc) SIFSd) QIFS	14
	2)	RFCOMM in a Bluetooth Protocol Stack is a Interface.a) Host Controllerb) Link Controlc) Serial Lined) Radio Frequency	
	3)	Bluetooth is the wireless technology fora) local area networkb) personal area networkc) both (a) and (b)d) none of the mentioned	
	4)	 Mostly is used in wireless LAN. a) time division multiplexing b) orthogonal frequency division multiplexing c) space division multiplexing d) none of the mentioned 	
	5)	IP assigned for a client by DHCP server is a) for a limited period b) for unlimited period c) not time dependent d) none of the mentioned	
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	7)	The connectivity from exchange to customer prermises is termed asa) Data networkb) Access Network or Local Loopc) Bridge networkd) None of the above	
	8)	The process of channel coding, Encryption, Multiplexing and modulation forTrans direction and reverse for reception are to be carried out bya) BTSb) BSCc) MSCd) MS	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

SLR-FM-215

Set S 9) The CDMA system has a soft capacity limit. That is increasing the number of users will _____ the system performance.

- a) increases c) stabilise
- b) decreases
- d) none of the above

SLR-FM-215

Set S

- CDMA base stations consumes _____ power than GSM and also covers 10) a _____ distance.
 - a) more, large c) less, less

a) larger

- b) less, large
- d) none of the above
- The cell size in CDMA is _____ compared to GSM. 11)
 - b) smaller
 - c) same d) none of the above
- 12) Which of this is the interface between MS & BSS?
 - a) Um b) А c) Abis
 - d) None of the above
- 13) Which of this is the interface between BTS and BSC?
 - a) Um b) Α c) Abis
 - d) None of the above
- Which of this is the interface within the GSM network architecture between 14) the BSS (Base Station Subsystem) and an MSC (Mobile Switching Centre)?
 - a) A В b)
 - c) C d) D

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MOBILE TECHNOLOGY

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four.

- a) How signal spreading is achieved using FHSS?
- **b)** With suitable example discuss effect of Δ on handoff.
- c) Explain Blocked Calls Delayed Trunking.
- d) Discuss limitations of CDMA.
- e) With suitable example discuss relationship between number of users, no of cells per cluster and number of clusters.

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- **b)** Explain long code scrambling in forward traffic channel in detail for CDMA-IS95.
- c) Explain TCH/FS, SACCH & FACCH channel coding in GSM signal processing.

Section – II

Q.4 Attempt any four.

- a) Explain its advantages & disadvantages with suitable examples of WLAN.
- **b)** What is DHCP? What are its applications?
- c) What are the characteristics of a mobile environment?
- d) What were the design goals of Bluetooth?
- e) What is encapsulation? Why it is required?

Q.5 Attempt any two.

- a) Describe infrastructure architecture for WLAN. Explain its advantages & disadvantages with suitable examples.
- **b)** With suitable diagram & explain how a scatternet is formed and data can be exchanged between two piconets.
- c) With suitable example and signal diagram; explain optimization in mobile IP.

SLR-FM-215

Set

Max. Marks: 56

12

16

16

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRONIC SYSTEM DESIGN

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- The consumer a product should satisfy the requirements such as 1)
 - The reliability must be good a)
 - The ergonomic and aesthetic are prime requirements b)
 - Its cost must be low c)
 - d) All the above
- 2) The main advantage of logic analyzer compared to oscilloscope is _____. Multiple trigger levels b)
 - a) More number of channels
 - c) Both a) and b) d)
- The DPO uses _____ processing architecture 3)
 - a) Series
 - c) Anti-parallel

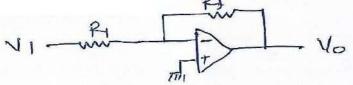
- b) Parallel
- d) None of above
- 4) MOV stands for _____.

6)

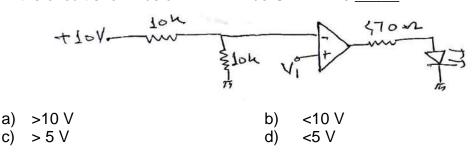
- a) Metal oxide varistors
- c) Metal oxide variable
- b) Metal oxigen varistors

None of above

- none of the above d)
- The circuit shown below uses 5)



- a) voltage series feedback
- voltage shunt feedback b) d) current shunt feedback
- c) current series feedback
- In the circuit shown below LED will be ON if V1 is _____.

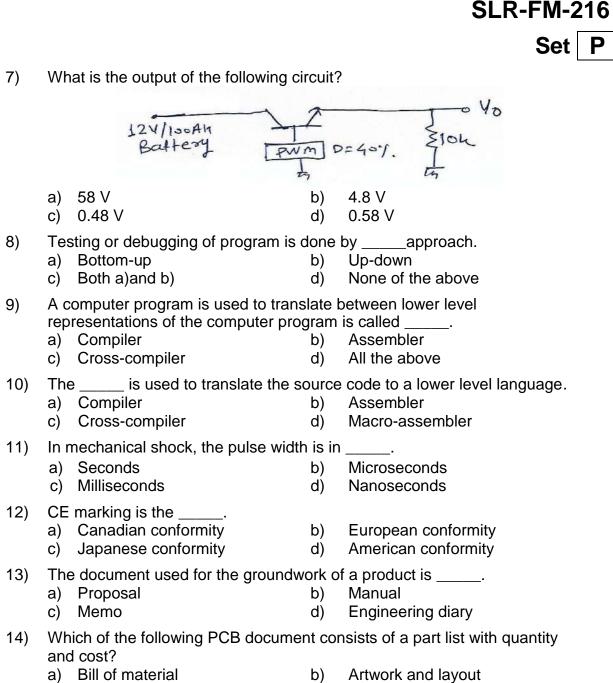


Max. Marks: 70

Marks: 14

14

Set



c) Memo

- d) Assembly drawing

Page **3** of **12**

Max. Marks: 56

Instructions: 1) All questions are compulsory.

Day & Date: Saturday, 14-12-2019

Time: 02:30 PM To 05:30 PM

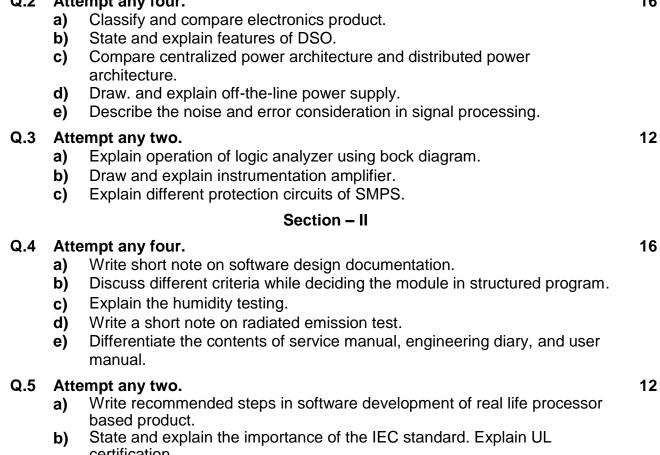
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRONIC SYSTEM DESIGN

Q.2 Attempt any four.

- State and explain the importance of the IEC standard. Explain UL b) certification.
- Explain in detail the user manual for any user product. C)



Seat No.



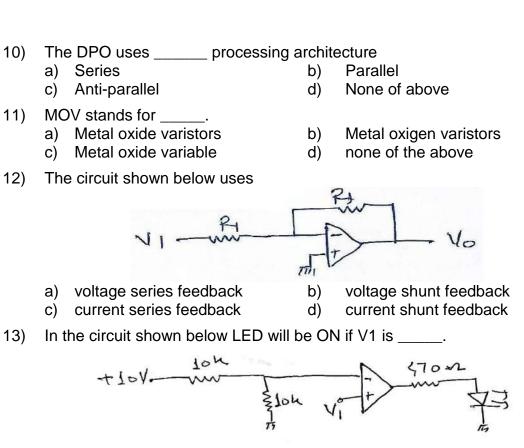
ELECTRONIC SYSTEM DESIGN					
	Day & Date: Saturday, 14-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Max. Marks: 70				
Instr	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.				
			 Figures to the right indicate full Assume suitable data if necess 		S.
			MCQ/Objective Ty	vpe (Questions
Dura	tion: 3	0 Mi	nutes	-	Marks: 14
Q.1			the correct alternatives from th	-	
	1)	a)	sting or debugging of program is o Bottom-up	b)	Up-down
		c)	Both a)and b)	d)	None of the above
	2)	rep a)	omputer program is used to trans resentations of the computer prog Compiler	gram b)	is called Assembler
	\mathbf{O}	,	Cross-compiler	d)	All the above
	3)	a)	e is used to translate the s Compiler	ource b)	Assembler
		c)	•	d)	Macro-assembler
	4)	ln r	nechanical shock, the pulse width	n is in	·
		a) c)	Seconds Milliseconds	b) d)	Microseconds Nanoseconds
	5)		marking is the Canadian conformity Japanese conformity	b) d)	European conformity American conformity
	6)		e document used for the groundw	ork o	•
		a) c)	Proposal Memo	b) d)	Manual Engineering diary
	7) Which of the following PCB document consists of a part list with quantity			nsists of a part list with quantity	
		ano a)	l cost? Bill of material	b)	Artwork and layout
		a) C)	Memo	d)	Assembly drawing
 8) The consumer a product should satisfy the requirements such as a) The reliability must be good b) The ergonomic and aesthetic are prime requirements c) Its cost must be low d) All the above 					
	9)		e main advantage of logic analyze		•
		a) c)	More number of channels Both a) and b)	b) d)	Multiple trigger levels None of above

Seat No.

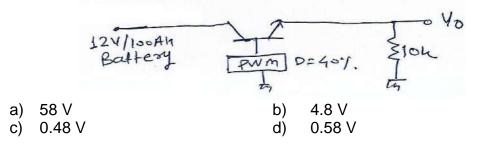
B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

SLR-FM-216

Set Q



14) What is the output of the following circuit?



SLR-FM-216

Set Q

Max. Marks: 56

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONIC SYSTEM DESIGN

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Classify and compare electronics product.
- b) State and explain features of DSO.
- c) Compare centralized power architecture and distributed power architecture.
- d) Draw. and explain off-the-line power supply.
- e) Describe the noise and error consideration in signal processing.

Q.3 Attempt any two.

- a) Explain operation of logic analyzer using bock diagram.
- **b)** Draw and explain instrumentation amplifier.
- c) Explain different protection circuits of SMPS.

Section – II

Q.4 Attempt any four.

- a) Write short note on software design documentation.
- **b)** Discuss different criteria while deciding the module in structured program.
- c) Explain the humidity testing.
- d) Write a short note on radiated emission test.
- e) Differentiate the contents of service manual, engineering diary, and user manual.

Q.5 Attempt any two.

- a) Write recommended steps in software development of real life processor based product.
- **b)** State and explain the importance of the IEC standard. Explain UL certification.
- c) Explain in detail the user manual for any user product.



16

12

16

Set

R



B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRONIC SYSTEM DESIGN

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

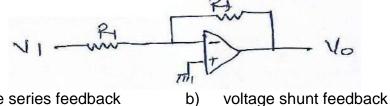
Duration: 30 Minutes

2)

3)

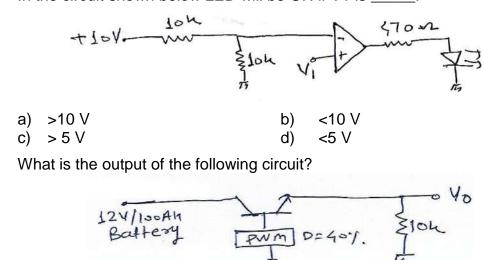
Q.1 Choose the correct alternatives from the options.

1) The circuit shown below uses



b)

- voltage series feedback a)
- current series feedback c)
- current shunt feedback d) In the circuit shown below LED will be ON if V1 is _____



- a) 58 V 4.8 V b) c) 0.48 V d) 0.58 V
- Testing or debugging of program is done by _____approach. 4)
 - a) Bottom-up b) c) Both a)and b)
 - Up-down d) None of the above
- A computer program is used to translate between lower level 5) representations of the computer program is called
 - a) Compiler Assembler b) c) Cross-compiler d) All the above

Max. Marks: 70

Marks: 14



			Set
6)	The is used to translate the s a) Compiler c) Cross-compiler	b)	e code to a lower level language. Assembler Macro-assembler
7)	In mechanical shock, the pulse widt a) Seconds c) Milliseconds		Microseconds
8)	CE marking is the a) Canadian conformity c) Japanese conformity	b) d)	European conformity American conformity
9)	The document used for the groundw a) Proposal c) Memo	b)	f a product is Manual Engineering diary
10)	Which of the following PCB docume and cost? a) Bill of material c) Memo	nt cor b) d)	
11)	 The consumer a product should sati a) The reliability must be good b) The ergonomic and aesthetic at c) Its cost must be low d) All the above 		
12)	The main advantage of logic analyze a) More number of channels c) Both a) and b)		• •
13)	The DPO uses processing a a) Series c) Anti-parallel		Parallel
14)	MOV stands for a) Metal oxide varistors	b)	Metal oxigen varistors

- Metal oxide varistors a)
- Metal oxide variable C)
- Metal oxigen varistors b)

R

d) none of the above

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONIC SYSTEM DESIGN

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

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Section – I

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16

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16

Max. Marks: 56

No. B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRONIC SYSTEM DESIGN Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

Q.1 Choose the correct alternatives from the options.

- The is used to translate the source code to a lower level language. 1)
 - a) Compiler b)
 - c) Cross-compiler d)
- 2) In mechanical shock, the pulse width is in
 - a) Seconds b)
 - c) Milliseconds d)

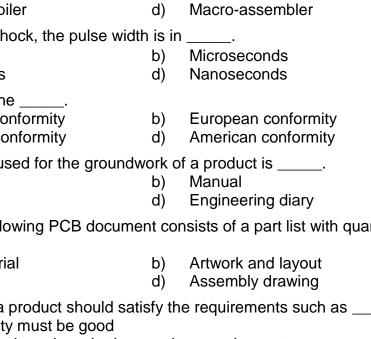
CE marking is the _____ 3)

- a) Canadian conformity
- c) Japanese conformity
- 4) The document used for the groundwork of a product is _____.
 - a) Proposal b)
 - c) Memo d)
- Which of the following PCB document consists of a part list with quantity 5) and cost?
 - a) Bill of material
 - c) Memo
- 6) The consumer a product should satisfy the requirements such as _____.
 - a) The reliability must be good
 - b) The ergonomic and aesthetic are prime requirements
 - c) Its cost must be low
 - d) All the above

7) The main advantage of logic analyzer compared to oscilloscope is _____.

- Multiple trigger levels a) More number of channels b) None of above
- c) Both a) and b) d)
- The DPO uses _____ processing architecture 8)
 - a) Series Parallel b) None of above
 - c) Anti-parallel d)
- 9) MOV stands for ____
 - Metal oxide varistors a) Metal oxide variable c)
- b) Metal oxigen varistors
- d) none of the above

SLR-FM-216



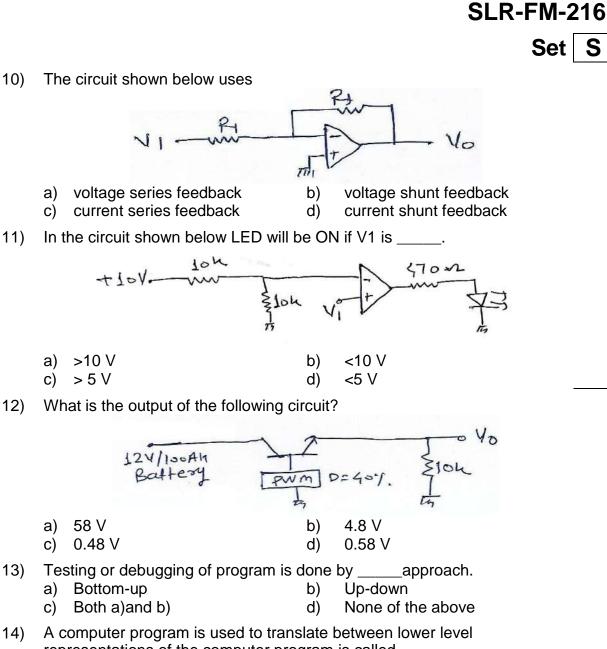
Assembler

Max. Marks: 70

Marks: 14

14

Set



- 14) representations of the computer program is called _
 - a) Compiler

- Assembler b)
- c) Cross-compiler
- d) All the above

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONIC SYSTEM DESIGN

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Classify and compare electronics product.
- b) State and explain features of DSO.
- c) Compare centralized power architecture and distributed power architecture.
- d) Draw. and explain off-the-line power supply.
- e) Describe the noise and error consideration in signal processing.

Q.3 Attempt any two.

- a) Explain operation of logic analyzer using bock diagram.
- **b)** Draw and explain instrumentation amplifier.
- c) Explain different protection circuits of SMPS.

Section – II

Q.4 Attempt any four.

- a) Write short note on software design documentation.
- **b)** Discuss different criteria while deciding the module in structured program.
- c) Explain the humidity testing.
- d) Write a short note on radiated emission test.
- e) Differentiate the contents of service manual, engineering diary, and user manual.

Q.5 Attempt any two.

- a) Write recommended steps in software development of real life processor based product.
- b) State and explain the importance of the IEC standard. Explain UL certification.
- c) Explain in detail the user manual for any user product.



Max. Marks: 56

12

16

12

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

A control system in which the control action is somehow dependent on the 1) output is known as b) Semi closed loop system

d)

b)

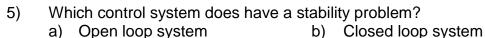
- a) Closed loop system
- c) Open loop system
- 2) A counter that starts from a specified number and increments up to maximum count is _____.
 - a) Down counter
 - Cascading counter c) Up counter d) Reset counter
- 3) A sensor, for an input of 12V gives a digital output of a word of 8 bits. Approximately resolution is
 - a) 46.88 mV 93.75 V c)

23.43 V b)

None of the above d)

None of the above

4) The output of the ladder diagram is for _____ gate.



CRI

X

- c) Both a and b
- The device which provides maximum isolation is 6)
 - **Opto-isolator** a) Normal transformer

EXOR

AND

a)

c)

c)

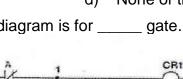
Pulse transformer b)

None of the above

- None of the above d)
- 7) The 1's complement representation of signed number -3 is _____.
 - 10000010 a)
 - 11111101 c)

- 00000010 b)
- 11111110 d)

b) NOR NAND



2

d)

d)

Max. Marks: 70

SLR-FM-218

Seat No.

Marks: 14

8) With two-step control, the controller, _____.

- i) The controlled variable will tend to oscillate about the set value.
- ii) The output of the controller is proportional to the error.
- a) Both i and ii are true b) ii is true
- c) i is true
- d) Both i and ii are false
- 9) Under what conditions does the gain of a feedback system approximate to 1/B?
 - a) The loop gain AB >> 1
- b) The feedback path gain B >>1

SLR-FM-218

Set

- c) The forward path gain A >> 1 d) The loop gain AB <<1
- 10) Lithography is used for _____
 - a) Forming resist layers on the substrate
 - b) Cutting tool
 - c) Forming electric bonds
 - d) None of the above
- 11) A complete micro-electromechanical system should _____.
 - a) Detect process and evaluate external signals
 - b) Make decisions based on obtained information
 - c) Convert decisions into corresponding actuator commands
 - d) All of the above
- 12) The advantages of using the relay type output in PLC's is that _____.
 - a) They allows small currents to switch large currents
 - b) Provides isolation to the PLC from external circuit external circuit
 - c) Suitable for both AC and DC switching
 - d) All of the above
- 13) For optical rotary encoders the _____ code is preferred over the binary code.
 - a) Gray
 - b) ASCII
 - c) BCD d) Excess 3
- 14) Sensors are interfaced with _____ card of the PLC.
 - a) Memory c) Output

- b) Input
- d) Power

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) List down the characteristics of negative feedback system.
- b) Explain in detail the structural text programming used for PLC.
- c) Draw a ladder diagram to turn an indicator ON after a 5 sec delay and OFF after a 3 sec delay by the switch.
- d) Discuss the possible mechatronics design process stages.
- e) List down the factors considered for the selection of a PLC.

Q.3 Attempt any two.

- a) Derive a mathematical model for PI controller. Discuss Op-Amp based proportional integral controller with necessary circuit diagrams.
- **b)** Draw and discuss the FBD and ladder diagram programming $f(abc) = \Pi M(1, 2, 4, 7)$.
- c) Develop a ladder diagram model for motor control with two switches (A, B). When either of two, normally open, switches has to be closed for a coil to be energized and operate an actuator.

Section – II

Q.4 Attempt any four.

- a) What is impurity doping process used in micromachining? Discuss ion implantation doping processes for semiconductors.
- b) List down the differences between bulk and surface micromachining.
- c) Discuss the working principle of electro-hydraulic actuation system with a neat sketch.
- d) List different methods used for motor control. Explain any one in detail.
- e) Draw the block diagram of micro-sensor MEMS system and discuss each block in detail.

Q.5 Attempt any two.

- a) Discuss in detail surface micromachining fabrication process for MEMS devices with neat diagrams.
- **b)** Draw and discuss a mechatronics system for a pick and place manipulator with neat diagram.
- c) With neat diagram discuss any two sensors used for measuring pressure.

12

16

12

16

Set P

Max. Marks: 56

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

MECHATRONICS

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- With two-step control, the controller, _ 1)
 - The controlled variable will tend to oscillate about the set value. i)
 - ii) The output of the controller is proportional to the error.
 - a) Both i and ii are true b) ii is true
 - c) i is true d) Both i and ii are false
- 2) Under what conditions does the gain of a feedback system approximate to 1/B?
 - The loop gain AB >> 1 a)
 - The feedback path gain B >>1 b) c) The forward path gain A >> 1 d) The loop gain AB <<1
- 3) Lithography is used for _____
 - a) Forming resist layers on the substrate
 - b) Cutting tool
 - c) Forming electric bonds
 - d) None of the above
- 4) A complete micro-electromechanical system should _____.
 - a) Detect process and evaluate external signals
 - b) Make decisions based on obtained information
 - Convert decisions into corresponding actuator commands c)
 - d) All of the above
- The advantages of using the relay type output in PLC's is that . 5)
 - a) They allows small currents to switch large currents
 - b) Provides isolation to the PLC from external circuit external circuit
 - c) Suitable for both AC and DC switching
 - d) All of the above
- 6) For optical rotary encoders the code is preferred over the binary code.

Input

- a) Gray ASCII b) c) BCD d) Excess 3
- 7) Sensors are interfaced with _____ card of the PLC.
 - a) Memory b)
 - c) Output Power d)

Set

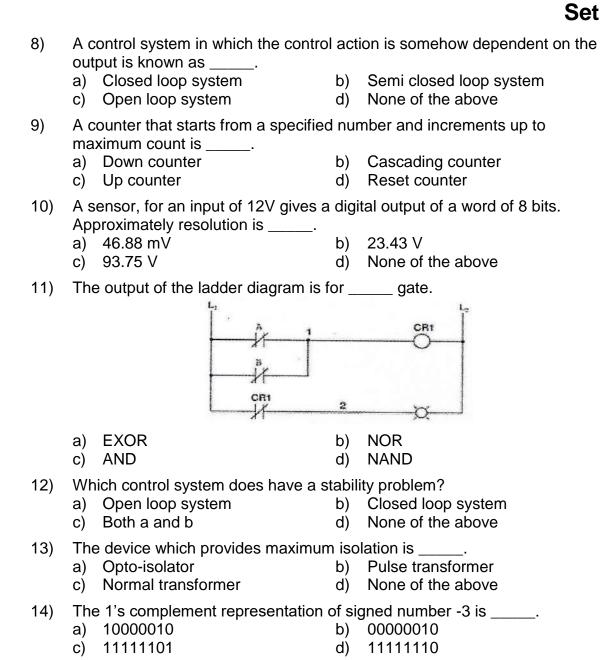
Max. Marks: 70

Marks: 14

14



Seat No.



Set Q

Max. Marks: 56

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

Seat No.

- a) List down the characteristics of negative feedback system.
- b) Explain in detail the structural text programming used for PLC.
- c) Draw a ladder diagram to turn an indicator ON after a 5 sec delay and OFF after a 3 sec delay by the switch.
- d) Discuss the possible mechatronics design process stages.
- e) List down the factors considered for the selection of a PLC.

Q.3 Attempt any two.

- a) Derive a mathematical model for PI controller. Discuss Op-Amp based proportional integral controller with necessary circuit diagrams.
- **b)** Draw and discuss the FBD and ladder diagram programming $f(abc) = \Pi M(1, 2, 4, 7)$.
- c) Develop a ladder diagram model for motor control with two switches (A, B). When either of two, normally open, switches has to be closed for a coil to be energized and operate an actuator.

Section – II

Q.4 Attempt any four.

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- b) List down the differences between bulk and surface micromachining.
- c) Discuss the working principle of electro-hydraulic actuation system with a neat sketch.
- d) List different methods used for motor control. Explain any one in detail.
- e) Draw the block diagram of micro-sensor MEMS system and discuss each block in detail.

Q.5 Attempt any two.

- a) Discuss in detail surface micromachining fabrication process for MEMS devices with neat diagrams.
- **b)** Draw and discuss a mechatronics system for a pick and place manipulator with neat diagram.
- c) With neat diagram discuss any two sensors used for measuring pressure.

12

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

MECHATRONICS

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

b)

d)

None of the above

The feedback path gain B >>1

d) The loop gain AB <<1

Q.1 Choose the correct alternatives from the options.

- Which control system does have a stability problem? 1) Closed loop system
 - Open loop system a)
 - c) Both a and b
 - The device which provides maximum isolation is
 - **Opto-isolator** b) Pulse transformer a)
 - Normal transformer None of the above d) C)
- 3) The 1's complement representation of signed number -3 is _____.
 - 10000010 00000010 a) b) 11111110
 - 11111101 d) C)
- 4) With two-step control, the controller, _
 - The controlled variable will tend to oscillate about the set value. i)
 - The output of the controller is proportional to the error. ii)
 - a) Both i and ii are true ii is true b)
 - c) i is true d) Both i and ii are false
- 5) Under what conditions does the gain of a feedback system approximate to 1/B?

b)

- a) The loop gain AB >> 1
- c) The forward path gain A >> 1
- 6) Lithography is used for ____
 - a) Forming resist layers on the substrate
 - b) Cutting tool
 - Forming electric bonds c)
 - d) None of the above
- 7) A complete micro-electromechanical system should .
 - Detect process and evaluate external signals a)
 - Make decisions based on obtained information b)
 - c) Convert decisions into corresponding actuator commands
 - d) All of the above

14

Max. Marks: 70

SLR-FM-218

Set

R





Duration: 30 Minutes

2)

Marks: 14

Set

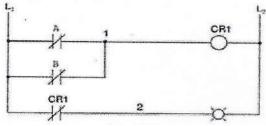
SLR-FM-218

- The advantages of using the relay type output in PLC's is that _____.
 - a) They allows small currents to switch large currents
 - b) Provides isolation to the PLC from external circuit external circuit
 - c) Suitable for both AC and DC switching
 - d) All of the above
- 9) For optical rotary encoders the _____ code is preferred over the binary code.
 - a) Gray b) ASCII
 - c) BCD d) Excess 3
- 10) Sensors are interfaced with _____ card of the PLC.
 - a) Memory b) Input
 - c) Output d) Power
- 11) A control system in which the control action is somehow dependent on the output is known as _____.
 - a) Closed loop system
- b) Semi closed loop system
- c) Open loop system d)
- d) None of the above
- 12) A counter that starts from a specified number and increments up to maximum count is _____.
 - a) Down counter
- b) Cascading counter

c) Up counter

- d) Reset counter
- 13) A sensor, for an input of 12V gives a digital output of a word of 8 bits. Approximately resolution is _____.
 - a) 46.88 mV

- b) 23.43 V
- c) 93.75 V
- d) None of the above
- 14) The output of the ladder diagram is for _____ gate.



- a) EXOR
- c) AND

b) NOR d) NAND

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) List down the characteristics of negative feedback system.
- b) Explain in detail the structural text programming used for PLC.
- c) Draw a ladder diagram to turn an indicator ON after a 5 sec delay and OFF after a 3 sec delay by the switch.
- d) Discuss the possible mechatronics design process stages.
- e) List down the factors considered for the selection of a PLC.

Q.3 Attempt any two.

- a) Derive a mathematical model for PI controller. Discuss Op-Amp based proportional integral controller with necessary circuit diagrams.
- **b)** Draw and discuss the FBD and ladder diagram programming $f(abc) = \Pi M(1, 2, 4, 7)$.
- c) Develop a ladder diagram model for motor control with two switches (A, B). When either of two, normally open, switches has to be closed for a coil to be energized and operate an actuator.

Section – II

Q.4 Attempt any four.

- a) What is impurity doping process used in micromachining? Discuss ion implantation doping processes for semiconductors.
- b) List down the differences between bulk and surface micromachining.
- c) Discuss the working principle of electro-hydraulic actuation system with a neat sketch.
- d) List different methods used for motor control. Explain any one in detail.
- e) Draw the block diagram of micro-sensor MEMS system and discuss each block in detail.

Q.5 Attempt any two.

- a) Discuss in detail surface micromachining fabrication process for MEMS devices with neat diagrams.
- **b)** Draw and discuss a mechatronics system for a pick and place manipulator with neat diagram.
- c) With neat diagram discuss any two sensors used for measuring pressure.

12

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Set R

Max. Marks: 56

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- 1) Lithography is used for ____
 - a) Forming resist layers on the substrate
 - b) Cutting tool
 - c) Forming electric bonds
 - d) None of the above
- 2) A complete micro-electromechanical system should _____.
 - a) Detect process and evaluate external signals
 - b) Make decisions based on obtained information
 - c) Convert decisions into corresponding actuator commands
 - d) All of the above
- 3) The advantages of using the relay type output in PLC's is that _____.
 - a) They allows small currents to switch large currents
 - b) Provides isolation to the PLC from external circuit external circuit
 - c) Suitable for both AC and DC switching
 - d) All of the above
- 4) For optical rotary encoders the _____ code is preferred over the binary code.
 - a) Gray b) ASCII
 - c) BCD d) Excess 3
- 5) Sensors are interfaced with _____ card of the PLC.
 - a) Memory b) Input
 - c) Output d) Power
- A control system in which the control action is somehow dependent on the output is known as _____.
 - a) Closed loop system
- b) Semi closed loop systemd) None of the above
- c) Open loop system d)
- A counter that starts from a specified number and increments up to maximum count is _____.
 - a) Down counter b)
 - c) Up counter
- b) Cascading counter
- d) Reset counter

9

Max. Marks: 70

Marks: 14

14

Set



Set 8) A sensor, for an input of 12V gives a digital output of a word of 8 bits. Approximately resolution is ____ a) 46.88 mV b) 23.43 V c) 93.75 V d) None of the above 9) The output of the ladder diagram is for _____ gate. CRI 31 CRI 2 EXOR b) NOR a) NAND AND d) C) Which control system does have a stability problem? 10) Closed loop system a) Open loop system b) c) Both a and b d) None of the above 11) The device which provides maximum isolation is _ a) Opto-isolator b) Pulse transformer c) Normal transformer d) None of the above 12) The 1's complement representation of signed number -3 is ____ 0000010 a) 10000010 b) c) 11111101 d) 11111110 13) With two-step control, the controller, The controlled variable will tend to oscillate about the set value. i) ii) The output of the controller is proportional to the error. Both i and ii are true b) ii is true a) c) i is true d) Both i and ii are false Under what conditions does the gain of a feedback system approximate to 14) 1/B?

- a) The loop gain AB >> 1
- The feedback path gain B >>1 b)

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- The forward path gain A >> 1 c)
- The loop gain AB <<1
- d)

Page **11** of **12**

Set

Max. Marks: 56

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MECHATRONICS

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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Section – I

Q.2 Attempt any four.

- a) List down the characteristics of negative feedback system.
- b) Explain in detail the structural text programming used for PLC.
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- d) Discuss the possible mechatronics design process stages.
- e) List down the factors considered for the selection of a PLC.

Q.3 Attempt any two.

- a) Derive a mathematical model for PI controller. Discuss Op-Amp based proportional integral controller with necessary circuit diagrams.
- **b)** Draw and discuss the FBD and ladder diagram programming $f(abc) = \Pi M(1, 2, 4, 7)$.
- c) Develop a ladder diagram model for motor control with two switches (A, B). When either of two, normally open, switches has to be closed for a coil to be energized and operate an actuator.

Section – II

Q.4 Attempt any four.

- a) What is impurity doping process used in micromachining? Discuss ion implantation doping processes for semiconductors.
- b) List down the differences between bulk and surface micromachining.
- c) Discuss the working principle of electro-hydraulic actuation system with a neat sketch.
- d) List different methods used for motor control. Explain any one in detail.
- e) Draw the block diagram of micro-sensor MEMS system and discuss each block in detail.

Q.5 Attempt any two.

- a) Discuss in detail surface micromachining fabrication process for MEMS devices with neat diagrams.
- **b)** Draw and discuss a mechatronics system for a pick and place manipulator with neat diagram.
- c) With neat diagram discuss any two sensors used for measuring pressure.

12

16

16

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering IMAGE PROCESSING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Duration: 30 Minutes

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options.

- Digitizing the amplitude values is called _____ 1)
 - a) sampling
 - c) scaling d) none of these
- The difference in intensity between the highest and lowest intensity levels 2) in an image is called as _____.

b)

- a) noise b) contrast
- d) c) dynamic range saturation
- 3) The number of bits required to store a digital image of size N×N having 2^{κ} intensity levels are _____.
 - a) Nk N/k b) c) kN² Nk² d)
- Transform domain operations in case of 2-D Discrete Cosine Transform 4) requires
 - a) real arithmetic b) complex arithmetic
 - none of these c) binary arithmetic d)
- 5) 2-D Discrete Fourier transform provides a way to analyze input image in terms of
 - a) spatial information
 - b) frequency information
 - c) both spatial and frequency information
 - d) none of these

2-D Discrete cosine transform provides excellent capability for . 6)

- a) Image restoration Image compression b)
- c) Image deconvolution d) Image enhancement
- For rotating the input image by 30 degrees which operation should be 7) used?
 - a) point processing b) neighborhood
 - c) geometric transformation d) image analysis
- Log transformation _____ the dynamic range of intensity values in an 8) input image. increases
 - a) reduces b)
 - minimizes d) maximizes C)

SLR-FM-219

Set

Ρ

quantization

Max. Marks: 70

Marks: 14

Set

- 9) Contrast stretching _____ the range of intensity values in an input image.
 - a) expands

- b) decreases
- minimizes c) d) none of these
- 10) Hough transform can be used to detect _____ in an input image.
 - straight lines a) circles b)
 - curves all of these c) d)
- Merging and splitting approaches are part of which segmentation method? 11)
 - a) edge-based region-based b)
 - c) watershed d) maximizes
- 12) In spatial filtering, masks for correlation and convolution approaches differ by degrees .
 - a) 180 b) 120
 - c) 360 d) 90

A digital boundary can be approximated with arbitrary accuracy by a _____. 13)

- a) triangle b) square
- c) polygon d) hexagon
- The MPEG standard was developed for _ 14)
 - video b)
 - a) grayscale images c) color images d) none of these

Set

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering IMAGE PROCESSING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four.

- a) Illustrate image sampling and quantization in the context of image processing.
- **b)** What is Singular Value Decomposition (SVD)? How SVD can be used to compress digital images?
- c) Write the resultant transformation (or affine) matrix if an input image has to be upscaled by factor of 2 and rotated by 30 degrees.
- d) Why do we process images? Distinguish representation of a digital image with its continuous counterpart.
- e) How many bits do we need to store an image of size N \times N? Calculate the same for grayscale and color image of size 256 \times 256.

Q.3 Answer any two.

- a) What are different color models used in general? For any two color models of your choice, write down the formulae to convert from one color model to another and vice versa.
- **b)** What is Principle Component Analysis (PCA)? Explain the steps to obtain PCA for 2-D data.
- c) What is the histogram of an image? What is histogram equalization?

Section – II

Q.4 Answer any four.

- a) Explain Harris corner detection algorithm.
- **b)** Explain predictive image compression approach.
- c) Why signatures are used in image processing?
- d) Explain algorithm to obtain skeleton of a binary region.
- e) Write down the main conceptual differences in edge-based and regionbased approaches to image segmentation.

Q.5 Answer any two

- a) Explain in brief different JPEG still image compression modes.
- b) Explain JPEG-2000 image compression with schematic diagram.
- c) Explain region based segmentation along with splitting and merging steps.

Max. Marks: 56

16

12

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Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering IMAGE PROCESSING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

MCQ/Objective Type Questions

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- Log transformation _____ the dynamic range of intensity values in an input image.
 a) reduces
 b) increases
 - a) reduces c) minimizes
- d) maximizes
- 2) Contrast stretching _____ the range of intensity values in an input image.
 - a) expands b) decreases c) minimizes d) none of these
- 3) Hough transform can be used to detect _____ in an input image.
 - a) circlesb) straight linesc) curvesd) all of these
- 4) Merging and splitting approaches are part of which segmentation method?
 - a) edge-based b) region-based
 - c) watershed d) maximizes
- 5) In spatial filtering, masks for correlation and convolution approaches differ by degrees _____.
 - a) 180 b) 120
 - c) 360 d) 90

A digital boundary can be approximated with arbitrary accuracy by a _____.

- a) triangle b) square
- c) polygon d) hexagon
- 7) The *MPEG* standard was developed for _____.
 - a) grayscale images b) video
 - c) color images d) none of these
- 8) Digitizing the amplitude values is called _____.
 a) sampling b) quantization
 - c) scaling d) none of these

9) The difference in intensity between the highest and lowest intensity levels in an image is called as _____.

- a) noise b) contrast
- c) dynamic range d) saturation

Set Q

Max. Marks: 70

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Marks: 14

The number of bits required to store a digital image of size N×N having 2^{k} 10) intensity levels are _____.

- a) Nk b) N/k Nk²
- c) kN² d)
- 11) Transform domain operations in case of 2-D Discrete Cosine Transform requires
 - a) real arithmetic b) complex arithmetic
 - c) binary arithmetic d) none of these
- 2-D Discrete Fourier transform provides a way to analyze input image in 12) terms of
 - a) spatial information
 - b) frequency information
 - c) both spatial and frequency information
 - d) none of these
- 13) 2-D Discrete cosine transform provides excellent capability for _____.
 - a) Image restoration
- b) Image compression

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Set | Q

- c) Image deconvolution d) Image enhancement
- 14) For rotating the input image by 30 degrees which operation should be used?
 - a) point processing
- b) neighborhood
- c) geometric transformation
- d) image analysis

Seat	
No.	

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering IMAGE PROCESSING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four.

- a) Illustrate image sampling and quantization in the context of image processing.
- **b)** What is Singular Value Decomposition (SVD)? How SVD can be used to compress digital images?
- c) Write the resultant transformation (or affine) matrix if an input image has to be upscaled by factor of 2 and rotated by 30 degrees.
- d) Why do we process images? Distinguish representation of a digital image with its continuous counterpart.
- e) How many bits do we need to store an image of size N \times N? Calculate the same for grayscale and color image of size 256 \times 256.

Q.3 Answer any two.

- a) What are different color models used in general? For any two color models of your choice, write down the formulae to convert from one color model to another and vice versa.
- **b)** What is Principle Component Analysis (PCA)? Explain the steps to obtain PCA for 2-D data.
- c) What is the histogram of an image? What is histogram equalization?

Section – II

Q.4 Answer any four.

- a) Explain Harris corner detection algorithm.
- **b)** Explain predictive image compression approach.
- c) Why signatures are used in image processing?
- d) Explain algorithm to obtain skeleton of a binary region.
- e) Write down the main conceptual differences in edge-based and regionbased approaches to image segmentation.

Q.5 Answer any two

- a) Explain in brief different JPEG still image compression modes.
- **b)** Explain JPEG-2000 image compression with schematic diagram.
- c) Explain region based segmentation along with splitting and merging steps.

Max. Marks: 56

16

12

12

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering IMAGE PROCESSING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- 2-D Discrete Fourier transform provides a way to analyze input image in 1) terms of
 - a) spatial information
 - b) frequency information
 - both spatial and frequency information c)
 - d) none of these

2) 2-D Discrete cosine transform provides excellent capability for _____.

- Image compression a) Image restoration b) d) Image enhancement
- Image deconvolution c)
- For rotating the input image by 30 degrees which operation should be 3) used?
 - a) point processing neighborhood b)
 - geometric transformation d) image analysis c)

4) Log transformation _____ the dynamic range of intensity values in an input image.

- a) reduces b) increases c) minimizes
 - d) maximizes
- 5) Contrast stretching _____ the range of intensity values in an input image.
 - decreases a) expands b) c) minimizes
 - d) none of these
- 6) Hough transform can be used to detect _____ in an input image.
 - circles straight lines a) b)
 - d) all of these c) curves
- 7) Merging and splitting approaches are part of which segmentation method?
 - a) edge-based b) region-based
 - maximizes c) watershed d)
- In spatial filtering, masks for correlation and convolution approaches differ 8) by degrees _____.
 - a) 180 b) 120 90 360 d) C)

Set R

Max. Marks: 70



			SLR-FM-219
			Set R
9)	A digital boundary can be approxima a) triangle c) polygon	ated v b) d)	vith arbitrary accuracy by a square hexagon
10)	The <i>MPEG</i> standard was developed a) grayscale images c) color images	d for _ b) d)	
11)	Digitizing the amplitude values is ca a) sampling c) scaling	lled _ b) d)	
12)	The difference in intensity between t in an image is called as a) noise c) dynamic range	the hi b) d)	ghest and lowest intensity levels contrast saturation
13)	The number of bits required to store intensity levels are a) Nk c) kN ²	b)	ital image of size N×N having 2 ^k N/k Nk ²
14)	Transform domain operations in cas requires a) real arithmetic c) binary arithmetic	b) d)	

Set

R

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Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering IMAGE PROCESSING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
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Section – I

Q.2 Answer any four.

- a) Illustrate image sampling and quantization in the context of image processing.
- **b)** What is Singular Value Decomposition (SVD)? How SVD can be used to compress digital images?
- c) Write the resultant transformation (or affine) matrix if an input image has to be upscaled by factor of 2 and rotated by 30 degrees.
- d) Why do we process images? Distinguish representation of a digital image with its continuous counterpart.
- e) How many bits do we need to store an image of size N \times N? Calculate the same for grayscale and color image of size 256 \times 256.

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- a) What are different color models used in general? For any two color models of your choice, write down the formulae to convert from one color model to another and vice versa.
- **b)** What is Principle Component Analysis (PCA)? Explain the steps to obtain PCA for 2-D data.
- c) What is the histogram of an image? What is histogram equalization?

Section – II

Q.4 Answer any four.

- a) Explain Harris corner detection algorithm.
- **b)** Explain predictive image compression approach.
- c) Why signatures are used in image processing?
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- e) Write down the main conceptual differences in edge-based and regionbased approaches to image segmentation.

Q.5 Answer any two

- a) Explain in brief different JPEG still image compression modes.
- b) Explain JPEG-2000 image compression with schematic diagram.
- c) Explain region based segmentation along with splitting and merging steps.

Max. Marks: 56

16

12

məu	uctio	Book.		
		2) Figures to the right indicate full marks.3) Assume suitable data if necessary.		
		MCQ/Objective Type Questions		
Dura	tion: 3	0 Minutes Marks:		
Q.1	Q.1 Choose the correct alternatives from the options.			
	1)	Hough transform can be used to detect in an input image.a) circlesb) straight linesc) curvesd) all of these		
	2)	Merging and splitting approaches are part of which segmentation method? a) edge-based b) region-based c) watershed d) maximizes		
	3)	In spatial filtering, masks for correlation and convolution approaches differ by degrees a) 180 b) 120 c) 360 d) 90		
	4)	A digital boundary can be approximated with arbitrary accuracy by aa) triangleb) squarec) polygond) hexagon		
	5)	The MPEG standard was developed fora) grayscale imagesb) videoc) color imagesd) none of these		
	6)	Digitizing the amplitude values is called a) sampling b) quantization c) scaling d) none of these		
 7) The difference in intensity between the high in an image is called as a) noise b) c) dynamic range d) 		a) noise b) contrast		
	8)	The number of bits required to store a digital image of size N×N having 2^k intensity levels are a) Nk b) N/k c) kN^2 d) Nk^2		
	9)	Transform domain operations in case of 2-D Discrete Cosine Transformrequiresa) real arithmeticb) complex arithmeticc) binary arithmeticd) none of these		

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering IMAGE PROCESSING**

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Seat No.

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14

14

- c) binary arithmetic
 - none of these d)

Set

Max. Marks: 70

10) 2-D Discrete Fourier transform provides a way to analyze input image in terms of _____.

- a) spatial information
- b) frequency information
- c) both spatial and frequency information
- d) none of these
- 11) 2-D Discrete cosine transform provides excellent capability for _____.
 - a) Image restoration b) Image compression
 - c) Image deconvolution d) Image enhancement
- 12) For rotating the input image by 30 degrees which operation should be used?
 - a) point processing
- b) neighborhood
- c) geometric transformation
- d) image analysis

SLR-FM-219

Set

- 13) Log transformation _____ the dynamic range of intensity values in an input image.
 - a) reduces

c) minimizes

- b) increases
- d) maximizes
- 14) Contrast stretching _____ the range of intensity values in an input image.
 - a) expands

- b) decreases
- c) minimizes
- d) none of these

Set

Seat No.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering IMAGE PROCESSING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four.

- a) Illustrate image sampling and quantization in the context of image processing.
- **b)** What is Singular Value Decomposition (SVD)? How SVD can be used to compress digital images?
- c) Write the resultant transformation (or affine) matrix if an input image has to be upscaled by factor of 2 and rotated by 30 degrees.
- d) Why do we process images? Distinguish representation of a digital image with its continuous counterpart.
- e) How many bits do we need to store an image of size N \times N? Calculate the same for grayscale and color image of size 256 \times 256.

Q.3 Answer any two.

- a) What are different color models used in general? For any two color models of your choice, write down the formulae to convert from one color model to another and vice versa.
- **b)** What is Principle Component Analysis (PCA)? Explain the steps to obtain PCA for 2-D data.
- c) What is the histogram of an image? What is histogram equalization?

Section – II

Q.4 Answer any four.

- a) Explain Harris corner detection algorithm.
- **b)** Explain predictive image compression approach.
- c) Why signatures are used in image processing?
- d) Explain algorithm to obtain skeleton of a binary region.
- e) Write down the main conceptual differences in edge-based and regionbased approaches to image segmentation.

Q.5 Answer any two

- a) Explain in brief different JPEG still image compression modes.
- b) Explain JPEG-2000 image compression with schematic diagram.
- c) Explain region based segmentation along with splitting and merging steps.

Max. Marks: 56

16

12

12

Set

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - The frequency of oscillation in a backward wave oscillator can be 1) changed by _
 - a) varying the voltage which controls beam velocity
 - b) varying the beam current
 - c) both by varying the beam current and by light varying the voltage which controls beam velocity
 - d) changing the rate of thermionic emission
 - 2) The semiconductor diode which can be used in switching circuit in microwave range is _____.
 - a) PIN diode c) Tunnel diode
- b) Varactor diode d) Gunn diode
- 3) What happens to a tunnel diode when the reverse bias effect goes beyond the valley point?
 - a) it behaves as a normal diode
 - b) it attains increased negative slope effects
 - c) reverse saturation current increases
 - d) becomes independent of temperature
- Which of the following is wrong for a magic used to tee? 4)
 - a) E and H arms are decoupled
 - b) coplanar arms are coupled
 - c) all ports are perfectly matched
 - d) A signal into coplanar arm splits equally between E and H arms
- 5) The two terms used to describe performance of a directional coupler are
 - a) coupling and directivity b)
 - gain and isolation c) gain and directivity d)
- The duty cycle of a radar transmitter is equal to 6)
 - (PRF)/(pulse width) a) (PRF) (pulse width) b)
 - c) (pulse width) /(PRF) d) (pulse width) + (PRF)
- 7) Which of the following diode is used as a detector in a RADAR?
 - a) Gunn Diode

c) IMPATT diode

- Schottky diode b)
- Any of the above d)

gain and coupling

Max. Marks: 70

Marks: 14





- Antenna elevation angle at the ground station for satellite communication is always kept above 5° to _____.
 - a) minimize the sky noise temperature
 - b) reduce the effect of oxygen and water vapors absorption on the antenna noise temperature
 - c) minimize the slant range
 - d) increase the visibility of the satellite
- FM is preferred for satellite communication because _____.
 - a) satellite channel has large bandwidth and less noise
 - b) It gives high modulation index
 - c) low bandwidth is essentially required
 - d) Other methods of modulation will result in fading and distortion
- 10) A geostationary satellite _
 - a) remains stationary in space.
 - b) remains at a height of 1000 km above the surface of earth.
 - c) orbits the earth with 24 hour period.
 - d) remains always in a direction opposite to that of sun, with respect to earth.
- 11) Satellite communication links are preferred over sub-marine cables because _____.
 - a) they are faster b) they involve lesser cost
 - c) of their multiple access ability d) none of these
- 12) What does a link budget for satellite communication include?
 - a) Total cost of satellite
 - b) Cost of satellite plus launch vehicle
 - c) Signal and noise levels in dB
 - d) Margins of error permitted
- 13) The output stage of a transponder on-board a satellite has a maximum power output of 10 watts. However, it is not operated at the maximum power output in order to _____.
 - a) Conserve the available limited battery power
 - b) Reduce noise due to device
 - c) Avoid inter-modulation distortion
 - d) Avoid heating up of the satellite beyond a preset value
- 14) Is the width of the range of wavelengths emitted by the light source _____.
 - a) Bandwidth

b) Chromatic Dispersion

c) Spectral width

d) Beamwidth

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two.

- a) Realize construction and working of TWT. Sate its performance parameters.
- b) Draw block diagram of Pulse radar system and explain its working Principal.
- c) Dramatize construction and working two hole directional coupler. Derive its S- matrix.

Q.3 Attempt Any Four.

- a) With suitable Diagram explain working of Circulator.
- **b)** Compare E-plane Tee Junction and H-plane Tee Junction.
- c) With the waveform show how BARATT diode functions in negative resistance region.
- d) Derive Doppler frequency in continuous wave radar.
- e) Show how PIN diode can be used as variable resistance and variable capacitance.

Section – II

Q.4 Attempt Any Two.

- a) Realize block diagram of Telemetry Tracking and control subsystem and explain.
- b) Explain construction and working of LASER diode.
- c) "Satellite can be used in Navigation Service like Globe positioning system" illustrate the statement.

Q.5 Attempt Any Four.

- a) Summarize basic antenna types used for satellite.
- **b)** Discuss on multiple accesses in satellite.
- c) Outline different losses in optical fiber.
- d) State Kepler's Three Laws of planetary motion.
- e) State range and application of LEO, MEO and GEO satellites.

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Max. Marks: 56

16

Set Q

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 1) Antenna elevation angle at the ground station for satellite communication
 - 1) Antenna elevation angle at the ground station for satellite communication is always kept above 5° to _____.
 - a) minimize the sky noise temperature
 - b) reduce the effect of oxygen and water vapors absorption on the antenna noise temperature
 - c) minimize the slant range
 - d) increase the visibility of the satellite
 - 2) FM is preferred for satellite communication because _____
 - a) satellite channel has large bandwidth and less noise
 - b) It gives high modulation index
 - c) low bandwidth is essentially required
 - d) Other methods of modulation will result in fading and distortion
 - 3) A geostationary satellite _
 - a) remains stationary in space.
 - b) remains at a height of 1000 km above the surface of earth.
 - c) orbits the earth with 24 hour period.
 - d) remains always in a direction opposite to that of sun, with respect to earth.

4) Satellite communication links are preferred over sub-marine cables because _____.

- a) they are faster b) they involve lesser cost
- c) of their multiple access ability d) none of these
- 5) What does a link budget for satellite communication include?
 - a) Total cost of satellite
 - b) Cost of satellite plus launch vehicle
 - c) Signal and noise levels in dB
 - d) Margins of error permitted

Max. Marks: 70

Marks: 14

- 6) The output stage of a transponder on-board a satellite has a maximum power output of 10 watts. However, it is not operated at the maximum power output in order to
 - a) Conserve the available limited battery power
 - b) Reduce noise due to device
 - c) Avoid inter-modulation distortion
 - d) Avoid heating up of the satellite beyond a preset value
- Is the width of the range of wavelengths emitted by the light source _____. 7)
 - a) Bandwidth b) Chromatic Dispersion
 - c) Spectral width d) Beamwidth
- The frequency of oscillation in a backward wave oscillator can be 8) changed by
 - a) varying the voltage which controls beam velocity
 - b) varying the beam current
 - c) both by varying the beam current and by light varying the voltage which controls beam velocity
 - d) changing the rate of thermionic emission
- 9) The semiconductor diode which can be used in switching circuit in microwave range is _____.
 - a) PIN diode b)
 - c) Tunnel diode d) Gunn diode
- What happens to a tunnel diode when the reverse bias effect goes 10) beyond the valley point?
 - a) it behaves as a normal diode
 - b) it attains increased negative slope effects
 - c) reverse saturation current increases
 - d) becomes independent of temperature
- 11) Which of the following is wrong for a magic used to tee?
 - a) E and H arms are decoupled
 - b) coplanar arms are coupled
 - all ports are perfectly matched c)
 - d) A signal into coplanar arm splits equally between E and H arms
- 12) The two terms used to describe performance of a directional coupler are .
 - a) coupling and directivity
- b) gain and coupling gain and isolation d)
- 13) The duty cycle of a radar transmitter is equal to
 - a) (PRF) (pulse width)

c) gain and directivity

(PRF)/(pulse width) b) d) (pulse width) + (PRF)

Schottky diode

- c) (pulse width) /(PRF)
- 14) Which of the following diode is used as a detector in a RADAR?

b)

- a) Gunn Diode
- c) IMPATT diode Any of the above d)

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SLR-FM-220

Varactor diode

Max. Marks: 56

No.	
Seat	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt Any Two.

- a) Realize construction and working of TWT. Sate its performance parameters.
- b) Draw block diagram of Pulse radar system and explain its working Principal.
- c) Dramatize construction and working two hole directional coupler. Derive its S- matrix.

Q.3 Attempt Any Four.

- a) With suitable Diagram explain working of Circulator.
- **b)** Compare E-plane Tee Junction and H-plane Tee Junction.
- c) With the waveform show how BARATT diode functions in negative resistance region.
- d) Derive Doppler frequency in continuous wave radar.
- e) Show how PIN diode can be used as variable resistance and variable capacitance.

Section – II

Q.4 Attempt Any Two.

- a) Realize block diagram of Telemetry Tracking and control subsystem and explain.
- b) Explain construction and working of LASER diode.
- c) "Satellite can be used in Navigation Service like Globe positioning system" illustrate the statement.

Q.5 Attempt Any Four.

- a) Summarize basic antenna types used for satellite.
- b) Discuss on multiple accesses in satellite.
- c) Outline different losses in optical fiber.
- d) State Kepler's Three Laws of planetary motion.
- e) State range and application of LEO, MEO and GEO satellites.

12

16

16

Set

Max. Marks: 70

Marks: 14

14

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ADVANCED COMMUNICATION ENGINEERING**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - The two terms used to describe performance of a directional coupler 1) are
 - a) coupling and directivity gain and coupling b)
 - gain and isolation c) gain and directivity d)

The duty cycle of a radar transmitter is equal to 2)

- a) (PRF) (pulse width)
- c) (pulse width) /(PRF)
- (PRF)/(pulse width) b) d) (pulse width) + (PRF)
- Which of the following diode is used as a detector in a RADAR? 3)
 - Gunn Diode a) IMPATT diode

c)

- b) Schottky diode d) Any of the above
- 4) Antenna elevation angle at the ground station for satellite communication is always kept above 5° to
 - a) minimize the sky noise temperature
 - b) reduce the effect of oxygen and water vapors absorption on the antenna noise temperature
 - minimize the slant range c)
 - d) increase the visibility of the satellite
- FM is preferred for satellite communication because _ 5)
 - a) satellite channel has large bandwidth and less noise
 - b) It gives high modulation index
 - c) low bandwidth is essentially required
 - d) Other methods of modulation will result in fading and distortion
- 6) A geostationary satellite
 - a) remains stationary in space.
 - remains at a height of 1000 km above the surface of earth. b)
 - orbits the earth with 24 hour period. c)
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- Satellite communication links are preferred over sub-marine cables because _____.
 - a) they are faster
- b) they involve lesser cost

Set

- c) of their multiple access ability d) none of these
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 - c) Signal and noise levels in dB
 - d) Margins of error permitted
- 9) The output stage of a transponder on-board a satellite has a maximum power output of 10 watts. However, it is not operated at the maximum power output in order to _____.
 - a) Conserve the available limited battery power
 - b) Reduce noise due to device
 - c) Avoid inter-modulation distortion
 - d) Avoid heating up of the satellite beyond a preset value
- 10) Is the width of the range of wavelengths emitted by the light source _____.
 - Bandwidth b) Chromatic Dispersion
 - c) Spectral width d) Beamwidth
- 11) The frequency of oscillation in a backward wave oscillator can be changed by _____.
 - a) varying the voltage which controls beam velocity
 - b) varying the beam current

a)

- c) both by varying the beam current and by light varying the voltage which controls beam velocity
- d) changing the rate of thermionic emission
- 12) The semiconductor diode which can be used in switching circuit in microwave range is _____.
 - a) PIN diode b) V
 - b) Varactor diode
 - c) Tunnel diode d) Gunn diode
- 13) What happens to a tunnel diode when the reverse bias effect goes beyond the valley point?
 - a) it behaves as a normal diode
 - b) it attains increased negative slope effects
 - c) reverse saturation current increases
 - d) becomes independent of temperature
- 14) Which of the following is wrong for a magic used to tee?
 - a) E and H arms are decoupled
 - b) coplanar arms are coupled
 - c) all ports are perfectly matched
 - d) A signal into coplanar arm splits equally between E and H arms

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two.

- a) Realize construction and working of TWT. Sate its performance parameters.
- b) Draw block diagram of Pulse radar system and explain its working Principal.
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- d) Derive Doppler frequency in continuous wave radar.
- e) Show how PIN diode can be used as variable resistance and variable capacitance.

Section – II

Q.4 Attempt Any Two.

- a) Realize block diagram of Telemetry Tracking and control subsystem and explain.
- b) Explain construction and working of LASER diode.
- c) "Satellite can be used in Navigation Service like Globe positioning system" illustrate the statement.

Q.5 Attempt Any Four.

- a) Summarize basic antenna types used for satellite.
- b) Discuss on multiple accesses in satellite.
- c) Outline different losses in optical fiber.
- d) State Kepler's Three Laws of planetary motion.
- e) State range and application of LEO, MEO and GEO satellites.

16

12

Max. Marks: 56

R

16

Set

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ADVANCED COMMUNICATION ENGINEERING**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Marks: 14

14

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - A geostationary satellite _____. 1)
 - a) remains stationary in space.
 - b) remains at a height of 1000 km above the surface of earth.
 - c) orbits the earth with 24 hour period.
 - d) remains always in a direction opposite to that of sun, with respect to earth.
 - 2) Satellite communication links are preferred over sub-marine cables because ____
 - a) they are faster they involve lesser cost b)
 - c) of their multiple access ability d) none of these
 - 3) What does a link budget for satellite communication include?
 - a) Total cost of satellite
 - b) Cost of satellite plus launch vehicle
 - c) Signal and noise levels in dB
 - d) Margins of error permitted
 - The output stage of a transponder on-board a satellite has a maximum 4) power output of 10 watts. However, it is not operated at the maximum power output in order to
 - a) Conserve the available limited battery power
 - b) Reduce noise due to device
 - c) Avoid inter-modulation distortion
 - d) Avoid heating up of the satellite beyond a preset value
 - Is the width of the range of wavelengths emitted by the light source _____. 5) a) Bandwidth
 - **Chromatic Dispersion** b)

c) Spectral width

Beamwidth d)

Max. Marks: 70

- 6) The frequency of oscillation in a backward wave oscillator can be changed by
 - a) varying the voltage which controls beam velocity
 - b) varying the beam current
 - both by varying the beam current and by light varying the voltage c) which controls beam velocity
 - d) changing the rate of thermionic emission
- 7) The semiconductor diode which can be used in switching circuit in microwave range is _____.
 - a) PIN diode

- b) Varactor diode
- c) Tunnel diode d) Gunn diode
- 8) What happens to a tunnel diode when the reverse bias effect goes beyond the valley point?
 - a) it behaves as a normal diode

 - d) becomes independent of temperature
- 9) Which of the following is wrong for a magic used to tee?
 - a) E and H arms are decoupled
 - b) coplanar arms are coupled
 - c) all ports are perfectly matched
 - d) A signal into coplanar arm splits equally between E and H arms
- 10) The two terms used to describe performance of a directional coupler are
 - a) coupling and directivity
- gain and coupling b)
- c) gain and directivity gain and isolation d)
- The duty cycle of a radar transmitter is equal to 11)
 - a) (PRF) (pulse width)
- (PRF)/(pulse width) b)
- c) (pulse width) /(PRF) d) (pulse width) + (PRF)
- Which of the following diode is used as a detector in a RADAR? 12)
 - a) Gunn Diode Schottky diode b)
 - c) IMPATT diode Any of the above d)
- Antenna elevation angle at the ground station for satellite communication 13) is always kept above 5° to _____.
 - a) minimize the sky noise temperature
 - b) reduce the effect of oxygen and water vapors absorption on the antenna noise temperature
 - c) minimize the slant range
 - d) increase the visibility of the satellite
- FM is preferred for satellite communication because _____. 14)
 - a) satellite channel has large bandwidth and less noise
 - b) It gives high modulation index
 - c) low bandwidth is essentially required
 - d) Other methods of modulation will result in fading and distortion

Set S

- b) it attains increased negative slope effects
- c) reverse saturation current increases

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ADVANCED COMMUNICATION ENGINEERING

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two.

- a) Realize construction and working of TWT. Sate its performance parameters.
- b) Draw block diagram of Pulse radar system and explain its working Principal.
- c) Dramatize construction and working two hole directional coupler. Derive its S- matrix.

Q.3 Attempt Any Four.

- a) With suitable Diagram explain working of Circulator.
- **b)** Compare E-plane Tee Junction and H-plane Tee Junction.
- c) With the waveform show how BARATT diode functions in negative resistance region.
- d) Derive Doppler frequency in continuous wave radar.
- e) Show how PIN diode can be used as variable resistance and variable capacitance.

Section – II

Q.4 Attempt Any Two.

- a) Realize block diagram of Telemetry Tracking and control subsystem and explain.
- b) Explain construction and working of LASER diode.
- c) "Satellite can be used in Navigation Service like Globe positioning system" illustrate the statement.

Q.5 Attempt Any Four.

- a) Summarize basic antenna types used for satellite.
- b) Discuss on multiple accesses in satellite.
- c) Outline different losses in optical fiber.
- d) State Kepler's Three Laws of planetary motion.
- e) State range and application of LEO, MEO and GEO satellites.

12

16

12

16



Max. Marks: 56

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering AUDIO VIDEO SYSTEM**

Day & Date: Saturday, 23-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

C)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Paint programs and image editors are used for creating and editing, 1) b) Vector images
 - Text a)
 - Bitmap images
- 2) In video compression, an independent frame that is not related to any other frame is called, _____.
 - B-Frame a)
 - C) I-Frame d) P-Frame
- 3) A video consists of a sequence of,
 - b) Signals a) Frames d) Slots
 - Packets C)
- The signals U and V are, _____. 4)
 - Same as I and Q a)
 - b) Modified I and Q
 - Same as colour difference components R-Y and B-Y C)
 - d) None of the above
- Compared to progressive scanning, the interlacing technique reduces 5) bandwidth because, ____
 - The picture scanning rate is increased a)
 - b) The picture scanning rate is reduced
 - The effective picture scanning rate is kept same while pixel scanning c) rate is halved
 - d) b) and c) both
- In Audio and Video Compression, voice is sampled at 8000 samples per 6) second with _____.
 - 5 bits per sample a) 7 bits per sample C)
- b) 6 bits per sample
- d) 8 bits per sample

d) HTML codes

b) C-Frame

- For speech, we need to compress the digitize signals at, _____. 7) b) 256 KHz
 - 128 KHz a) 64 KHz c)
 - d) 1152 KHz
- The principle of image orthicon camera tube is based on the principle of 8)
 - Photo-emissivity a) Photo-conductivity

c)

- b) Photo-resistivity
- d) None of these

SLR-FM-221

Set

Max. Marks: 70

Marks: 14

Set P 9) Delay line matrix is used in PAL receiver, _____. To derive R, G and B colours a) To separate the colour difference components b) Cancel the phase errors C) b) and c) d) 10) The colour subcarrier oscillator frequency of NTSC receiver is_____, 5.579545 MHz b) 3.579545 MHz a) d) 2.579545 MHz 4.579545 MHz C) Hue complementary to magenta is, ____ 11) b) Blue Yellow a) C) Cyan d) Green The type of AGC used in TV receiver is, _____. 12) Simple AGC b) Delayed AGC a) d) b) and c) both Keyed AGC C) 13) Slotted aperture mask is used in, ____ b) PIL tubes Trinitron a) Shadow mask tube d) a) and b) C) The process of bringing beam together in picture tube is known as, _____. 14) Convergence b) Purity a) d) Pincushion C) Degaussing

SLR-FM-221

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

AUDIO VIDEO SYSTEM

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) All questions are compulsory

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section I

- Attempt any four of the following questions. Discuss the benefits offered by compression schemes in designing a) multimedia systems? Discuss the terms acoustics, reverberation, absorption coefficient, growth b) and decay of sound? Discuss in detail the term MIDI? C) Explain lossy sequential DCT mode of JPEG? d) Compare headphones and headset. e) Q.3 Attempt any two of the following questions. 12 How sound is optically recorded on photographic film using variable a) density method? Illustrate with a neat block diagram the Facsimile system? b) C) Illustrate with a neat diagram the different layers of MPEG? Section –II Q.4 Attempt any four of the following questions. 16 Compare NTSC and PAL colour television standards. a) Describe in detail how chrominance signal is derived from RGB signal in b) PAL TV system? Give significance of chromaticity diagram. c) d) Discuss the term AGC? What are different types of AGC? Discuss how interlaced scanning reduces flicker and conserves e) bandwidth. Q.5 Attempt any two of the following questions. 12 Discuss with a neat diagram three colour theory? a) Draw block diagram of digital TV and explain its working in detail? b)
 - Explain Trinitron picture tube? c)

Seat No.

Q.2





Max. Marks: 56

Electronics Engineering AUDIO VIDEO SYSTEM						
	Day & Date: Saturday, 23-11-2019 Max. Marks: 70					
			To 05:30 PM			_
Instr	uctio	ns: 1)	Q. No. 1 is compulsory and it sho answer book.	buld	be solved in first 30 mir	iutes in
		2) Figures to the right indicate full n	harks	3	
			Assume suitable data if necessa MCQ/Objective Typ	ry.		
Dura	tion: 3	30 Mir			163110113	Marks: 14
Q.1			ne correct alternatives from the	onti	ons and rewrite the se	
	1)		principle of image orthicon camera	-		
		a)	Photo-emissivity	b)	Photo-resistivity	
		c)	Photo-conductivity	d)	None of these	
	2)	Dela	y line matrix is used in PAL receiv	/er, _	<u> </u>	
		a)	To derive R, G and B colours			
		b) c)	To separate the colour difference Cancel the phase errors	e cor	nponents	
		d)	b) and c)			
	3)	,	colour subcarrier oscillator freque	ncv	of NTSC receiver is	
	-,	a)	5.579545 MHz		3.579545 MHz	7
		c)	4.579545 MHz	d)	2.579545 MHz	
	4)	Hue	complementary to magenta is,			
		a)	Yellow	b)	Blue	
		c)	Cyan	d)		
	5)		type of AGC used in TV receiver i			
		a) c)	Simple AGC Keyed AGC	b) d)		
	6)	,	-	u)		
	6)	a)	ed aperture mask is used in, Trinitron	 b)	PIL tubes	
		c)	Shadow mask tube	d)	a) and b)	
	7)	The	process of bringing beam togethe	r in p	picture tube is known as	ò,
	,	a)	Convergence		Purity	·
		c)	Degaussing	d)	Pincushion	
	8)		t programs and image editors are		-	g,
		a)	Text Bitmon images	,	Vector images	
	•	c)	Bitmap images	d)	HTML codes	
	9)		deo compression, an independent r frame is called,	tran	he that is not related to	any
		a)	B-Frame	b)	C-Frame	
		c)	I-Frame	d)	P-Frame	

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019

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No.

- 10) A video consists of a sequence of,
 - a) Frames

b) Signalsd) Slots

SLR-FM-221

Set Q

- c) Packets
- 11) The signals U and V are, _____.
 - a) Same as I and Q
 - b) Modified I and Q
 - c) Same as colour difference components R-Y and B-Y
 - d) None of the above
- 12) Compared to progressive scanning, the interlacing technique reduces bandwidth because, _____.
 - a) The picture scanning rate is increased
 - b) The picture scanning rate is reduced
 - c) The effective picture scanning rate is kept same while pixel scanning rate is halved
 - d) b) and c) both
- 13) In Audio and Video Compression, voice is sampled at 8000 samples per second with _____.
 - a) 5 bits per sample
- b) 6 bits per sample
- c) 7 bits per sample d) 8 bits per sample
- 14) For speech, we need to compress the digitize signals at, _____.
 - a) 128 KHz

c)

b) 256 KHz

64 KHz

d) 1152 KHz

Page **5** of **12**

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

AUDIO VIDEO SYSTEM

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) All questions are compulsory

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section I

- Attempt any four of the following questions. Discuss the benefits offered by compression schemes in designing a) multimedia systems? Discuss the terms acoustics, reverberation, absorption coefficient, growth b) and decay of sound? Discuss in detail the term MIDI? C) Explain lossy sequential DCT mode of JPEG? d) Compare headphones and headset. e) Q.3 Attempt any two of the following questions. 12 How sound is optically recorded on photographic film using variable a) density method? Illustrate with a neat block diagram the Facsimile system? b) C) Illustrate with a neat diagram the different layers of MPEG? Section –II Q.4 Attempt any four of the following questions. 16 Compare NTSC and PAL colour television standards. a) Describe in detail how chrominance signal is derived from RGB signal in b) PAL TV system? Give significance of chromaticity diagram. c) d) Discuss the term AGC? What are different types of AGC? Discuss how interlaced scanning reduces flicker and conserves e) bandwidth. Q.5 Attempt any two of the following questions. 12 Discuss with a neat diagram three colour theory? a) Draw block diagram of digital TV and explain its working in detail? b)
 - Explain Trinitron picture tube? c)

Seat No.

Q.2





Max. Marks: 56

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering AUDIO VIDEO SYSTEM**

Day & Date: Saturday, 23-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Compared to progressive scanning, the interlacing technique reduces 1) bandwidth because.
 - The picture scanning rate is increased a)
 - The picture scanning rate is reduced b)
 - The effective picture scanning rate is kept same while pixel scanning c) rate is halved
 - b) and c) both d)
- 2) In Audio and Video Compression, voice is sampled at 8000 samples per second with .
 - 5 bits per sample a)
- b) 6 bits per sample d) 8 bits per sample
- 7 bits per sample c)
- For speech, we need to compress the digitize signals at, _____. 3)
 - 128 KHz b) 256 KHz a)
 - 64 KHz c) d) 1152 KHz
- The principle of image orthicon camera tube is based on the principle of 4)
 - a) Photo-emissivity
 - b) Photo-resistivity d) None of these
- Delay line matrix is used in PAL receiver, _____. 5)
 - To derive R, G and B colours a)
 - To separate the colour difference components b)
 - Cancel the phase errors c)

Photo-conductivity

b) and c) d)

C)

The colour subcarrier oscillator frequency of NTSC receiver is _____, 6)

- b) 3.579545 MHz 5.579545 MHz a)
- C) 4.579545 MHz d) 2.579545 MHz
- Hue complementary to magenta is, __ 7)
 - Yellow b) Blue a) Cyan d) Green C)
- 8) The type of AGC used in TV receiver is, b) Delayed AGC
 - Simple AGC a)
 - Keyed AGC d) b) and c) both c)

Max. Marks: 70

Marks: 14

Set R

SLR-FM-221

Slotted aperture mask is used in, _____. 9)

- b) PIL tubes Trinitron a) c)
 - Shadow mask tube d) a) and b)
- The process of bringing beam together in picture tube is known as, _____. 10)
 - Convergence
 - C) Degaussing

a)

a)

d) Pincushion

b) Purity

SLR-FM-221

Set | R

Paint programs and image editors are used for creating and editing, _____. 11)

- b) Vector images Text
- Bitmap images d) HTML codes C)
- In video compression, an independent frame that is not related to any 12) other frame is called, _____.
 - B-Frame b) C-Frame a)
 - C) I-Frame d) P-Frame
- A video consists of a sequence of, _____. 13)
 - b) Signals a) Frames C)
 - d) Slots Packets
- 14) The signals U and V are, _____.
 - Same as I and Q a)
 - b) Modified I and Q
 - Same as colour difference components R-Y and B-Y C)
 - None of the above d)

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

AUDIO VIDEO SYSTEM

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) All questions are compulsory

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section I

- Attempt any four of the following questions. Discuss the benefits offered by compression schemes in designing a) multimedia systems? Discuss the terms acoustics, reverberation, absorption coefficient, growth b) and decay of sound? Discuss in detail the term MIDI? C) Explain lossy sequential DCT mode of JPEG? d) Compare headphones and headset. e) Q.3 Attempt any two of the following questions. 12 How sound is optically recorded on photographic film using variable a) density method? Illustrate with a neat block diagram the Facsimile system? b) C) Illustrate with a neat diagram the different layers of MPEG? Section –II Q.4 Attempt any four of the following questions. 16 Compare NTSC and PAL colour television standards. a) Describe in detail how chrominance signal is derived from RGB signal in b) PAL TV system? Give significance of chromaticity diagram. c) d) Discuss the term AGC? What are different types of AGC? Discuss how interlaced scanning reduces flicker and conserves e) bandwidth. Q.5 Attempt any two of the following questions. 12 Discuss with a neat diagram three colour theory? a) Draw block diagram of digital TV and explain its working in detail? b)
 - Explain Trinitron picture tube? c)

Max. Marks: 56

Set

16

SLR-FM-221



Q.2

Seat No.		Set S
110.	B.E. (Part - II) (CGPA) Exam Electronics Eng	
	AUDIO VIDEO	
	Date: Saturday, 23-11-2019 02:30 PM To 05:30 PM	Max. Marks: 70
Instru	ctions: 1) Q. No. 1 is compulsory and it she answer book.	ould be solved in first 30 minutes in
	2) Figures to the right indicate full r3) Assume suitable data if necessa	ry.
Duratio	MCQ/Objective Typ	e Questions Marks: 14
	Choose the correct alternatives from the	
1	1) The colour subcarrier oscillator freque	-
	a) 5.579545 MHz c) 4.579545 MHz	b) 3.579545 MHz d) 2.579545 MHz
2	2) Hue complementary to magenta is,	·
	a) Yellow c) Cyan	b) Blue d) Green
3	3) The type of AGC used in TV receiver	/
-	a) Simple AGC	b) Delayed AGC
	c) Keyed AGC4) Slotted aperture mask is used in,	d) b) and c) both
	a) Trinitron	b) PIL tubes
F	c) Shadow mask tube	d) a) and b)
5	 The process of bringing beam togethe a) Convergence 	b) Purity
	c) Degaussing	d) Pincushion
6	 Paint programs and image editors are a) Text 	used for creating and editing, b) Vector images
	c) Bitmap images	d) HTML codes
7	In video compression, an independent other frame is called,	t frame that is not related to any
	a) B-Frame	b) C-Frame
	c) I-Frame	d) P-Frame
6	 A video consists of a sequence of, a) Frames 	 b) Signals
	c) Packets	d) Slots
ç	 The signals U and V are, a) Same as I and Q 	
	b) Modified I and Q	
	c) Same as colour difference compd) None of the above	onents R-Y and B-Y
	,	

- 10) Compared to progressive scanning, the interlacing technique reduces bandwidth because, _____.
 - a) The picture scanning rate is increased
 - b) The picture scanning rate is reduced
 - c) The effective picture scanning rate is kept same while pixel scanning rate is halved
 - d) b) and c) both
- 11) In Audio and Video Compression, voice is sampled at 8000 samples per second with _____.
 - a) 5 bits per sample b) 6 bits per sample
 - c) 7 bits per sample d
- d) 8 bits per sample

Set | S

- 12) For speech, we need to compress the digitize signals at, _____.
 - a) 128 KHz b) 256 KHz
 - c) 64 KHz d) 1152 KHz
- 13) The principle of image orthicon camera tube is based on the principle of
 - a) Photo-emissivity

- b) Photo-resistivity
- c) Photo-conductivity d) None of these
- 14) Delay line matrix is used in PAL receiver, _____.
 - a) To derive R, G and B colours
 - b) To separate the colour difference components
 - c) Cancel the phase errors
 - d) b) and c)

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

AUDIO VIDEO SYSTEM

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) All questions are compulsory

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section I

- Attempt any four of the following questions. Discuss the benefits offered by compression schemes in designing a) multimedia systems? Discuss the terms acoustics, reverberation, absorption coefficient, growth b) and decay of sound? Discuss in detail the term MIDI? C) Explain lossy sequential DCT mode of JPEG? d) Compare headphones and headset. e) Q.3 Attempt any two of the following questions. 12 How sound is optically recorded on photographic film using variable a) density method? Illustrate with a neat block diagram the Facsimile system? b) C) Illustrate with a neat diagram the different layers of MPEG? Section –II Q.4 Attempt any four of the following questions. 16 Compare NTSC and PAL colour television standards. a) Describe in detail how chrominance signal is derived from RGB signal in b) PAL TV system? Give significance of chromaticity diagram. c) d) Discuss the term AGC? What are different types of AGC? Discuss how interlaced scanning reduces flicker and conserves e) bandwidth. Q.5 Attempt any two of the following questions. 12 Discuss with a neat diagram three colour theory? a) Draw block diagram of digital TV and explain its working in detail? b)
 - Explain Trinitron picture tube? c)

Seat No.

Q.2

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Max. Marks: 56

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

EMBEDDED SYSTEMS

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- After the execution of following ARM instruction the content of R2 register 1) will be _____ RSB R2, R2, R2, LSL #3.
 - R2 * 7 a) b) R2/7 C) R2 * 8 d) R2/8
- In LPC2148 _____ pin select register is used to configure port pins P1.25 2)
 - to P1.30 PINSEL2 b) IODIR2 a)
 - PINSEL0 d) PINSEL1 c)
- The on-chip ADC's of LPC2148 has _____ bit resolution and _____ 3) conversion time.
 - 8, 2.44 µsec b) 10, 2.44 µsec a) 12, 1.44 µsec d) 10, 1.44µsec C)
- To force logic '0' on port pin P1 .20, _____ register is used in LPC2148. 4) IOSET0 a)
 - b) IOCLR0
 - d) IODIR3
- 5) What is the value of R1 after MVN R1, #3 is executed?
 - a) 0x0000003 b) 0xFFFFFFC
 - C) 0xFFFFFFE d) 0xFFFFFD

_ vector is used when the processor cannot decode an instruction. 6)

- a) Undefined b) Abort Reset d) Data Abort c)
- Let R0=0x00000000 and R1=0x00000055. What will be the content of R0 7) after execution of "ADD R0, R1, R1, LSL #1"?
 - a) 0x00000000 b) 0x0000005
 - 0x00000FF d) 0x000000A C)
- 8) The most common methods to obtain exclusive access to shared resources is/are _____.
 - a) Disabling interrupts

IOCLR1

C)

b) Disabling scheduling

d) None of the above

b) Preemptive

- Using semaphores d) All of above
- 9) In _____ kernel, the highest priority task ready to run is always given control of the CPU.
 - Non-preemptive a)
 - c) Micro

c)

Max. Marks: 70

Marks: 14

SLR-FM-222



10) The _____ is the part of the kernel responsible for determining which task will run next.

a) Scheduler

Mailbox

C)

- b) Semaphore
- d) Mutex
- 11) A _____ is a situation in which two tasks are each unknowingly waiting for resources held by each other.
 - a) Deadlock

b) Synchronization

SLR-FM-222

Set | P

- c) Dormant
- d) No of the above.
- 12) A semaphore is/are used to _____.
 - a) control access to a shared resource
 - b) signal the occurrence of an event
 - c) allow two tasks to synchronize their activities
 - d) all of the above.
- 13) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
 - a) Ready b) Dormant
 - c) Running d) Waiting
- 14) µcos-II and most commercial real-time kernels are _____ because system responsiveness is important.
 - a) Preemptive
 - c) Selective preemption
- b) Non-preemptive
- d) None of above

Seat	
No.	

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Write an ARM ASM code to count positive numbers from a series of 16 bit numbers.
- **b)** Discuss ADD and RSB data processing ARM instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.29. Write an embedded C program to blink it continuously.
- d) What is an exception? Explain vector addresses and vector table.
- e) List the registers available in Pin Connect block of LPC2148 and discuss any two registers with example.

Q.3 Attempt any two

- a) What is pipeline? Explain the effect of pipeline on program execution.
- **b)** What do you understand by load/store architecture? Explain load/store instructions in detail with examples.
- c) Interface a stepper motor with LPC2148 port pins P0.14, P0.15, P0.16, and P0.17 and write an embedded C program to rotate motor in anti-clockwise direction.

Section – II

Q.4 Attempt any four.

- a) List down all the µcos-II RTOS features.
- **b)** What is priority inversion? How to avoid it using priority inheritance?
- **c)** Discuss the operation and significance of the μcos-II API functions, OSStart() & OSInit().
- d) What is non-preemptive kernel? Elaborate in detail with example and proper diagram.
- e) Explain clock tick in multitasking system. What are the constraints in selection of the clock tick in multitasking system?

Q.5 Attempt any two

- a) Elaborate with examples inter-task communication tool, message mailbox, used in RTOS environment.
- b) Define a task? Discuss the task control box (TCB) and its data in detail.
- c) Write an embedded C program to illustrate message semaphores in µcos-II for LPC2148.

Max. Marks: 56

16

12

16

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

c)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b) Disabling scheduling

b) Preemptive

b) Semaphore

- The most common methods to obtain exclusive access to shared 1) resources is/are .
 - Disabling interrupts a)
 - c) Using semaphores d) All of above
- 2) In kernel, the highest priority task ready to run is always given control of the CPU.
 - a) Non-preemptive
 - Micro d) None of the above
- 3) The _____ is the part of the kernel responsible for determining which task will run next.
 - a) Scheduler
 - Mailbox d) Mutex c)
- A _____ is a situation in which two tasks are each unknowingly waiting for 4) resources held by each other.
 - a) Deadlock b) Synchronization d) No of the above.
 - c) Dormant
- 5) A semaphore is/are used to _____.
 - control access to a shared resource a)
 - signal the occurrence of an event b)
 - c) allow two tasks to synchronize their activities
 - all of the above. d)
- 6) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
 - b) Dormant a) Ready
 - c) Running d) Waiting
- 7) ucos-II and most commercial real-time kernels are because system responsiveness is important.
 - Preemptive a) b) Non-preemptive
 - Selective preemption d) None of above C)
- After the execution of following ARM instruction the content of R2 register 8) will be _____ RSB R2, R2, R2, LSL #3.

b) R2/7

- R2 * 7 a)
- R2 * 8 d) R2/8 c)

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Max. Marks: 70

Set

Set Q

- 9) In LPC2148 _____ pin select register is used to configure port pins P1.25 to P1.30
 - a) PINSEL2
 - b) IODIR2 d) PINSEL1 PINSEL0
- The on-chip ADC's of LPC2148 has _____ bit resolution and _____ 10) conversion time.
 - a) 8, 2.44 µsec

c)

C)

a)

c)

12, 1.44 µsec C)

- b) 10, 2.44 µsec d) 10, 1.44µsec
- To force logic '0' on port pin P1 .20, _____ register is used in LPC2148. 11)
 - a) IOSET0
- b) IOCLR0
- IOCLR1 d) IODIR3
- 12) What is the value of R1 after MVN R1, #3 is executed?
 - 0x0000003 b) 0xFFFFFC
 - 0xFFFFFFE C)
- d) 0xFFFFFD
- 13) _ vector is used when the processor cannot decode an instruction.
 - a) Undefined b) Abort Reset d) Data Abort C)
- Let R0=0x00000000 and R1=0x00000055. What will be the content of R0 14) after execution of "ADD R0, R1, R1, LSL #1"?
 - 0x00000000 a)
 - 0x00000FF
- b) 0x0000005
- d) 0x000000A

Seat	
No.	

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Write an ARM ASM code to count positive numbers from a series of 16 bit numbers.
- **b)** Discuss ADD and RSB data processing ARM instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.29. Write an embedded C program to blink it continuously.
- d) What is an exception? Explain vector addresses and vector table.
- e) List the registers available in Pin Connect block of LPC2148 and discuss any two registers with example.

Q.3 Attempt any two

- a) What is pipeline? Explain the effect of pipeline on program execution.
- **b)** What do you understand by load/store architecture? Explain load/store instructions in detail with examples.
- c) Interface a stepper motor with LPC2148 port pins P0.14, P0.15, P0.16, and P0.17 and write an embedded C program to rotate motor in anti-clockwise direction.

Section – II

Q.4 Attempt any four.

- a) List down all the µcos-II RTOS features.
- **b)** What is priority inversion? How to avoid it using priority inheritance?
- **c)** Discuss the operation and significance of the μcos-II API functions, OSStart() & OSInit().
- d) What is non-preemptive kernel? Elaborate in detail with example and proper diagram.
- e) Explain clock tick in multitasking system. What are the constraints in selection of the clock tick in multitasking system?

Q.5 Attempt any two

- a) Elaborate with examples inter-task communication tool, message mailbox, used in RTOS environment.
- b) Define a task? Discuss the task control box (TCB) and its data in detail.
- c) Write an embedded C program to illustrate message semaphores in µcos-II for LPC2148.

Max. Marks: 56

16

12

16

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- What is the value of R1 after MVN R1, #3 is executed? 1)
 - 0x0000003 b) 0xFFFFFC a)
 - **0xFFFFFF** C)
- 2) vector is used when the processor cannot decode an instruction.
 - Undefined a)
 - Reset C) d) Data Abort
- Let R0=0x00000000 and R1=0x00000055. What will be the content of R0 3) after execution of "ADD R0, R1, R1, LSL #1"?
 - 0x0000000 a)
 - 0x00000FF C)
- The most common methods to obtain exclusive access to shared 4) resources is/are .
 - Disabling interrupts a)

Using semaphores

- b) Disabling scheduling d) All of above
- 5) kernel, the highest priority task ready to run is always given In control of the CPU.
 - Non-preemptive a)
 - Micro
- 6) The _____ is the part of the kernel responsible for determining which task will run next.
 - a) Scheduler

c)

C)

Semaphore b)

d) No of the above.

b) Preemptive

d) None of the above

- C) Mailbox d) Mutex
- 7) A is a situation in which two tasks are each unknowingly waiting for resources held by each other. b) Synchronization
 - Deadlock a)
 - Dormant C)
- 8) A semaphore is/are used to _____
 - control access to a shared resource a)
 - signal the occurrence of an event b)
 - allow two tasks to synchronize their activities C)
 - d) all of the above.



Marks: 14

Set

Max. Marks: 70



- d) 0xFFFFFD

b) 0x0000005

d) 0x000000A

- b) Abort

Seat No.

9) The state corresponds to a task which resides in memory but has not been made available to the multitasking kernel. a) Ready b) Dormant c) Running d) Waiting µcos-II and most commercial real-time kernels are _____ because system 10) responsiveness is important. a) Preemptive b) Non-preemptive Selective preemption d) None of above C) After the execution of following ARM instruction the content of R2 register 11) will be _____ RSB R2, R2, R2, LSL #3. R2 * 7 b) R2/7 a) R2 * 8 d) R2/8 c) 12) In LPC2148 _____ pin select register is used to configure port pins P1.25 to P1.30 a) PINSEL2 b) IODIR2 PINSEL0 d) PINSEL1 c) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ 13) conversion time. a) 8, 2.44 µsec b) 10, 2.44 µsec c) 12, 1.44 µsec d) 10, 1.44µsec To force logic '0' on port pin P1 .20, _____ register is used in LPC2148. 14)

- - a) IOSET0
 - IOCLR1 C)

b) IOCLR0

SLR-FM-222

Set R

d) IODIR3

Seat	
No.	

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Write an ARM ASM code to count positive numbers from a series of 16 bit numbers.
- **b)** Discuss ADD and RSB data processing ARM instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.29. Write an embedded C program to blink it continuously.
- d) What is an exception? Explain vector addresses and vector table.
- e) List the registers available in Pin Connect block of LPC2148 and discuss any two registers with example.

Q.3 Attempt any two

- a) What is pipeline? Explain the effect of pipeline on program execution.
- **b)** What do you understand by load/store architecture? Explain load/store instructions in detail with examples.
- c) Interface a stepper motor with LPC2148 port pins P0.14, P0.15, P0.16, and P0.17 and write an embedded C program to rotate motor in anti-clockwise direction.

Section – II

Q.4 Attempt any four.

- a) List down all the µcos-II RTOS features.
- **b)** What is priority inversion? How to avoid it using priority inheritance?
- **c)** Discuss the operation and significance of the μcos-II API functions, OSStart() & OSInit().
- d) What is non-preemptive kernel? Elaborate in detail with example and proper diagram.
- e) Explain clock tick in multitasking system. What are the constraints in selection of the clock tick in multitasking system?

Q.5 Attempt any two

- a) Elaborate with examples inter-task communication tool, message mailbox, used in RTOS environment.
- b) Define a task? Discuss the task control box (TCB) and its data in detail.
- c) Write an embedded C program to illustrate message semaphores in µcos-II for LPC2148.

Max. Marks: 56

16

12

16

Seat No.

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

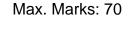
Duration: 30 Minutes

c)

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- 1) The _____ is the part of the kernel responsible for determining which task will run next.
 - a) Scheduler
 - b) Semaphore Mailbox d) Mutex
- A _____ is a situation in which two tasks are each unknowingly waiting for 2) resources held by each other.
 - a) Deadlock
 - Dormant c)
- A semaphore is/are used to ____ 3)
 - control access to a shared resource a)
 - signal the occurrence of an event b)
 - allow two tasks to synchronize their activities c)
 - d) all of the above.
- The state corresponds to a task which resides in memory but has 4) not been made available to the multitasking kernel.
 - b) Dormant a) Ready
 - Running d) Waiting c)
- µcos-II and most commercial real-time kernels are _____ because system 5) responsiveness is important.
 - Preemptive a)
- b) Non-preemptive d) None of above
- Selective preemption C) 6) After the execution of following ARM instruction the content of R2 register
 - will be RSB R2, R2, R2, LSL #3.
 - a) R2 * 7 b) R2/7
 - R2 * 8 d) R2/8 C)
- 7) In LPC2148 pin select register is used to configure port pins P1.25 to P1.30
 - a) PINSEL2 b) IODIR2
 - PINSEL0 d) PINSEL1 C)
- The on-chip ADC's of LPC2148 has _____ bit resolution and _____ 8) conversion time.
 - a) 8, 2.44 µsec
 - 12, 1.44 µsec C)

- b) 10, 2.44 µsec
- d) 10, 1.44µsec



Marks: 14

- b) Synchronization d) No of the above.

Set

SLR-FM-222

9) To force logic '0' on port pin P1 .20, _____ register is used in LPC2148.

- a) IOSET0 b) IOCLR0
- c) IOCLR1 d) IODIR3
- 10) What is the value of R1 after MVN R1, #3 is executed?
 - a) 0x0000003
- b) 0xFFFFFCd) 0xFFFFFFD

SLR-FM-222

Set S

- 11) _____ vector is used when the processor cannot decode an instruction.
 - a) Undefined

0xFFFFFFE

C)

C)

b) Abort

d) Data Abort

- c) Reset
- 12) Let R0=0x00000000 and R1=0x00000055. What will be the content of R0 after execution of "ADD R0, R1, R1, LSL #1"?
 - a) 0x0000000
 - b) 0x00000005 d) 0x0000000A
- 13) The most common methods to obtain exclusive access to shared resources is/are _____.
 - b) Disabling scheduling
 - a) Disabling interruptsc) Using semaphores

0x00000FF

- d) All of above
- 14) In _____ kernel, the highest priority task ready to run is always given control of the CPU.
 - a) Non-preemptive
 - c) Micro

- b) Preemptive
- d) None of the above

Seat	
No.	

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering EMBEDDED SYSTEMS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any four

- a) Write an ARM ASM code to count positive numbers from a series of 16 bit numbers.
- **b)** Discuss ADD and RSB data processing ARM instructions with examples.
- c) Interface one LED to LPC2148 port pin P0.29. Write an embedded C program to blink it continuously.
- d) What is an exception? Explain vector addresses and vector table.
- e) List the registers available in Pin Connect block of LPC2148 and discuss any two registers with example.

Q.3 Attempt any two

- a) What is pipeline? Explain the effect of pipeline on program execution.
- **b)** What do you understand by load/store architecture? Explain load/store instructions in detail with examples.
- c) Interface a stepper motor with LPC2148 port pins P0.14, P0.15, P0.16, and P0.17 and write an embedded C program to rotate motor in anti-clockwise direction.

Section – II

Q.4 Attempt any four.

- a) List down all the µcos-II RTOS features.
- **b)** What is priority inversion? How to avoid it using priority inheritance?
- **c)** Discuss the operation and significance of the μcos-II API functions, OSStart() & OSInit().
- d) What is non-preemptive kernel? Elaborate in detail with example and proper diagram.
- e) Explain clock tick in multitasking system. What are the constraints in selection of the clock tick in multitasking system?

Q.5 Attempt any two

- a) Elaborate with examples inter-task communication tool, message mailbox, used in RTOS environment.
- b) Define a task? Discuss the task control box (TCB) and its data in detail.
- c) Write an embedded C program to illustrate message semaphores in µcos-II for LPC2148.

Max. Marks: 56

12

16

12

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering BROADBAND COMMUNICATION**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

- 1) ATM stands for
 - a) Automatic teller machine
 - c) Automatic transfer machine d) Asynchronous transfer mode
- 2) are the algorithms are available to update contents of routing tables.
 - a) Distance-Vector Protocol
- b) Link-State Protocol

Automated teller machine

- c) Both a & b None of these d)
- X.25 provides a virtual high-quality digital network at _____. 3)
 - High cost a) Low cost b)
 - c) Medium cost All of these d)
- Cell relay is data transmission services that uses transmission technology 4) referred to as _____.
 - a) ATM b) BTM
 - c) STM DTM d)
- The data transmission is a fixed length of data known as _____. 5) Frame
 - a) Cell b)
 - c) Relay d) Cell relay
- VP is a bundle of _____. 6)
 - a) VCs b) VCM VIP c) VCI d)
- ATM networks are used to carry _____ information mostly. 7)
 - a) Voice b) Video
 - c) Data d) All of these
- 8) ISDN stands for
 - a) Integrated Services Digital Network
 - b) Integrated Services Discrete Network
 - Integrated Services Digital Node C)
 - d) Integrated Services Discrete Node
- 9) ISDN is based on the concept of _
 - CCS a) SS7 b) c) ARDIS d) CDPD

Set

Marks: 14

Max. Marks: 70

- Set P
- 10) In SONET, duration of any frame is _____micro seconds.
 - a) 110? b) 120?
 - c) 125? d) 135?
- 11) Two broad categories of congestion control are _____.
 - a) Open-loop and Closed-loop
 - b) Open-control and Closed-control
 - c) Active control and Passive control
 - d) None of the mentioned
- 12) What is the routing algorithm used in MANETs?
 - a) Shortest Path First
 - b) Routing Information Protocol
 - c) Distance Vector Protocol
 - d) Ad hoc On- demand Distance Vector Protocol
- 13) Which is another useful characteristics of X.25 _
 - a) Speed b) Matching
 - c) Speed matching d) None of these
- 14) Retransmission of packets must be done when _
 - a) Packet is lost

- b) Packet is corrupted
- c) Packet is needed
- d) All of the mentioned

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What are different routing methods and control signals used in circuit switched networks?
- b) What are X.25 Devices and Protocol Operation?
- c) Specify frame relay devices. What are switched VC and permanent VC related to frame relay? What is DLCI and specify its importance.
- **d)** What are benefits of ATM? What is ATM network interface? How ATM device is connected to ATM network?
- e) Discuss call establishment procedure in ATM.

Q.3 Attempt any two.

- a) Draw ATM cell format and describe it in detail.
- b) Draw LAPF core protocol and discuss in detail.
- c) Explain PCR algorithm related to ATM.

Section – II

Q.4 Attempt any four.

- a) Why buffers are requirement in ATM switches? How buffer placement is plays important role in case of high speed communication?
- **b)** How many channels are there in ISDN over which data communication is possible? Explain multi framing environment in ISDN.
- c) List different channels available for data transfer in case of ISDN. Explain various channel structures in ISDN.
- d) What is contention in ISDN? How contention is resolved on D-Channel in ISDN?
- e) Discuss IEEE 802.16 MAC sublayer and discuss services related to IEEE 802.16.

Q.5 Attempt any two.

- a) What is rate adaption in ISDN? Explain different rate adaption methods.
- b) Discuss AODV protocol related to MANET.
- c) What are ISDN compatible and ISDN incompatible devices? Draw UNI architecture for ISDN and explain in detail.

Max. Marks: 56

16

12

16

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

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- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) ISDN stands for _
 - a) Integrated Services Digital Network
 - b) Integrated Services Discrete Network
 - c) Integrated Services Digital Node
 - d) Integrated Services Discrete Node
- 2) ISDN is based on the concept of _____.
 a) SS7 b) CCS
 c) ARDIS d) CDPD
- 3) In SONET, duration of any frame is _____micro seconds.
 - a) 110? b) 120? c) 125? d) 135?
- 4) Two broad categories of congestion control are _____.
 - a) Open-loop and Closed-loop
 - b) Open-control and Closed-control
 - c) Active control and Passive control
 - d) None of the mentioned
- 5) What is the routing algorithm used in MANETs?
 - a) Shortest Path First
 - b) Routing Information Protocol
 - c) Distance Vector Protocol
 - d) Ad hoc On- demand Distance Vector Protocol
- 6) Which is another useful characteristics of X.25 ____
 - a) Speed b) Matching
 - c) Speed matching d) None of these
- 7) Retransmission of packets must be done when _____
 - a) Packet is lostc) Packet is needed
- b) Packet is corrupted
- d) All of the mentioned

- 8) ATM stands for _____
 - a) Automatic teller machine
 - c) Automatic transfer machine
- b) Automated teller machine
- d) Asynchronous transfer mode



Max. Marks: 70

Marks: 14

			Set Q
9)	are the algorithms are avail tables.	able t	o update contents of routing
	a) Distance-Vector Protocol c) Both a & b	'	Link-State Protocol None of these
10)	X.25 provides a virtual high-quality o a) Low cost c) Medium cost	b)	network at High cost All of these
11)	Cell relay is data transmission servi referred to as a) ATM c) STM	ces th b) d)	nat uses transmission technology BTM DTM
12)	The data transmission is a fixed len a) Cell c) Relay	gth of b) d)	Frame
13)	VP is a bundle of a) VCs c) VCI	b) d)	VCM VIP
14)	ATM networks are used to carry a) Voice c) Data	b) d)	information mostly. Video All of these

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What are different routing methods and control signals used in circuit switched networks?
- b) What are X.25 Devices and Protocol Operation?
- c) Specify frame relay devices. What are switched VC and permanent VC related to frame relay? What is DLCI and specify its importance.
- **d)** What are benefits of ATM? What is ATM network interface? How ATM device is connected to ATM network?
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Q.3 Attempt any two.

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- b) Draw LAPF core protocol and discuss in detail.
- c) Explain PCR algorithm related to ATM.

Section – II

Q.4 Attempt any four.

- a) Why buffers are requirement in ATM switches? How buffer placement is plays important role in case of high speed communication?
- **b)** How many channels are there in ISDN over which data communication is possible? Explain multi framing environment in ISDN.
- c) List different channels available for data transfer in case of ISDN. Explain various channel structures in ISDN.
- d) What is contention in ISDN? How contention is resolved on D-Channel in ISDN?
- e) Discuss IEEE 802.16 MAC sublayer and discuss services related to IEEE 802.16.

Q.5 Attempt any two.

- a) What is rate adaption in ISDN? Explain different rate adaption methods.
- b) Discuss AODV protocol related to MANET.
- c) What are ISDN compatible and ISDN incompatible devices? Draw UNI architecture for ISDN and explain in detail.

Max. Marks: 56

16

12

16

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The data transmission is a fixed length of data known as _____. 1)
 - a) Cell b) Frame c) Relay d)
- 2) VP is a bundle of .
 - VCM a) VCs b) c) VCI
- ATM networks are used to carry _ 3) information mostly.
 - a) Voice b) Video
 - All of these c) Data d)
- 4) ISDN stands for _____.
 - a) Integrated Services Digital Network
 - b) Integrated Services Discrete Network
 - c) Integrated Services Digital Node
 - d) Integrated Services Discrete Node
- ISDN is based on the concept of ____ 5)
 - CCS b) a) SS7 c) ARDIS d) CDPD
- 6) In SONET, duration of any frame is _____ micro seconds.
 - b) a) 110? 120? 125? c) d) 135?
- 7) Two broad categories of congestion control are _____.
 - a) Open-loop and Closed-loop
 - b) Open-control and Closed-control
 - c) Active control and Passive control
 - d) None of the mentioned
- 8) What is the routing algorithm used in MANETs?
 - a) Shortest Path First
 - b) Routing Information Protocol
 - **Distance Vector Protocol** C)
 - d) Ad hoc On- demand Distance Vector Protocol





Max. Marks: 70

Marks: 14

- Cell relay
- d)
 - VIP

		Se
Which is another useful characteris	tics of	X.25
a) Speed	b)	Matching
c) Speed matching	d)	None of these
Retransmission of packets must be	done	when
a) Packet is lost	b)	Packet is corrupted
c) Packet is needed	d)	All of the mentioned
ATM stands for		
a) Automatic teller machine	b)	Automated teller machine
c) Automatic transfer machine	d)	Asynchronous transfer mode
are the algorithms are avai	lable t	o update contents of routing
tables.		
a) Distance-Vector Protocol	b)	Link-State Protocol
c) Both a & b	d)	None of these
X.25 provides a virtual high-quality	digital	network at
a) Low cost	b)	High cost
	••	

- All of these c) Medium cost d)
- 14) Cell relay is data transmission services that uses transmission technology referred to as _____.
 - a) ATM
 - b) BTM c) STM d) DTM

- 9) W
 - a)

10)

11)

12)

13)

Set R

SLR-FM-223

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What are different routing methods and control signals used in circuit switched networks?
- b) What are X.25 Devices and Protocol Operation?
- c) Specify frame relay devices. What are switched VC and permanent VC related to frame relay? What is DLCI and specify its importance.
- **d)** What are benefits of ATM? What is ATM network interface? How ATM device is connected to ATM network?
- e) Discuss call establishment procedure in ATM.

Q.3 Attempt any two.

- a) Draw ATM cell format and describe it in detail.
- b) Draw LAPF core protocol and discuss in detail.
- c) Explain PCR algorithm related to ATM.

Section – II

Q.4 Attempt any four.

- a) Why buffers are requirement in ATM switches? How buffer placement is plays important role in case of high speed communication?
- **b)** How many channels are there in ISDN over which data communication is possible? Explain multi framing environment in ISDN.
- c) List different channels available for data transfer in case of ISDN. Explain various channel structures in ISDN.
- d) What is contention in ISDN? How contention is resolved on D-Channel in ISDN?
- e) Discuss IEEE 802.16 MAC sublayer and discuss services related to IEEE 802.16.

Q.5 Attempt any two.

- a) What is rate adaption in ISDN? Explain different rate adaption methods.
- b) Discuss AODV protocol related to MANET.
- c) What are ISDN compatible and ISDN incompatible devices? Draw UNI architecture for ISDN and explain in detail.

Max. Marks: 56

16

12

16

Set

Max. Marks: 70

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering BROADBAND COMMUNICATION**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In SONET, duration of any frame is micro seconds.
 - 110? b) 120? a)
 - 125? c) d) 135?
- Two broad categories of congestion control are _____. 2)
 - a) Open-loop and Closed-loop
 - b) Open-control and Closed-control
 - c) Active control and Passive control
 - d) None of the mentioned
- 3) What is the routing algorithm used in MANETs?
 - Shortest Path First a)
 - Routing Information Protocol b)
 - c) Distance Vector Protocol
 - d) Ad hoc On- demand Distance Vector Protocol
- Which is another useful characteristics of X.25 4)
 - a) Speed Matching b)
 - None of these c) Speed matching d)
- Retransmission of packets must be done when _____ 5) Packet is corrupted b)
 - a) Packet is lost
 - c) Packet is needed
- ATM stands for _____ 6)
 - a) Automatic teller machine
 - c) Automatic transfer machine
- Automated teller machine b)

All of the mentioned

- d) Asynchronous transfer mode
- 7) _ are the algorithms are available to update contents of routing tables. Link-State Protocol
 - a) Distance-Vector Protocol Both a & b C)
 - b) None of these d)

d)

- X.25 provides a virtual high-quality digital network at _ 8)
 - a) Low cost
 - C) Medium cost d)
- High cost b)
- All of these



- 9) Cell relay is data transmission services that uses transmission technology referred to as _____.
 - a) ATM b) BTM
 - c) STM d) DTM

10) The data transmission is a fixed length of data known as _____.

- a) Cell b) Frame c) Relay
 - Cell relay d)
- 11) VP is a bundle of _____.
 - a) VCs b) VCM
 - c) VCI d) VIP
- ATM networks are used to carry _____ information mostly. 12) a) Voice
 - b) Video
 - All of these d)
- ISDN stands for _____. 13)

c) Data

- a) Integrated Services Digital Network
- b) Integrated Services Discrete Network
- c) Integrated Services Digital Node
- d) Integrated Services Discrete Node
- ISDN is based on the concept of _ 14)
 - CCS a) SS7 b) c) ARDIS d) CDPD

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering BROADBAND COMMUNICATION

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What are different routing methods and control signals used in circuit switched networks?
- b) What are X.25 Devices and Protocol Operation?
- c) Specify frame relay devices. What are switched VC and permanent VC related to frame relay? What is DLCI and specify its importance.
- d) What are benefits of ATM? What is ATM network interface? How ATM device is connected to ATM network?
- e) Discuss call establishment procedure in ATM.

Q.3 Attempt any two.

- a) Draw ATM cell format and describe it in detail.
- b) Draw LAPF core protocol and discuss in detail.
- c) Explain PCR algorithm related to ATM.

Section – II

Q.4 Attempt any four.

- a) Why buffers are requirement in ATM switches? How buffer placement is plays important role in case of high speed communication?
- **b)** How many channels are there in ISDN over which data communication is possible? Explain multi framing environment in ISDN.
- c) List different channels available for data transfer in case of ISDN. Explain various channel structures in ISDN.
- d) What is contention in ISDN? How contention is resolved on D-Channel in ISDN?
- e) Discuss IEEE 802.16 MAC sublayer and discuss services related to IEEE 802.16.

Q.5 Attempt any two.

- a) What is rate adaption in ISDN? Explain different rate adaption methods.
- b) Discuss AODV protocol related to MANET.
- c) What are ISDN compatible and ISDN incompatible devices? Draw UNI architecture for ISDN and explain in detail.

Max. Marks: 56

12

12

16

Seat	
No.	

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

Q.1 Choose the correct alternatives from the options and rewrite the answer. 14

- 1) Functional Block Diagram Programming consists primarily of
 - logic gate symbol and connecting lines a)
 - virtual relay contacts and coils b)

Scan time in PLC depends upon ____

- c) function blocks and connecting lines
- d) text-based codes
- a) SMPS b) Linear power supply None of the above
- c) Number of rows in a ladder d)
- 3) Open loop control systems are _
 - More stable than closed loop systems. i)
 - ii) Easy to design than closed loop systems.
 - Both i and ii are true b) i is true and ii is false a)
 - c) i is false and ii is true d) Both i and ii are false
- For a 15-bit register, which is the largest integer number a PLC counter 4) function can reach _____.
 - 65,535 a) 32,768 b)
 - c) 65,536 d) 32,767

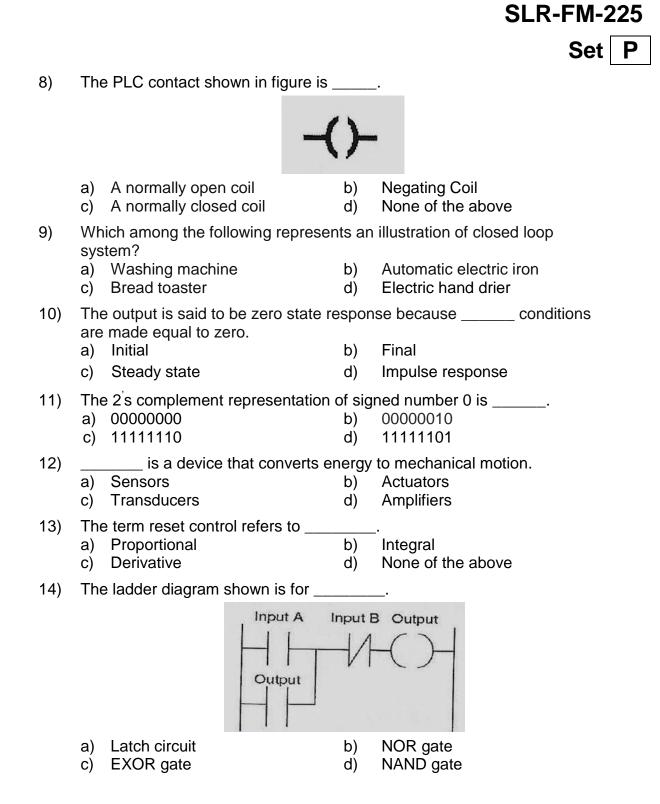
A counter than starts from a specified number and increments/ 5) decrements up to maximum/minimum count is known as the

- a) Up counter Down counter b)
- c) Up/Down counter d) Cascading counter
- 6) To protect a PLC from any incoming surges from the field, an isolated device such as _____ is used.
 - a) Transformer b) Transducer
 - c) Relay d) None of these
- DC motor control is achieved using 7)
- a) PWM b) Frequency modulation
 - None of the above c) Amplitude modulation d)

Max. Marks: 70

Marks: 14

Set



Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday,26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Draw the gate and ladder logic for Boolean equations
 - i) A'B' + C'D' =Y
 - \dot{ii} AB +A'B' = Y
- b) Why SMPS is preferred over linear power supply in case of PLC?
- c) What are different I/O modules in PLC's?
- d) What are the different languages used for programming of PLC's? Discuss FBD with example.
- e) State advantages of PLC's over hard wired relays.

Q.3 Attempt any two of the following questions.

- a) Draw and discuss block diagram of PLC in detail.
- **b)** Draw and explain delay on and delay off timers in PLC.
- c) Draw and explain the ladder diagram for automatic bottle filling plant.

Section – II

Q.4 Attempt any four of the following questions.

- a) Write short note on hydraulic actuation system.
- b) Write short note on temperature sensors.
- c) What are the different components of robotic system? Explain with neat diagrams.
- d) Design converter for conversion of 4mA to 20mA into -3v to +3v using grounded load.
- e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions.

- a) Design 2 Channel Data Acquisition System with the following specifications Channel 1:
 - i) Temp. Range -0° to 800° C
 - ii) Sensor Thermocouple

Channel 2

- i) Temp. Range -0^0 to 80^0 C
- ii) Sensor LM35
- **b)** List down the semiconductor sensors. Explain any two sensors in detail with neat diagrams.
- c) Derive a mathematical model for Proportional controller. Explain electronic proportional (P) controller with necessary circuit diagrams.

Max. Marks: 56

Set

16

12

16

10

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

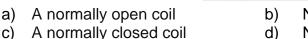
MCQ/Objective Type Questions

Duration: 30 Minutes

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the answer. 14

1) The PLC contact shown in figure is



- 2) Which among the following represents an illustration of closed loop system?
 - a) Washing machine
 - c) Bread toaster d) Electric hand drier
- The output is said to be zero state response because _____ conditions 3) are made equal to zero. b) Final

a) Initial

- c) Steady state
- The 2's complement representation of signed number 0 is _____. 4)
 - a) 00000000 b) 00000010
 - c) 11111110 11111101 d)
- is a device that converts energy to mechanical motion. 5) b) Actuators
 - Sensors a)
 - Amplifiers c) Transducers d)
- The term reset control refers to ____ 6)
 - Proportional a) c) Derivative

- b) Integral
- d) None of the above

b)

d)





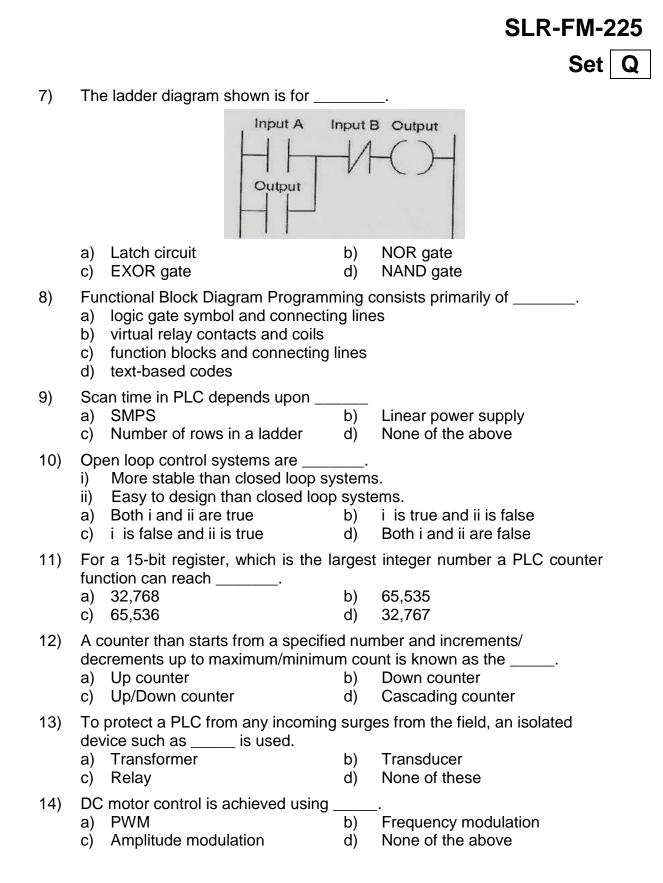
Max. Marks: 70

Marks: 14

Automatic electric iron

Impulse response

- - Negating Coil
- - None of the above



Page 5 of 12

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday,26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Draw the gate and ladder logic for Boolean equations
 - i) A'B' + C'D' =Y
 - íi) AB +A'B' = Y
- b) Why SMPS is preferred over linear power supply in case of PLC?
- c) What are different I/O modules in PLC's?
- d) What are the different languages used for programming of PLC's? Discuss FBD with example.
- e) State advantages of PLC's over hard wired relays.

Q.3 Attempt any two of the following questions.

- a) Draw and discuss block diagram of PLC in detail.
- b) Draw and explain delay on and delay off timers in PLC.
- c) Draw and explain the ladder diagram for automatic bottle filling plant.

Section – II

Q.4 Attempt any four of the following questions.

- a) Write short note on hydraulic actuation system.
- b) Write short note on temperature sensors.
- c) What are the different components of robotic system? Explain with neat diagrams.
- d) Design converter for conversion of 4mA to 20mA into -3v to +3v using grounded load.
- e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions.

- a) Design 2 Channel Data Acquisition System with the following specifications Channel 1:
 - i) Temp. Range -0° to 800° C
 - ii) Sensor Thermocouple

Channel 2

- i) Temp. Range -0° to 80° C
- ii) Sensor LM35
- b) List down the semiconductor sensors. Explain any two sensors in detail with neat diagrams.
- c) Derive a mathematical model for Proportional controller. Explain electronic proportional (P) controller with necessary circuit diagrams.

Max. Marks: 56

16

12

12

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

PLC AND INDUSTRIAL CONTROLLERS

Duration: 30 Minutes

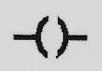
Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the answer. 14

d)

- A counter than starts from a specified number and increments/ 1) decrements up to maximum/minimum count is known as the b) Down counter
 - Up counter a)
 - Up/Down counter c)
- To protect a PLC from any incoming surges from the field, an isolated 2) device such as is used. Transducer
 - a) Transformer b)
 - c) Relay d) None of these
- DC motor control is achieved using 3)
 - a) PWM Frequency modulation b) None of the above c) Amplitude modulation d)
- 4) The PLC contact shown in figure is _



a) A normally open coil

- **Negating Coil** b)
- c) A normally closed coil
- None of the above d)
- Which among the following represents an illustration of closed loop 5) system?
 - a) Washing machine
 - c) Bread toaster
- b) Automatic electric iron

Cascading counter

- d) Electric hand drier
- 6) The output is said to be zero state response because _____ conditions are made equal to zero.
 - Final a) Initial b)
 - c) Steady state d) Impulse response
- The 2's complement representation of signed number 0 is _____. 7)
 - a) 00000000 0000010 b)
 - c) 11111110 11111101 d)

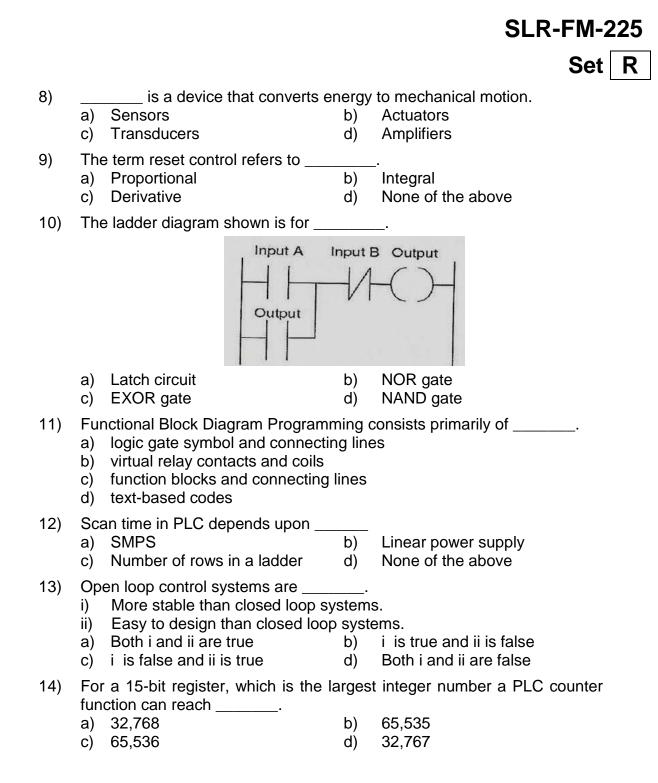
Max. Marks: 70

Marks: 14

Set

R





Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday,26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Draw the gate and ladder logic for Boolean equations
 - i) A'B' + C'D' =Y
 - íi) AB +A'B' = Y
- b) Why SMPS is preferred over linear power supply in case of PLC?
- c) What are different I/O modules in PLC's?
- d) What are the different languages used for programming of PLC's? Discuss FBD with example.
- e) State advantages of PLC's over hard wired relays.

Q.3 Attempt any two of the following questions.

- a) Draw and discuss block diagram of PLC in detail.
- b) Draw and explain delay on and delay off timers in PLC.
- c) Draw and explain the ladder diagram for automatic bottle filling plant.

Section – II

Q.4 Attempt any four of the following questions.

- a) Write short note on hydraulic actuation system.
- b) Write short note on temperature sensors.
- c) What are the different components of robotic system? Explain with neat diagrams.
- d) Design converter for conversion of 4mA to 20mA into -3v to +3v using grounded load.
- e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions.

- a) Design 2 Channel Data Acquisition System with the following specifications Channel 1:
 - i) Temp. Range -0° to 800° C
 - ii) Sensor Thermocouple

Channel 2

- i) Temp. Range -0° to 80° C
- ii) Sensor LM35
- b) List down the semiconductor sensors. Explain any two sensors in detail with neat diagrams.
- c) Derive a mathematical model for Proportional controller. Explain electronic proportional (P) controller with necessary circuit diagrams.

Set R

Max. Marks: 56

16

12

16

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019

PLC AND INDUSTRIAL CONTROLLERS Day & Date: Tuesday, 26-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

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- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Electronics Engineering

Duration: 30 Minutes

3)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the answer. 14

- 1) The output is said to be zero state response because conditions are made equal to zero.
 - Initial a)
 - Steady state c)

- The 2's complement representation of signed number 0 is _____. 2)
 - a) 00000000 b) 00000010 11111101 d)
 - c) 11111110
 - _ is a device that converts energy to mechanical motion.
 - a) Sensors
 - c) Transducers Amplifiers d)
- 4) The term reset control refers to _____
 - a) Proportional Derivative c)

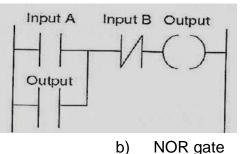
Integral b)

Actuators

d) None of the above

NAND gate

The ladder diagram shown is for 5)



d)

b)

- Latch circuit a) c) EXOR gate
- Functional Block Diagram Programming consists primarily of _____. 6)
 - a) logic gate symbol and connecting lines
 - b) virtual relay contacts and coils
 - c) function blocks and connecting lines
 - d) text-based codes
- Scan time in PLC depends upon _ 7)
 - SMPS a) c)
 - b) d) Number of rows in a ladder
- Linear power supply
 - None of the above





Max. Marks: 70

Marks: 14

- Final

- d) Impulse response

- b)

Set 8) Open loop control systems are . More stable than closed loop systems. i) Easy to design than closed loop systems. ii) Both i and ii are true a) b) i is true and ii is false c) i is false and ii is true d) Both i and ii are false 9) For a 15-bit register, which is the largest integer number a PLC counter function can reach _____. 32,768 b) 65,535 a) c) 65,536 32,767 d) 10) A counter than starts from a specified number and increments/ decrements up to maximum/minimum count is known as the Up counter a) b) Down counter c) Up/Down counter d) Cascading counter To protect a PLC from any incoming surges from the field, an isolated 11) device such as is used. a) Transformer b) Transducer d) None of these c) Relay 12) DC motor control is achieved using a) PWM Frequency modulation b) None of the above c) Amplitude modulation d) 13) The PLC contact shown in figure is a) A normally open coil **Negating Coil** b) c) A normally closed coil d) None of the above

- 14) Which among the following represents an illustration of closed loop system?
 - a) Washing machine
 - c) Bread toaster

- b) Automatic electric iron
- d) Electric hand drier

SLR-FM-225

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering PLC AND INDUSTRIAL CONTROLLERS

Day & Date: Tuesday,26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions.

- a) Draw the gate and ladder logic for Boolean equations
 - i) A'B' + C'D' =Y
 - íi) AB +A'B' = Y
- b) Why SMPS is preferred over linear power supply in case of PLC?
- c) What are different I/O modules in PLC's?
- d) What are the different languages used for programming of PLC's? Discuss FBD with example.
- e) State advantages of PLC's over hard wired relays.

Q.3 Attempt any two of the following questions.

- a) Draw and discuss block diagram of PLC in detail.
- **b)** Draw and explain delay on and delay off timers in PLC.
- c) Draw and explain the ladder diagram for automatic bottle filling plant.

Section – II

Q.4 Attempt any four of the following questions.

- a) Write short note on hydraulic actuation system.
- b) Write short note on temperature sensors.
- c) What are the different components of robotic system? Explain with neat diagrams.
- d) Design converter for conversion of 4mA to 20mA into -3v to +3v using grounded load.
- e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions.

- a) Design 2 Channel Data Acquisition System with the following specifications Channel 1:
 - i) Temp. Range -0° to 800° C
 - ii) Sensor Thermocouple

Channel 2

- i) Temp. Range -0^0 to 80^0 C
- ii) Sensor LM35
- **b)** List down the semiconductor sensors. Explain any two sensors in detail with neat diagrams.
- c) Derive a mathematical model for Proportional controller. Explain electronic proportional (P) controller with necessary circuit diagrams.

Max. Marks: 56

16

12

16

Set

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The Timer is a basic countdown timer that can be used to 1) generate interrupts at regular time intervals, even when the system is in sleep mode.
 - a) SYSTICK

a) Carry

c) Zero

c) Repetitive Interrupt Timer

- b) Watchdog d) None of these
- 2) The ______ flag is set when in subtract operation borrow did not occur.
 - Negative b) Overflow d)
- 3) To force logic '0' on port pin P1.20, _ register is used in LPC1768.
 - a) FIO1CLR FIO2CLR b)
 - c) FIO0CLR d) FIO3CLR
- LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM. 4)
 - a) 30, 16 128, 32 b) c) 256, 40 d) 512,64
- 5) After the execution of following ARM instruction the content of R0 register will be
 - ADD R0, R1, R1, LSL #2
 - a) R1 + (R1 * 4)R1 + (R1 * 3)b)
 - c) R1+(R1 / 4) R1+ (R1 / 3) d)

6) Highest priority exception in ARM Cortex-M3 processor is _____.

- Reset Hard fault a) b) Bus fault NMI c) d)
- What is the value of R1 after MVN R1, #7 is executed? 7)
 - a) 0x00000007 0xFFFFF8 b)
 - c) 0xFFFFFFA 0xFFFFF9 d)
- 8) RFID is an acronym for
 - a) Radio frequency Identification
 - b) Random frequency Identification
 - c) Radio frequency Identity
 - Random frequency Identity d)

Max. Marks: 70

Marks: 14

9) With respect to the IEEE 802.15.4 standard which statement is true? a) It is a low data-rate standard Used for architecting wireless PANs b) c) Uses only two layers - PHY and MAC d) All of these 10) In MQTT the central communication point is _ MQTT publisher a) MQTT broker b) c) MQTT subscriber d) None of the above Infrastructure -Cloud deals with 11) a) Infrastructure-as-a-Service b) Infrastructure-in-Cloud c) Infrastructure-for-Service d) None of above 12) supports a long-range communication. a) ZigBee b) **GPRS** c) Bluetooth d) All of the above 13) Class-1 Bluetooth devices have a range of: 1 m b) 10 m a) 100m 1000m C) d) Wireless access points uses _____ 14) _-b) IEEE 802.15.4 protocol a) IEEE 802.15.6 protocol

- c) IEEE 802.11 protocol
- d) None of the above

SLR-FM-226

Set P

Set |

Max. Marks: 56

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four questions.

- a) What are the architectural layers in a modified OSI model for IoT systems?
- b) Explain UART interface. When and where this interface is used?
- c) Write short notes on ARM Cortex M3 operation modes.
- d) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.
- e) List down and discuss the flags available in ARM Processors.

Q.3 Attempt any two questions.

- a) Give examples of IoT used in a smart home with sensors, actuators and smart home automation software.
- **b)** List down data processing instruction and discuss any two in details with examples.
- c) List down call and unconditional branch also discuss any two in details with examples.

Section – II

Q.4 Attempt any four questions.

- a) Write short note on IEEE 802.11 spectrum allocation.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) Discuss the differences in MOM and RESTful service with neat diagram.
- d) With neat diagram discuss public and private cloud models.
- e) Write a short note on RFID Controllers and RFID frequency bands.

Q.5 Attempt any two questions.

- a) With an example discuss the CoAP NON and CON messaging in detail.
- **b)** With a neat diagram discuss the core components of an RFID system.
- **c)** What is MQTT protocol? List down the requirements provided by MQTT protocol.

12

12

16

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) RFID is an acronym for ____
 - a) Radio frequency Identification
 - b) Random frequency Identification
 - c) Radio frequency Identity
 - d) Random frequency Identity
- 2) With respect to the IEEE 802.15.4 standard which statement is true?
 - a) It is a low data-rate standard
 - b) Used for architecting wireless PANs
 - c) Uses only two layers PHY and MAC
 - d) All of these
- 3) In MQTT the central communication point is _
 - a) MQTT broker b) MQTT publisher
 - c) MQTT subscriber d) None of the above
- 4) Infrastructure -Cloud deals with _____.
 - a) Infrastructure-as-a-Service b) Infrastructure-in-Cloud
 - c) Infrastructure-for-Service d) None of above

5) _____ supports a long-range communication.

- a) ZigBeeb) GPRSc) Bluetoothd) All of the above

Class-1 Bluetooth devices have a range of: _____.

- a) 1 m b) 10 m c) 100m d) 1000m
- Wireless access points uses _____.
- a) IEEE 802.15.4 protocol b) IEEE 802.15.6 protocol
- c) IEEE 802.11 protocol d) None of the above
- 8) The _____ Timer is a basic countdown timer that can be used to generate interrupts at regular time intervals, even when the system is in sleep mode.
 - a) SYSTICKc) Repetitive Interrupt Timer

7)

- b) Watchdog
- d) None of these



Max. Marks: 70

9) The ______ flag is set when in subtract operation borrow did not occur.

- a) Carry
- Negative b)

SLR-FM-226

Set Q

- c) Zero d) Overflow
- To force logic '0' on port pin P1.20, _____ register is used in LPC1768. 10)
 - b) a) FIO1CLR FIO2CLR
 - c) FIO0CLR **FIO3CLR** d)
- LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM. 11) 128, 32 a) 30, 16 b) c) 256, 40 d) 512, 64
- After the execution of following ARM instruction the content of R0 register 12) will be
 - ADD R0, R1, R1, LSL #2
 - a) R1 + (R1 * 4) b) R1 + (R1 * 3)R1+ (R1 / 3)
 - c) R1+(R1 / 4) d)
- Highest priority exception in ARM Cortex-M3 processor is _____. 13)
 - a) Reset Hard fault b)
 - c) Bus fault d) NMI
- 14) What is the value of R1 after MVN R1, #7 is executed?
 - 0x0000007 a)
- 0xFFFFF8 b)
- c) 0xFFFFFFA d) 0xFFFFF9

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four questions.

- a) What are the architectural layers in a modified OSI model for IoT systems?
- **b)** Explain UART interface. When and where this interface is used?
- c) Write short notes on ARM Cortex M3 operation modes.
- d) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.
- e) List down and discuss the flags available in ARM Processors.

Q.3 Attempt any two questions.

- a) Give examples of IoT used in a smart home with sensors, actuators and smart home automation software.
- **b)** List down data processing instruction and discuss any two in details with examples.
- c) List down call and unconditional branch also discuss any two in details with examples.

Section – II

Q.4 Attempt any four questions.

- a) Write short note on IEEE 802.11 spectrum allocation.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) Discuss the differences in MOM and RESTful service with neat diagram.
- **d**) With neat diagram discuss public and private cloud models.
- e) Write a short note on RFID Controllers and RFID frequency bands.

Q.5 Attempt any two questions.

- a) With an example discuss the CoAP NON and CON messaging in detail.
- b) With a neat diagram discuss the core components of an RFID system.
- c) What is MQTT protocol? List down the requirements provided by MQTT protocol.

12

16

Max. Marks: 56

12

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- After the execution of following ARM instruction the content of R0 register 1) will be
 - ADD R0, R1, R1, LSL #2
 - a) R1 + (R1 * 4)R1 + (R1 * 3)b)
 - c) R1+(R1 / 4) R1+ (R1 / 3) d)

2) Highest priority exception in ARM Cortex-M3 processor is _____.

- a) Reset b)
- c) Bus fault d) NMI

What is the value of R1 after MVN R1. #7 is executed? 3)

- a) 0x0000007 b)
- c) 0xFFFFFFA
- 4) RFID is an acronym for
 - Radio frequency Identification a)
 - Random frequency Identification b)
 - Radio frequency Identity c)
 - Random frequency Identity d)
- With respect to the IEEE 802.15.4 standard which statement is true? 5)
 - It is a low data-rate standard a)
 - b) Used for architecting wireless PANs
 - Uses only two layers PHY and MAC c)
 - d) All of these
- In MQTT the central communication point is _ 6)
 - **MQTT** publisher MQTT broker b) a) MQTT subscriber d) None of the above C)
- Infrastructure -Cloud deals with 7)
 - a) Infrastructure-as-a-Service
 - c) Infrastructure-for-Service
 - supports a long-range communication.
 - ZigBee a)

8)

Bluetooth d) All of the above c)

b)

- Infrastructure-in-Cloud b)
- d) None of above

GPRS

Max. Marks: 70

Marks: 14

R





- - Hard fault
- - - 0xFFFFF8
- d) 0xFFFFFF9

Set R

- 9) Class-1 Bluetooth devices have a range of: _
 - a) 1 m b) 10 m
 - c) 100m d) 1000m
- 10) Wireless access points uses _____.
 - a) IEEE 802.15.4 protocol b) IEEE 802.15.6 protocol
 - c) IEEE 802.11 protocol d) None of the above
- 11) The _____ Timer is a basic countdown timer that can be used to generate interrupts at regular time intervals, even when the system is in sleep mode.
 - a) SYSTICK
- b) Watchdog
- c) Repetitive Interrupt Timer d) None of these
- 12) The ______ flag is set when in subtract operation borrow did not occur.
 - a) Carry b) Ne
 - c) Zero
- b) Negatived) Overflow

register is used in LPC1768.

- 13) To force logic '0' on port pin P1.20, ____
 - a) FIO1CLR b) FIO2CLR
 - c) FIO0CLR d) FIO3CLR
- 14) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.
 - a) 30, 16
 - c) 256, 40

- b) 128, 32
- d) 512, 64

Seat No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INTERNET OF THINGS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four questions.

- a) What are the architectural layers in a modified OSI model for IoT systems?
- b) Explain UART interface. When and where this interface is used?
- c) Write short notes on ARM Cortex M3 operation modes.
- d) Discuss the ARM Cortex-M3 special registers in details with neat diagrams.
- e) List down and discuss the flags available in ARM Processors.

Q.3 Attempt any two questions.

- a) Give examples of IoT used in a smart home with sensors, actuators and smart home automation software.
- **b)** List down data processing instruction and discuss any two in details with examples.
- c) List down call and unconditional branch also discuss any two in details with examples.

Section – II

Q.4 Attempt any four questions.

- a) Write short note on IEEE 802.11 spectrum allocation.
- **b)** What is a Bluetooth profile? Discuss a Bluetooth profile in detail.
- c) Discuss the differences in MOM and RESTful service with neat diagram.
- **d)** With neat diagram discuss public and private cloud models.
- e) Write a short note on RFID Controllers and RFID frequency bands.

Q.5 Attempt any two questions.

- a) With an example discuss the CoAP NON and CON messaging in detail.
- **b)** With a neat diagram discuss the core components of an RFID system.
- c) What is MQTT protocol? List down the requirements provided by MQTT protocol.

12

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16

12

Set R

Max. Marks: 56

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

- In MQTT the central communication point is 1)
 - MQTT broker a)
 - c) MQTT subscriber d) None of the above
- 2) Infrastructure -Cloud deals with
 - a) Infrastructure-as-a-Service b) Infrastructure-in-Cloud d) None of above
 - c) Infrastructure-for-Service
- 3) _ supports a long-range communication.
 - **GPRS** a) ZigBee b) c) Bluetooth d) All of the above
- Class-1 Bluetooth devices have a range of: 4)
 - a) 1 m b) 10 m
 - c) 100m d) 1000m
- 5) Wireless access points uses
 - a) IEEE 802.15.4 protocol IEEE 802.15.6 protocol b)
 - c) IEEE 802.11 protocol d) None of the above
- Timer is a basic countdown timer that can be used to 6) The generate interrupts at regular time intervals, even when the system is in sleep mode. Watchdog
 - a) SYSTICK b)
 - Repetitive Interrupt Timer d) None of these c)
- The flag is set when in subtract operation borrow did not occur. 7)
 - Negative Carry b) a) C)
 - Overflow Zero d)
- _ register is used in LPC1768. 8) To force logic '0' on port pin P1.20, ____
 - a) FIO1CLR b) FIO2CLR c) FIO0CLR d) **FIO3CLR**
- LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM. 9) 128, 32 a) 30, 16 b)
 - c) 256, 40 d) 512,64

Set

Max. Marks: 70

Marks: 14



MQTT publisher

Set S

- After the execution of following ARM instruction the content of R0 register 10) will be ___
 - ADD R0, R1, R1, LSL #2
 - a) R1 + (R1 * 4) b) R1 + (R1 *3)
 - c) R1+(R1 / 4) d)
- R1+ (R1 / 3)
- 11) Highest priority exception in ARM Cortex-M3 processor is _____.
 - Hard fault a) Reset b)
 - c) Bus fault NMI d)
- What is the value of R1 after MVN R1, #7 is executed? 12)
 - a) 0x0000007 b) 0xFFFFF8
 - c) 0xFFFFFA d) 0xFFFFF9
- 13) RFID is an acronym for _____
 - a) Radio frequency Identification
 - b) Random frequency Identification
 - c) Radio frequency Identity
 - d) Random frequency Identity

With respect to the IEEE 802.15.4 standard which statement is true? 14)

- It is a low data-rate standard a)
- b) Used for architecting wireless PANs
- c) Uses only two layers PHY and MAC
- d) All of these

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INTERNET OF THINGS**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figures to the right indicates full marks.

3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four questions.

- What are the architectural layers in a modified OSI model for IoT systems? a)
- Explain UART interface. When and where this interface is used? b)
- Write short notes on ARM Cortex M3 operation modes. c)
- Discuss the ARM Cortex-M3 special registers in details with neat d) diagrams.
- List down and discuss the flags available in ARM Processors. e)

Q.3 Attempt any two questions.

- Give examples of IoT used in a smart home with sensors, actuators and a) smart home automation software.
- b) List down data processing instruction and discuss any two in details with examples.
- List down call and unconditional branch also discuss any two in details with C) examples.

Section – II

Q.4 Attempt any four questions.

- Write short note on IEEE 802.11 spectrum allocation. a)
- What is a Bluetooth profile? Discuss a Bluetooth profile in detail. b)
- Discuss the differences in MOM and RESTful service with neat diagram. c)
- With neat diagram discuss public and private cloud models. d)
- Write a short note on RFID Controllers and RFID frequency bands. e)

Q.5 Attempt any two questions.

- With an example discuss the CoAP NON and CON messaging in detail. a)
- With a neat diagram discuss the core components of an RFID system. b)
- C) What is MQTT protocol? List down the requirements provided by MQTT protocol.

Set

Max. Marks: 56

16

16

12

	INFORMATION TECHNOLOGY AND MANAGEMENT			
	Day & Date: Monday,16-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM			
 Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. 2) Figures to the right indicates full marks. 3) Assume suitable data wherever necessary. 				
		MCQ/Objective Type Questions		
Dura	tion: 3	0 Minutes Marks: 14		
Q.1	Choo 1)	Descriptions correct alternatives from the options.14Two types of decision support systems are14a) model driven, data drivenb) data based, information basedc) middle, upperd) TPS, ERP		
	2)	The major cost incurred in implementing ERP is due toa) hardwareb) softwarec) trainingd) reengineering		
	3)	As the cost of IS, it is substituted for labor which is a) increasing, increasing b) decreasing, increasing c) decreasing, decreasing d) increasing, decreasing		
	4)	Take odd man out - NEFT, ERP, RTGS, UPI a) NEFT b) ERP c) RTGS d) UPI		
	5)	An IT project can producea) a systemb) softwarec) recommendationsd) all of these		
	6)	Which of below is not a resource for a software project?a) moneyb) peoplec) constraintsd) technology		
	7)	Two types of integrations in SDLC area) software level & system levelb) data & databasec) requirement & designd) all of these		
	8)	In model, typically, the outcome of one phase acts as the input for the next phase sequentially. a) RAD b) Waterfall c) Prototyping d) SDLC		
	9)	 Two types of project requirement specifications are a) managerial & related to customer. b) related to developer & related to customer. c) functional & quality d) low lovel & high lovel 		

SLR-FM-601

Set

Ρ

Seat No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering

10) Collection of computing systems used by organization in Information System is referred as _____.

- a) information technology b) ERP
- c) computing systems d) TPS
- Data items that has been organized so that it has a particular value & meaning to recipient is called _____.
 - a) data mart b) data store
 - c) information d) knowledge
- 12) Which of below is not a function of DBMS?
 - a) quality b)
 - c) enrichment d) forecasting
- 13) Which of below is not true about organizations?
 - a) closed system b)
 - c) interact with environment
- d) have a structure

social unit

synch

- 14) SETI@home is an example of _____.
 - a) cloud computing
 - c) govt. e commerce d) r
- b) grid computing

SLR-FM-601

Set P

none of these

Seat No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INFORMATION TECHNOLOGY AND MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two.

- a) Explain partitioned database with - diagram, advantages and disadvantages.
- With suitable example explain electronic supply chain management. b)
- With suitable example explain ERP system. C)

Q.3 Solve any four

- What is business analytics? What are its types? a)
- With suitable example explain service oriented architecture. b)
- C) With suitable example explain PAAS model of cloud computing.
- With suitable example explain B2B model of E Commerce. d)
- With suitable example explain E Commerce and E Business. e)

Section – II

Solve any two Q.4

- a) Discuss in brief any six attributes of software project.
- What is Project Management Body of Knowledge? b)
- Explain economical impact of IS on organization. c)

Q.5 Solve any four

- What are activities involved in software project management? a)
- b) Discuss social issues related to information systems.
- With suitable example discuss project requirement specifications. c)
- What are the causes of software project overrun? d)
- e) What are the different roles of the individuals required in successful completion of software project?



Max. Marks: 56

12

16

12

Seat No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INFORMATION TECHNOLOGY AND MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicates full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- In _____ model, typically, the outcome of one phase acts as the input for 1) the next phase sequentially. Waterfall
 - a) RAD b)
 - SDLC c) Prototyping d)
- 2) Two types of project requirement specifications are _____.
 - managerial & related to customer. a)
 - b) related to developer & related to customer.
 - c) functional & quality
 - d) low level & high level
- 3) Collection of computing systems used by organization in Information System is referred as
 - a) information technology ERP b)
 - c) computing systems d) TPS
- 4) Data items that has been organized so that it has a particular value & meaning to recipient is called
 - a) data mart data store b)
 - c) information knowledge d)
- 5) Which of below is not a function of DBMS?
 - a) quality b) synch
 - c) enrichment d) forecasting

6) Which of below is not true about organizations?

- a) closed system c) interact with environment
- 7) SETI@home is an example of _____
 - a) cloud computing b) none of these C) govt. e commerce d)
- 8) Two types of decision support systems are
 - a) model driven, data driven data based, information based b)
 - c) middle, upper d)
- The major cost incurred in implementing ERP is due to _____. 9)
 - hardware a) c) training

- b) software
- d) reengineering

TPS, ERP

Marks: 14

14

- **SLR-FM-601**
 - Set Q

Max. Marks: 70

- b) social unit
- d) have a structure
 - - grid computing

			SLR-FM-601
			Set Q
10)	As the cost of IS, it is substitu a) increasing, increasing c) decreasing, decreasing		
11)	Take odd man out - NEFT, ERP, RT a) NEFT c) RTGS	GS, l b) d)	UPI ERP UPI
12)	An IT project can produce a) a system c) recommendations	b) d)	software all of these
13)	Which of below is not a resource for a) money c) constraints	a sof b) d)	tware project? people technology

- 14)
 - data & database b)
- Two types of integrations in SDLC are _a) software level & system levelb)c) requirement & designd) d) all of these

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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INFORMATION TECHNOLOGY AND MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two.

Seat No.

- a) Explain partitioned database with - diagram, advantages and disadvantages.
- With suitable example explain electronic supply chain management. b)
- With suitable example explain ERP system. C)

Q.3 Solve any four

- What is business analytics? What are its types? a)
- With suitable example explain service oriented architecture. b)
- C) With suitable example explain PAAS model of cloud computing.
- With suitable example explain B2B model of E Commerce. d)
- With suitable example explain E Commerce and E Business. e)

Section – II

Solve any two Q.4

- a) Discuss in brief any six attributes of software project.
- What is Project Management Body of Knowledge? b)
- Explain economical impact of IS on organization. c)

Q.5 Solve any four

- What are activities involved in software project management? a)
- b) Discuss social issues related to information systems.
- With suitable example discuss project requirement specifications. c)
- What are the causes of software project overrun? d)
- e) What are the different roles of the individuals required in successful completion of software project?



Max. Marks: 56

12

16

12

16

SLR-FM-601

No.		Set R			
	T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering				
		INFORMATION TECHNOLOGY AND MANAGEMENT			
-		e: Monday,16-12-2019 Max. Marks: 70 0 PM To 05:30 PM			
Instru	uctio	ns: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer			
		Book. 2) Figures to the right indicates full marks. 3) Assume suitable data wherever necessary.			
		MCQ/Objective Type Questions			
Durat	ion: 3	0 Minutes Marks: 14			
Q.1		ose the correct alternatives from the options. 14			
	1)	An IT project can producea) a systemb) softwarec) recommendationsd) all of these			
	2)	Which of below is not a resource for a software project?			
		a) money b) people			
	\sim	c) constraints d) technology			
	3)	Two types of integrations in SDLC are a) software level & system level b) data & database			
		c) requirement & design d) all of these			
 In model, typically, the outcome of one phase acts as the input for the next phase sequentially. 					
		a) RAD b) Waterfall c) Prototyping d) SDLC			
	5)	Two types of project requirement specifications are			
	a) managerial & related to customer.				
b) related to developer & related to customer.c) functional & guality					
d) low level & high level					
6) Collection of computing systems used by organization in Information					
System is referred as a) information technology b) ERP					
		a) information technology b) ERP c) computing systems d) TPS			
7) Data items that has been organized so that it has a particular value &					
meaning to recipient is called					
		a) data mart b) data store c) information d) knowledge			
	8)	Which of below is not a function of DBMS?			
	,	a) quality b) synch			
	0)	c) enrichment d) forecasting			
	9)	Which of below is not true about organizations? a) closed system b) social unit			
		c) interact with environment d) have a structure			

c) interact with environment d) have a structure

Seat

Set R

SETI@home is an example of _____. 14)

- a) cloud computing
- c) govt. e commerce

a) model driven, data driven

b) grid computing **SLR-FM-601**

Set | R

- none of these d)
- 11) Two types of decision support systems are _____.
 - b) data based, information based
 - c) middle, upper
- d) TPS, ERP
- 12) The major cost incurred in implementing ERP is due to _____.
 - a) hardware b) software c) training
 - d) reengineering
- As the cost of IS _____, it is substituted for labor which is _____. 13)
 - a) increasing, increasing b)
 - decreasing, increasing
 - c) decreasing, decreasing
- d) increasing, decreasing

Take odd man out - NEFT, ERP, RTGS, UPI 14) ERP

- a) NEFT b)
- c) RTGS d) UPI

Seat No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INFORMATION TECHNOLOGY AND MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two.

- a) Explain partitioned database with - diagram, advantages and disadvantages.
- With suitable example explain electronic supply chain management. b)
- With suitable example explain ERP system. C)

Q.3 Solve any four

- What is business analytics? What are its types? a)
- With suitable example explain service oriented architecture. b)
- C) With suitable example explain PAAS model of cloud computing.
- With suitable example explain B2B model of E Commerce. d)
- With suitable example explain E Commerce and E Business. e)

Section – II

Solve any two Q.4

- a) Discuss in brief any six attributes of software project.
- What is Project Management Body of Knowledge? b)
- Explain economical impact of IS on organization. c)

Q.5 Solve any four

- What are activities involved in software project management? a)
- b) Discuss social issues related to information systems.
- With suitable example discuss project requirement specifications. c)
- What are the causes of software project overrun? d)
- e) What are the different roles of the individuals required in successful completion of software project?

R

16

12

16

12

Set

Max. Marks: 56

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering				
	INFORMATION TECHNOL	OGY AND MANAGEMENT		
	ate: Monday,16-12-2019 :30 PM To 05:30 PM	Max. Marks: 70		
Instructi	, , , , ,	should be solved in first 30 minutes in answer		
	Book. 2) Figures to the right indicates full marks. 3) Assume suitable data wherever necessary.			
	MCQ/Objective			
Duration	: 30 Minutes	Marks: 14		
	oose the correct alternatives from	•		
1)	System is referred as	used by organization in Information		
	a) information technology	,		
	c) computing systems	,		
2)	Data items that has been organize meaning to recipient is called	ed so that it has a particular value &		
	a) data mart	 b) data store		
	c) information	d) knowledge		
3)	Which of below is not a function of			
	a) quality c) enrichment	b) synch d) forecasting		
4)	, , , , ,			
	 a) closed system c) interact with environment 	b) social unitd) have a structure		
5)	SETI@home is an example of	u) have a structure		
5)	a) cloud computing	 b) grid computing		
	c) govt. e commerce	d) none of these		
 6) Two types of decision support systems are a) model driven, data driven b) data based, information based 				
	c) middle, upper	d) TPS, ERP		
7) The major cost incurred in implementing ERP is due to				
	a) hardware	b) software		
 c) training d) reengineering 8) As the cost of IS, it is substituted for labor which is 				
0)	a) increasing, increasing			
	c) decreasing, decreasing			
9)	Take odd man out - NEFT, ERP, F			
	a) NEFT c) RTGS	b) ERP d) UPI		
10	,	,		
	a) a system	b) software		
	c) recommendations	d) all of these		

Seat

No.

Set S

- 11) Which of below is not a resource for a software project?
 - a) money

- b) people
- c) constraints d)
- 12) Two types of integrations in SDLC are _
 - a) software level & system levelc) requirement & design
- b) data & databased) all of these

technology

SLR-FM-601

Set S

- 13) In _____ model, typically, the outcome of one phase acts as the input for the next phase sequentially.
 - a) RAD

- b) Waterfall
- c) Prototyping d) SDLC
- 14) Two types of project requirement specifications are _____.
 - a) managerial & related to customer.
 - b) related to developer & related to customer.
 - c) functional & quality
 - d) low level & high level

Seat

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering** INFORMATION TECHNOLOGY AND MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two.

No.

- a) Explain partitioned database with - diagram, advantages and disadvantages.
- With suitable example explain electronic supply chain management. b)
- With suitable example explain ERP system. C)

Q.3 Solve any four

- What is business analytics? What are its types? a)
- With suitable example explain service oriented architecture. b)
- C) With suitable example explain PAAS model of cloud computing.
- With suitable example explain B2B model of E Commerce. d)
- With suitable example explain E Commerce and E Business. e)

Section – II

Solve any two Q.4

- a) Discuss in brief any six attributes of software project.
- What is Project Management Body of Knowledge? b)
- Explain economical impact of IS on organization. c)

Q.5 Solve any four

- What are activities involved in software project management? a)
- b) Discuss social issues related to information systems.
- With suitable example discuss project requirement specifications. c)
- What are the causes of software project overrun? d)
- e) What are the different roles of the individuals required in successful completion of software project?



SLR-FM-601

16

12

16

e is the module that gives ected by the short-term schedule		rol of the CPU to the process
Switcher	b)	Pager
Dispatcher	d)́	Swapper
najor problem with priority schedurvation.	uling i	s indefinite blocking or
True	b)	False
Can't Say	d)	None of above
nen the messages are sent to and communication.	l rece	ive from mailboxes or ports it is
Thread	b)	Semaphore
Direct	d)	Indirect
e file name is generally split into t	wo pa	urts
name & identifier	b)	identifier & type
extension & name	d)	type & extension
		Page 1 of 16

2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - Which of the following is a classical problem of synchronization? 1)
 - The Bounded buffer problem a)
 - The Dinning-Philosophers problem b)
 - C) The Readers-Writers problem
 - d) All

c) Round Robin

a)

c)

Day & Date: Friday, 22-11-2019

book.

Time: 10:00 AM To 01:00 PM

- 2) A _____ is a basic unit of CPU Utilization comprises a program counter, a register set and a stack.
 - a) Program Throughput b)
 - c) Thread CPU memory d)
- 3) _____ time is the time from submission of a request until the first response is produced.
 - a) Waiting b) Turnaround
 - c) Response d) Throughput
- Shortest next CPU burst algorithm is known as ______ scheduling 4) algorithm. a) FCFS Shortest Job First b)
- 4 5) The selected

d)

Priority

- a) Sw
- c) Dis
- 6) A majo starvati
 - a) Tru c) Ca
- 7) When the the second sec
 - Th a)
 - Dir c)
- The file 8)

Max. Marks: 70



Set

Ρ

Electronics Engineering OPERATING SYSTEMS

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

	SLR-FM-602
	Set P
9)	The valid - invalid bit, in this case, what valid indicates a) the page is not legal b) the page is illegal c) the page is in memory d) the page is not in memory
10)	Physical memory is broken into fixed-sized blocks calleda) framesb) pagesc) backing stored) none of the mentioned
11)	If a page number is not found in the TLB, then it is known as a a) TLB miss b) Buffer miss c) TLB hit d) All of the mentioned
12)	 Deadlock prevention is a set of methods a) to decide if the requested resources for a process have to be given or not
	 b) to ensure that all of the necessary conditions do not hold c) to ensure that at least one of the necessary conditions cannot hold d) to recover from a deadlock
13)	Which one of the following is the deadlock avoidance algorithm? a) karn's algorithm b) round-robin algorithm c) elevator algorithm d) banker's algorithm
14)	 When a process begins execution with no pages in memory a) process execution becomes impossible b) a page fault occurs for every page brought into memory c) process causes system crash

d) none of the mentioned

Set

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is Time-sharing system? Explain in detail.
- **b)** Draw and explain the PCB (Process Control Block).
- c) Explain priority scheduling with the help of suitable example.
- d) List and Define different Scheduling Criteria.
- e) What is Critical Section? List and explain three requirements of a solution to CS problem.

Q.3 Attempt any two.

a) Consider the following Four Processes arrive at the ready queue at the times shown below:

Process	Burst Time	Arrival Time
P1	8	0

P2	8	0
P3	5	1
P4	2	2

Draw Gantt Chart and calculate the Average Waiting time using FCFS, Preemptive SJF, and RR (time quantum = 2 ms) Scheduling.

- **b)** Explain the following:
 - i) Co operating process
 - ii) Process Creating and Termination
- c) List classical synchronization problems. Explain The Bounded Buffer Producer-Consumer problem in detail. Provide its solution using semaphore.

Section – II

Q.4 Attempt any four.

- a) Elaborate the different file operations.
- **b**) What is deadlock? Describe four necessary conditions for deadlock.
- c) What is thrashing? What are the causes of thrashing?
- d) Describe swapping with diagram.
- e) Compare sequential and direct access methods of a file.

Max. Marks: 56

16

12

12

Q.5 Attempt any two.

- a) Describe Banker's algorithm for deadlock avoidance.
- b) Consider the following reference string
 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5
 How many page faults occur for the FIFO and Optimal page replacement algorithms assuming four frames? Which one is having minimum number of page faults?
- c) Define paging? Explain paging hardware implementation.

Electronics Engineering OPERATING SYSTEMS					
	Day & Date: Friday,22-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Max. Marks: 70				
Instr	uctio	: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer			
		book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary.			
_		MCQ/Objective Type Questions			
		Minutes Marks: 14			
Q.1	Q.1 Choose the correct alternatives from the options and rewrite the 1 sentence.				
	1)	The file name is generally split into two parts a) name & identifier b) identifier & type b) extension & name d) type & extension			
	2)	The valid - invalid bit, in this case, what valid indicates a) the page is not legal b) the page is illegal b) the page is in memory d) the page is not in memory			
	3)	Physical memory is broken into fixed-sized blocks called a) frames b) pages b) backing store d) none of the mentioned			
	4)	f a page number is not found in the TLB, then it is known as a a) TLB miss b) Buffer miss c) TLB hit d) All of the mentioned			
	5)	 Deadlock prevention is a set of methods a) to decide if the requested resources for a process have to be given or not b) to ensure that all of the necessary conditions do not hold c) to ensure that at least one of the necessary conditions cannot hold d) to recover from a deadlock 			
	6)	Which one of the following is the deadlock avoidance algorithm?a) karn's algorithmb) round-robin algorithmb) elevator algorithmd) banker's algorithm			
	7)	 When a process begins execution with no pages in memory a) process execution becomes impossible b) a page fault occurs for every page brought into memory c) process causes system crash d) none of the mentioned 			
	8)	Which of the following is a classical problem of synchronization? a) The Bounded buffer problem b) The Dinning-Philosophers problem c) The Beaders-Writers problem			

- c) The Readers-Writers problem
- d) All

Set

Q

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

			Set C
9)	A is a basic unit of CPU Ur register set and a stack.	tilizati	on comprises a program counter, a
	a) Program c) Thread	b) d)	Throughput CPU memory
10)	time is the time from subm response is produced.	issior	n of a request until the first
	a) Waiting c) Response	b) d)	Turnaround Throughput
11)	Shortest next CPU burst algorithm is algorithm.	s kno	wn as scheduling
	a) FCFS c) Round Robin	b) d)	Shortest Job First Priority
12)	The is the module that gives selected by the short-term schedule		trol of the CPU to the process
	a) Switcher c) Dispatcher	b) d)	Pager Swapper
13)	A major problem with priority schedu starvation.	uling i	is indefinite blocking or
	a) True	b)	False

- c) Can't Say
- d) None of above When the messages are sent to and receive from mailboxes or ports it is
 - _ communication.
- Semaphore b)

Thread a) c) Direct

14)

Indirect d)

SLR-FM-602

Ω

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is Time-sharing system? Explain in detail.
- b) Draw and explain the PCB (Process Control Block).
- c) Explain priority scheduling with the help of suitable example.
- d) List and Define different Scheduling Criteria.
- e) What is Critical Section? List and explain three requirements of a solution to CS problem.

Q.3 Attempt any two.

a) Consider the following Four Processes arrive at the ready queue at the times shown below:

Process	Burst Time	Arrival Time
P1	8	0

-	-
8	0
5	1
2	2
	5

Draw Gantt Chart and calculate the Average Waiting time using FCFS, Preemptive SJF, and RR (time quantum = 2 ms) Scheduling.

- **b)** Explain the following:
 - i) Co operating process
 - ii) Process Creating and Termination
- c) List classical synchronization problems. Explain The Bounded Buffer Producer-Consumer problem in detail. Provide its solution using semaphore.

Section – II

Q.4 Attempt any four.

- a) Elaborate the different file operations.
- **b**) What is deadlock? Describe four necessary conditions for deadlock.
- c) What is thrashing? What are the causes of thrashing?
- d) Describe swapping with diagram.
- e) Compare sequential and direct access methods of a file.

Max. Marks: 56

12

16

12

Q.5 Attempt any two.

- a) Describe Banker's algorithm for deadlock avoidance.
- b) Consider the following reference string
 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5
 How many page faults occur for the FIFO and Optimal page replacement algorithms assuming four frames? Which one is having minimum number of page faults?
- c) Define paging? Explain paging hardware implementation.

		e: Friday,22-11-2019 0 AM To 01:00 PM		Max. N	larks: 70
nstr	uctior	ns: 1) Q. No. 1 is compulsory and shou book.			answer
		2) Figures to the right indicate full n3) Assume suitable data if necessa		5.	
_		MCQ/Objective Typ	be C		
		30 Minutes			larks: 14
ຊ.1		ose the correct alternatives from the ence.	opt	ions and rewrite the	14
	1)	The is the module that gives of selected by the short-term scheduler.	cont	ol of the CPU to the process	
			c)	Pager	
			d)	Swapper	
	2)	A major problem with priority scheduli starvation.	ng is	s indefinite blocking or	
			c)	False	
		c) Can't Say d	d)	None of above	
	3)	When the messages are sent to and r	ecei	ve from mailboxes or ports it	is
			c) d)	Semaphore Indirect	
	4)		o pa o) d)		
	5)	,		lid indicates the page is illegal the page is not in memory	
	6)		size c) d)	d blocks called pages none of the mentioned	
	7)	,	LB, c) d)	then it is known as a Buffer miss All of the mentioned	<u>.</u>
	8)	Deadlock prevention is a set of metho a) to decide if the requested resource not	es f	or a process have to be given	or
		b) to ensure that all of the necessaryc) to ensure that at least one of the necessary			

d) to recover from a deadlock

SLR-FM-602

Seat No.

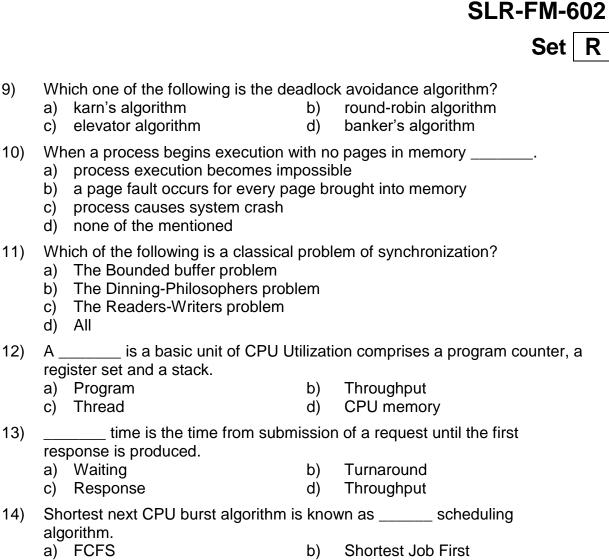
T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics** Engineering **OPERATING SYSTEMS**

Dav & Date: Fridav.22-11-2019 Ti

-)

Max. Marks: 70

Set R



c) Round Robin d) Priority

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is Time-sharing system? Explain in detail.
- **b)** Draw and explain the PCB (Process Control Block).
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- d) List and Define different Scheduling Criteria.
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P1	8	0

-	-
8	0
5	1
2	2
	5

Draw Gantt Chart and calculate the Average Waiting time using FCFS, Preemptive SJF, and RR (time quantum = 2 ms) Scheduling.

- **b)** Explain the following:
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 - ii) Process Creating and Termination
- c) List classical synchronization problems. Explain The Bounded Buffer Producer-Consumer problem in detail. Provide its solution using semaphore.

Section – II

Q.4 Attempt any four.

- a) Elaborate the different file operations.
- **b**) What is deadlock? Describe four necessary conditions for deadlock.
- c) What is thrashing? What are the causes of thrashing?
- d) Describe swapping with diagram.
- e) Compare sequential and direct access methods of a file.

Max. Marks: 56

Set

R

12

16

12

Q.5 Attempt any two.

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- b) Consider the following reference string
 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5
 How many page faults occur for the FIFO and Optimal page replacement algorithms assuming four frames? Which one is having minimum number of page faults?
- c) Define paging? Explain paging hardware implementation.

T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Electronics Engineering OPERATING SYSTEMS** Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Day & Date: Friday, 22-11-2019

book.

Time: 10:00 AM To 01:00 PM

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
 - Physical memory is broken into fixed-sized blocks called . 1)
 - a) frames Pages b)
 - c) backing store none of the mentioned d)

2) If a page number is not found in the TLB, then it is known as a _____.

- a) TLB miss b) Buffer miss
- c) TLB hit d) All of the mentioned
- 3) Deadlock prevention is a set of methods
 - a) to decide if the requested resources for a process have to be given or not
 - b) to ensure that all of the necessary conditions do not hold
 - c) to ensure that at least one of the necessary conditions cannot hold
 - d) to recover from a deadlock
- Which one of the following is the deadlock avoidance algorithm? 4)
 - round-robin algorithm a) karn's algorithm b)
 - c) elevator algorithm d) banker's algorithm
- 5) When a process begins execution with no pages in memory _____.
 - a) process execution becomes impossible
 - a page fault occurs for every page brought into memory b)
 - c) process causes system crash
 - d) none of the mentioned
- 6) Which of the following is a classical problem of synchronization?
 - a) The Bounded buffer problem
 - b) The Dinning-Philosophers problem
 - c) The Readers-Writers problem
 - d) All
- 7) _____ is a basic unit of CPU Utilization comprises a program counter, a Α__ register set and a stack.
 - a) Program c) Thread

- Throughput b)
- CPU memory d)

Seat No.

Max. Marks: 70

Set

S

Marks: 14

_ time is the time from submission of a request until the first 8) response is produced. a) Waiting Turnaround b) c) Response d) Throughput Shortest next CPU burst algorithm is known as ______ scheduling 9) algorithm. a) FCFS b) Shortest Job First c) Round Robin d) Priority 10) The _____ is the module that gives control of the CPU to the process selected by the short-term scheduler. a) Switcher b) Pager c) Dispatcher d) Swapper A major problem with priority scheduling is indefinite blocking or 11) starvation. a) True b) False c) Can't Say d) None of above When the messages are sent to and receive from mailboxes or ports it is 12) _ communication. Thread b) Semaphore a) c) Direct Indirect d) 13) The file name is generally split into two parts ____

- a) name & identifier b) identifier & type
 - c) extension & name d) type & extension
- 14) The valid invalid bit, in this case, what valid indicates _
 - a) the page is not legal
- b) the page is illegal
- c) the page is in memory d) the
-) the page is not in memory

SLR-FM-602

Set S

Seat No.

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Electronics Engineering OPERATING SYSTEMS

Day & Date: Friday,22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) What is Time-sharing system? Explain in detail.
- b) Draw and explain the PCB (Process Control Block).
- c) Explain priority scheduling with the help of suitable example.
- d) List and Define different Scheduling Criteria.
- e) What is Critical Section? List and explain three requirements of a solution to CS problem.

Q.3 Attempt any two.

a) Consider the following Four Processes arrive at the ready queue at the times shown below:

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P2	8	0
P3	5	1
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Draw Gantt Chart and calculate the Average Waiting time using FCFS, Preemptive SJF, and RR (time quantum = 2 ms) Scheduling.

- **b)** Explain the following:
 - i) Co operating process
 - ii) Process Creating and Termination
- c) List classical synchronization problems. Explain The Bounded Buffer Producer-Consumer problem in detail. Provide its solution using semaphore.

Section – II

Q.4 Attempt any four.

- a) Elaborate the different file operations.
- **b**) What is deadlock? Describe four necessary conditions for deadlock.
- c) What is thrashing? What are the causes of thrashing?
- d) Describe swapping with diagram.
- e) Compare sequential and direct access methods of a file.

Max. Marks: 56

16

12

Set

12

Q.5 Attempt any two.

- a) Describe Banker's algorithm for deadlock avoidance.
- b) Consider the following reference string
 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5
 How many page faults occur for the FIFO and Optimal page replacement algorithms assuming four frames? Which one is having minimum number of page faults?
- c) Define paging? Explain paging hardware implementation.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Day & Date: Saturday, 07-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Electronics Engineering ENGINEERING MATHEMATICS – III

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1)

- The particular Integral of $(D + 1)^3 y = e^{-x}$ is _____ a) $\frac{x^3}{3!}e^{-x}$ b) $\frac{x^2}{2}e^{-x}$ a) $\frac{x^3}{3!}e^{-x}$
 - c) xe^x d) None of these
- The complete solution of $(D^4 + 6D^2 + 9)y = 0$ is _____. 2)
 - a) $y = (c_1 + c_2 x)e^x + (c_3 + c_4 x)e^{-x}$ b) $y = (c_1 + c_2)e^x + (c_3 + c_4 x)e^{-x}$

 - c) $y = (c_1 + c_2 x) \cos \sqrt{3}x + (c_3 + c_4 x) \sin \sqrt{3}x$
 - d) $y = (c_1 + c_2 x) \cos 3x + (c_3 + c_4 x) \sin 3x$

The solution of px + qy = z is _____. a) $\phi(x + y, y + z) = 0$ b) $\phi\left(\frac{x}{y}, \frac{y}{z}\right) = 0$ 3) c) $\phi\left(\frac{x^2}{y}, \frac{y^2}{z}\right) = 0$ d) $\phi(xy, yz) = 0$ The value of the integral $\int_{0}^{\infty} e^{-3t} \sin t dt$ is_____. 4) b) $\frac{1}{5}$ d) $\frac{1}{10}$ a) 5 c) 10 The Laplace transform of $(\sin t + \cos t)^2$ is _____. $2) \frac{1}{s} \frac{2}{t^2 + 4}$ 5) c) $\frac{1}{s} - \frac{2}{s^2 - 4}$ d) $\frac{1}{s} + \frac{2}{s^2 - 4}$

$\frac{1}{(s+3)^2}$ is the Laplace transform of ____ 6) b) $t^2 e^{-3t}$ a) $t e^{-3t}$ c) e^{-3t} d) $t e^{3t}$ 7) $L^{-1}\left\{\frac{1}{s^2-6s+25}\right\} =$ _____. a) $\frac{e^{-3t}}{4}\sin 4t$ b) $\frac{e^{-3t}\cos 4t}{4}$ d) $\frac{e^{3t}\sin 4t}{4}$ c) $e^{-3t} \sin 4t$

SLR-FM-660

Max. Marks: 70

Marks: 14

Set

	Set
8)	The directional derivative of $\phi = xy + yz + zx$ at (1,1,1) is maximum in the direction of a) $i + j + k$ b) $i - j + k$ c) $2i + 2j + 2k$ d) $2i - 2j + 2k$
9)	If $\bar{r} = xi + yj + zk$ and \bar{a} is a constant vector then $\nabla(\bar{a}, \bar{r}) =$ a) \bar{a} b) \bar{r} c) \bar{a}, \bar{r} d) 0
10)	If $z\{a^k\} = \frac{z}{z-a}$ then $z\{k, a^k\} =$ a) $\frac{a}{(z-a)^2}$ b) $\frac{az}{(z-a)^2}$ c) $\frac{z}{(z-a)^2}$ d) $\frac{-1}{(z-a)^2}$
11)	The inverse z-transform of $\frac{z}{z-1}$, $ z > 1$ is a) -1 b) 1 c) 0 d) K
12)	If $f(x) = x$ is represented by Fourier series in $(-\pi, \pi)$ then is the constant term. a) $\frac{\pi}{2}$ b) π c) 0 d) 2π
13)	For Fourier series expansion, function must be a) Harmonic b) Reimann c) Cauchy d) Periodic
14)	The Fourier sine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ is a) $\sqrt{\frac{2}{\pi}}$ b) $\sqrt{\frac{2}{\pi}} (1 - \cos s)$ c) $\sqrt{\frac{2}{\pi}} (\frac{1 - \sin s}{s})$ d) $\sqrt{\frac{2}{\pi}} (\frac{1 - \cos s}{s})$
	$\sqrt{\pi}$ (s) $\sqrt{\pi}$ (s)

Ρ

		SLR-FM-6	660
Seat No.		Set	Ρ
	S.E. (Part – I) (Old) (CGPA) Examination Nov/De Electronics Engineering ENGINEERING MATHEMATICS – III	ec-2019	
	& Date: Saturday, 07-12-2019 : 10:00 AM To 01:00 PM	Max. Mark	s: 56
Instru	 uctions: 1) Q. No. 5 & Q. 6 are compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed. 		
	Section – I		
Q.2	Solve any three of the following questions.		09
	a) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 3D + 2)y = x^2 + 3x + 1$		
	c) Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$		
	OR Solve $(D^3 + 1)y = 65\cos(2x + 1)$		
03	Solve $(D^{-} + 1)y = 03\cos(2x + 1)$ Solve the following questions.		09
Q.0	a) $z(p^2 - q^2) = x - y$		05
	b) $p^3 + q^3 = 27z$ c) $px^2 + qy^2 = (x + y)z$		
0.4			09
Q.4	Solve the following questions. a) Find $L\{e^{-t}\cos^2 3t\}$		09
	b) Find $L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$		
	c) Find the laplace transform of the periodic function defined by	,	
	$f(t) = \frac{kt}{T}, 0 < t < T$		
	where $f(t+T) = f(t)$		
Q.5	Solve the following questions.		
	a) Find $L^{-1}\left\{\frac{2s^2+5s-4}{s^3+s^2-2s}\right\}$		03
	b) Using the convolution theorem, find the inverse Laplace trans	sform of	03
	$\frac{1}{(s-1)(s^2+1)}$		
	(s - 1)(s - + 1) c) Solve $y'' + 2y' + y = 3t e^{-t}$, given that $y = 4, y' = 2$ when t		04
	Laplace transform.		04
	Section – II		
Q.6	a) Find the unit tangent vector at any point on the curve given b		04
	$x = t^2 + 2$, $y = 4t - 5$ and $z = 2t^2 - 6t$ where t is any variable determine unit tangent vector at $t = 2$.	e. Also	
	b) Find the value of constant a, b and c for which vector		03
	$\bar{v} = (x + y + az)i + (bx + 3y - z)j + (3x + cy + z)k$ is irrotati c) Find the angle between the normals to the surface $x^2y + z = 0$		03

c) Find the angle between the normals to the surface $x^2y + z = 3$ and $x \log z - y^2 + 4 = 0$ at (-1,2,1) 03

SLR-FM-660 Set **a)** Find the Fourier expansion of $f(x) = 2x - x^2$ in (0,3) Q.7 05 **OR** Find the Fourier series of $f(x) = x^2 - 2$, $-2 \le x \le 2$ **b)** Find the Fourier series of $f(x) = x^3$ in $(-\pi, \pi)$ 05 04 **Q.8** a) Express $f(x) = \begin{cases} \sin x, & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ as a Fourier integral and show that 03 $\int_{0}^{\infty} \frac{\sin wx . \sin \pi w}{1 - w^2} dw = \begin{cases} \frac{\pi}{2} . \sin x , & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ **b)** Find Fourier sine transform of $f(x) = \begin{cases} \sin x, & 0 < x < 1 \\ 0, & x > 1 \end{cases}$ 03 Find the Fourier transform of $f(x) = \begin{cases} \sqrt{2\pi}, & |x| < a \\ 0, & |x| > a \end{cases}$ 03 c) Solve any three of the following questions. Q.9 09 **a)** Find the inverse z-transform of $\frac{1}{z^2-3z+2}$, |z| > 2

b) Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, $|z| < \frac{1}{5}$

c) Find
$$z\left\{3^k \sin\left(\frac{k\pi}{2}\right)\right\}, k \ge 0$$

d) Find
$$z \left\{ 4^k + \frac{1}{4^k} \right\}$$
, $k \ge 0$

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MCQ/Objective Type Questions						
ation: 3	0 Minutes	Marks: 14				
Choo 1)		the options and rewrite the sentence. 14 xy + yz + zx at (1,1,1) is maximum in				
	a) $i + j + k$ c) $2i + 2j + 2k$	b) $i - j + k$ d) $2i - 2j + 2k$				
2)	If $\bar{r} = xi + yj + zk$ and \bar{a} is a constant a) \bar{a} c) $\bar{a}.\bar{r}$	tant vector then $\nabla(\bar{a}.\bar{r}) = $ b) \bar{r} d) 0				
3)	If $z\{a^k\} = \frac{z}{z-a}$ then $z\{k, a^k\} = $					
	a) $\frac{a}{(z-a)^2}$	b) $\frac{az}{(z-a)^2}$				
	$C) \frac{z}{(z-a)^2}$	d) $\frac{-1}{(z-a)^2}$				
4)	The inverse z-transform of $\frac{z}{z-1}$, $ z > $					
	a) -1 c) 0	b) 1 d) K				
5)	If $f(x) = x$ is represented by Fourier constant term.	ier series in $(-\pi, \pi)$ then is the				
	a) $\frac{\pi}{2}$	b) π				
	c) 0	d) 2π				
6)	For Fourier series expansion, functia) Harmonicc) Cauchy	ction must be b) Reimann d) Periodic				
7)	The Fourier sine transform of $f(x)$ = a) $\sqrt{\frac{2}{\pi}}$	$0 = \begin{cases} 1 & 0 \le x < 1 \\ 0 & x > 1 \end{cases} \text{ is } __\$				
	a) $\sqrt{\frac{2}{\pi}}$	b) $\sqrt{\frac{2}{\pi}} (1 - \cos s)$				

d)

 $\int_{-\pi}^{\frac{1}{2}} \left(\frac{1-\cos s}{s}\right)$

Instructions: 1) Q. No.1 is compulsory should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of non-programmable calculator is allowed.

Dura

Q.1 .

Electronics Engineering ENGINEERING MATHEMATICS – III

c) $\sqrt{\frac{2}{\pi}} \left(\frac{1-\sin s}{s}\right)$

Day & Date: Saturday, 07-12-2019

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Set



Q

Max. Marks: 70

The particular Integral of $(D + 1)^3 y = e^{-x}$ is _____. a) $\frac{x^3}{3!}e^{-x}$ b) $\frac{x^2}{2}e^{-x}$. 8) a) $\frac{x^3}{3!}e^{-x}$ c) xe^x d) None of these The complete solution of $(D^4 + 6D^2 + 9)y = 0$ is _____. 9) a) $y = (c_1 + c_2 x)e^x + (c_3 + c_4 x)e^{-x}$ b) $y = (c_1 + c_2)e^x + (c_3 + c_4 x)e^{-x}$ c) $y = (c_1 + c_2 x) \cos \sqrt{3}x + (c_3 + c_4 x) \sin \sqrt{3}x$ d) $y = (c_1 + c_2 x) \cos 3x + (c_3 + c_4 x) \sin 3x$ The solution of px + qy = z is _____. a) $\phi(x + y, y + z) = 0$ b) $\phi\left(\frac{x}{y}, \frac{y}{z}\right) = 0$ 10) $c) \quad \phi\left(\frac{x^2}{y}, \frac{y^2}{z}\right) = 0$ d) $\phi(xy,yz) = 0$ The value of the integral $\int_{0}^{\infty} e^{-3t} \sin t dt$ is_____. a) 5 b) $\frac{1}{5}$ c) 10 d) $\frac{1}{10}$ 11) The Laplace transform of $(\sin t + \cos t)^2$ is _____. a) $\frac{1}{2} - \frac{2}{2 + 4}$ b) $\frac{1}{s} + \frac{2}{s^2 + 4}$ 12) a) $\frac{1}{s} - \frac{2}{s^2 + 4}$ c) $\frac{1}{s} - \frac{2}{s^2 - 4}$ $\frac{1}{(s+3)^2}$ is the Laplace transform of _____. b) $t^2 e^{-3t}$ d) $\frac{1}{s} + \frac{2}{s^2 - 4}$ 13) a) $t e^{-3t}$ c) e^{-3t} d) $t e^{3t}$ 14) $L^{-1}\left\{\frac{1}{s^2-6s+25}\right\} =$ _____. a) $\frac{e^{-3t}}{4}\sin 4t$ b) $\frac{e^{-3t}\cos 4t}{4}$ d) $\frac{e^{3t}\sin 4t}{4}$ c) $e^{-3t} \sin 4t$

SLR-FM-660

Set

		SLR-FM-6	660
Seat No.		Set	Q
	S.E. (Part – I) (Old) (CGPA) Examination Nov/De Electronics Engineering ENGINEERING MATHEMATICS – III	c-2019	
	Late: Saturday, 07-12-2019 10:00 AM To 01:00 PM	Max. Mark	s: 56
Instru	 actions: 1) Q. No. 5 & Q. 6 are compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed. 		
	Section – I		
Q.2	Solve any three of the following questions.		09
	a) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 3D + 2)y = x^2 + 3x + 1$		
	c) Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$ OR		
	Solve $(D^3 + 1)y = 65\cos(2x + 1)$		
Q.3	Solve the following questions.		09
	a) $z(p^2 - q^2) = x - y$ b) $p^3 + q^3 = 27z$		
	c) $p^{2} + q^{2} = (x + y)z$		
Q.4	Solve the following questions. a) Find $L\{e^{-t}\cos^2 3t\}$		09
	b) Find $L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$		
	c) Find the laplace transform of the periodic function defined by		
	$f(t) = \frac{kt}{T}, 0 < t < T$		
	where $f(t+T) = f(t)$		
Q.5	Solve the following questions.		
	a) Find $L^{-1}\left\{\frac{2s^2+5s-4}{s^3+s^2-2s}\right\}$		03
	b) Using the convolution theorem, find the inverse Laplace trans	sform of	03
	$\frac{1}{(s-1)(s^2+1)}$		
	c) Solve $y'' + 2y' + y = 3t e^{-t}$, given that $y = 4, y' = 2$ when $t = Laplace$ transform.	= 0 using	04
	Section – II		
Q.6	a) Find the unit tangent vector at any point on the curve given b $x = t^2 + 2$, $y = 4t - 5$ and $z = 2t^2 - 6t$ where t is any variable determine unit tangent vector at $t = 2$.		04
	b) Find the value of constant a, b and c for which vector		03
	$\bar{v} = (x + y + az)i + (bx + 3y - z)j + (3x + cy + z)k$ is irrotati c) Find the angle between the normals to the surface $x^2y + z =$		03

c) Find the angle between the normals to the surface $x^2y + z = 3$ and $x \log z - y^2 + 4 = 0$ at (-1,2,1) 03

SLR-FM-660 Set **a)** Find the Fourier expansion of $f(x) = 2x - x^2$ in (0,3) Q.7 05 **OR** Find the Fourier series of $f(x) = x^2 - 2$, $-2 \le x \le 2$ **b)** Find the Fourier series of $f(x) = x^3$ in $(-\pi, \pi)$ 05 04 **Q.8** a) Express $f(x) = \begin{cases} \sin x, & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ as a Fourier integral and show that 03 $\int_{0}^{\infty} \frac{\sin wx . \sin \pi w}{1 - w^2} dw = \begin{cases} \frac{\pi}{2} . \sin x , & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ **b)** Find Fourier sine transform of $f(x) = \begin{cases} \sin x, & 0 < x < 1 \\ 0, & x > 1 \end{cases}$ 03 Find the Fourier transform of $f(x) = \begin{cases} \sqrt{2\pi}, & |x| < a \\ 0, & |x| > a \end{cases}$ 03 c) Solve any three of the following questions. Q.9 09 **a)** Find the inverse z-transform of $\frac{1}{z^2-3z+2}$, |z| > 2

b) Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, $|z| < \frac{1}{5}$

c) Find
$$z\left\{3^k \sin\left(\frac{k\pi}{2}\right)\right\}$$
, $k \ge 0$

d) Find
$$z \left\{ 4^k + \frac{1}{4^k} \right\}$$
, $k \ge 0$

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Electronics Engineering

ENGINEERING MATHEMATICS – III

Day & Date: Saturday, 07-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The Laplace transform of $(\sin t + \cos t)^2$ is _____ a) $\frac{1}{2} \frac{2}{3t}$ b) $\frac{1}{s} + \frac{2}{s^2+4}$ 1) c) $\frac{1}{s} - \frac{2}{s^2 - 4}$ d) $\frac{1}{s} + \frac{2}{s^2 - 4}$ $\frac{1}{(s+3)^2}$ is the Laplace transform of _____. 2) b) $t^2 e^{-3t}$ a) $t e^{-3t}$ c) e^{-3t} d) $t e^{3t}$ $L^{-1}\left\{\frac{1}{s^2 - 6s + 25}\right\} = \underline{\qquad}.$ 3) a) $\frac{e^{-3t}}{4}\sin 4t$ b) $\frac{e^{-3t}\cos 4t}{4}$ c) $e^{-3t} \sin 4t$ d) $e^{3t} \sin 4t$ the direction of _____.
- 4) The directional derivative of $\phi = xy + yz + zx$ at (1,1,1) is maximum in

a)	i+j+k	b)	i - j + k
c)	2i + 2j + 2k	d)	2i-2j+2k

If $\bar{r} = xi + yj + zk$ and \bar{a} is a constant vector then $\nabla(\bar{a}.\bar{r}) = ...$ 5) a) ā b) \bar{r} c) $\bar{a}.\bar{r}$ d) 0 If $z\{a^k\} = \frac{z}{z-a}$ then $z\{k, a^k\} =$ _____. 6) b) $\frac{az}{(z-a)^2}$ a) $\frac{a}{(z-a)^2}$ d) $\frac{-1}{(z-a)^2}$ c) $\frac{z}{(z-a)^2}$ The inverse z-transform of $\frac{z}{z-1}$, |z| > 1 is _____. 7) b) 1 a) -1

d) K c) 0

Set R

Max. Marks: 70

Marks: 14

Set 8) If f(x) = x is represented by Fourier series in $(-\pi, \pi)$ then _____ is the constant term. $\frac{\pi}{2}$ b) π a) C) 0 d) 2π 9) For Fourier series expansion, function must be a) Harmonic b) Reimann c) Cauchy d) Periodic The Fourier sine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ a) $\sqrt{\frac{2}{\pi}}$ b) $\sqrt{\frac{2}{\pi}} (1 - \cos s)$ 10) d) $\sqrt{\frac{2}{\pi}} \left(\frac{1-\cos s}{s}\right)$ C) $\sqrt{\frac{2}{\pi}} \left(\frac{1-\sin s}{s}\right)$ The particular Integral of $(D + 1)^3 y = e^{-x}$ is _____. a) $\frac{x^3}{2!}e^{-x}$ b) $\frac{x^2}{2}e^{-x}$. 11)a) $\frac{x^3}{3!}e^{-x}$ c) xe^x d) None of these The complete solution of $(D^4 + 6D^2 + 9)y = 0$ is _____. 12) a) $y = (c_1 + c_2 x)e^x + (c_3 + c_4 x)e^{-x}$ b) $y = (c_1 + c_2)e^x + (c_3 + c_4x)e^{-x}$ c) $y = (c_1 + c_2 x) \cos \sqrt{3}x + (c_3 + c_4 x) \sin \sqrt{3}x$ d) $y = (c_1 + c_2 x) \cos 3x + (c_3 + c_4 x) \sin 3x$ 13) The solution of px + qy = z is _____ b) $\phi\left(\frac{x}{y},\frac{y}{z}\right) = 0$ a) $\phi(x + y, y + z) = 0$ c) $\phi\left(\frac{x^2}{y}, \frac{y^2}{z}\right) = 0$ d) $\phi(xy, yz) = 0$ The value of the integral $\int_{0}^{\infty} e^{-3t} \sin t dt$ is_____. a) 5 b) $\frac{1}{5}$ c) 10 d) $\frac{1}{10}$ 14)

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		SLR-FM-6	660
Seat No.		Set	R
	S.E. (Part – I) (Old) (CGPA) Examination Nov/De Electronics Engineering ENGINEERING MATHEMATICS – III	⊧c-2019	
	& Date: Saturday, 07-12-2019 : 10:00 AM To 01:00 PM	Max. Mark	s: 56
Instr	 uctions: 1) Q. No. 5 & Q. 6 are compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed. 		
	Section – I		
Q.2	Solve any three of the following questions.		09
	a) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 3D + 2)y = x^2 + 3x + 1$		
	c) Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$		
	OR Solve $(D^3 + 1)y = 65\cos(2x + 1)$		
Q.3	Solve the following questions.		09
Q.0	a) $z(p^2 - q^2) = x - y$		00
	b) $p^3 + q^3 = 27z$ c) $px^2 + qy^2 = (x + y)z$		
0.4	Solve the following questions.		09
Q.4	a) Find $L\{e^{-t}\cos^2 3t\}$		03
	b) Find $L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$		
	c) Find the laplace transform of the periodic function defined by		
	$f(t) = \frac{kt}{T}, 0 < t < T$		
	where $f(t+T) = f(t)$		
Q.5	Solve the following questions.		
	a) Find $L^{-1}\left\{\frac{2s^2+5s-4}{s^3+s^2-2s}\right\}$		03
	b) Using the convolution theorem, find the inverse Laplace trans	sform of	03
	$\frac{1}{(s-1)(s^2+1)}$		
	(3 - 1)(3 + 1) c) Solve $y'' + 2y' + y = 3t e^{-t}$, given that $y = 4, y' = 2$ when $t = 1$		04
	Laplace transform.		04
	Section – II		
Q.6	a) Find the unit tangent vector at any point on the curve given b		04
	$x = t^2 + 2$, $y = 4t - 5$ and $z = 2t^2 - 6t$ where t is any variable determine unit tangent vector at $t = 2$.	e. Also	
	b) Find the value of constant a, b and c for which vector		03
	$\bar{v} = (x + y + az)i + (bx + 3y - z)j + (3x + cy + z)k$ is irrotati c) Find the angle between the normals to the surface $x^2y + z = z^2$		03

c) Find the angle between the normals to the surface $x^2y + z = 3$ and $x \log z - y^2 + 4 = 0$ at (-1,2,1) 03

SLR-FM-660 Set R **a)** Find the Fourier expansion of $f(x) = 2x - x^2$ in (0,3) Q.7 05 **OR** Find the Fourier series of $f(x) = x^2 - 2$, $-2 \le x \le 2$ **b)** Find the Fourier series of $f(x) = x^3$ in $(-\pi, \pi)$ 05 04 **Q.8** a) Express $f(x) = \begin{cases} \sin x, & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ as a Fourier integral and show that 03 $\int_{0}^{\infty} \frac{\sin wx . \sin \pi w}{1 - w^2} dw = \begin{cases} \frac{\pi}{2} . \sin x , & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ **b)** Find Fourier sine transform of $f(x) = \begin{cases} \sin x, & 0 < x < 1 \\ 0, & x > 1 \end{cases}$ 03 Find the Fourier transform of $f(x) = \begin{cases} \sqrt{2\pi}, & |x| < a \\ 0, & |x| > a \end{cases}$ 03 c) Solve any three of the following questions. Q.9 09 **a)** Find the inverse z-transform of $\frac{1}{z^2-3z+2}$, |z| > 2

b) Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, $|z| < \frac{1}{5}$

c) Find
$$z\left\{3^k \sin\left(\frac{k\pi}{2}\right)\right\}$$
, $k \ge 0$

d) Find
$$z \left\{ 4^k + \frac{1}{4^k} \right\}$$
, $k \ge 0$

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ENGINEERING MATHEMATICS – III

Day & Date: Saturday, 07-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

1)

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- If $z\{a^k\} = \frac{z}{z-a}$ then $z\{k, a^k\} =$ _____ b) $\frac{az}{(z-a)^2}$ a) d) $\frac{-1}{(z-a)^2}$ c) $\frac{z}{(z-a)^2}$
- The inverse z-transform of $\frac{z}{z-1}$, |z| > 1 is _____. a) -1 b) 1 2)
 - c) 0 d) K
- 3) If f(x) = x is represented by Fourier series in $(-\pi, \pi)$ then _____ is the constant term.
 - π a) b) π 2
 - 0 d) 2π c)
- 4) For Fourier series expansion, function must be _____ a) Harmonic Reimann b)

c) Cauchy d) Periodic

The Fourier sine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ is _____. a) $\int_{-\pi}^{2}$ b) $\int_{-\pi}^{2} (1 - \cos s)$ 5) c) $\sqrt{\frac{2}{\pi}}\left(\frac{1-\sin s}{s}\right)$ d) $\sqrt{\frac{2}{\pi}}\left(\frac{1-\cos s}{s}\right)$

The particular Integral of $(D + 1)^3 y = e^{-x}$ is _____. a) $\frac{x^3}{2}e^{-x}$ b) $\frac{x^2}{2}e^{-x}$. 6) a) $\frac{x^3}{3!}e^{-x}$

- c) xe^x d) None of these
- The complete solution of $(D^4 + 6D^2 + 9)y = 0$ is _____. 7)
 - a) $y = (c_1 + c_2 x)e^x + (c_3 + c_4 x)e^{-x}$
 - b) $y = (c_1 + c_2)e^x + (c_3 + c_4x)e^{-x}$
 - c) $y = (c_1 + c_2 x) \cos \sqrt{3}x + (c_3 + c_4 x) \sin \sqrt{3}x$
 - d) $y = (c_1 + c_2 x) \cos 3x + (c_3 + c_4 x) \sin 3x$

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Set

Max. Marks: 70

Marks: 14

The solution of px + qy = z is _____. a) $\phi(x + y, y + z) = 0$ b) $\phi\left(\frac{x}{y}, \frac{y}{z}\right) = 0$ 8) $c) \quad \phi\left(\frac{x^2}{y}, \frac{y^2}{z}\right) = 0$ d) $\phi(xy, yz) = 0$ The value of the integral $\int_{0}^{\infty} e^{-3t} \sin t dt$ is_____. 9) b) $\frac{1}{5}$ a) 5 d) $\frac{1}{10}$ c) 10 The Laplace transform of $(\sin t + \cos t)^2$ is _____. a) $\frac{1}{2} - \frac{2}{2}$ b) $\frac{1}{s} + \frac{2}{s^2+4}$. 10) c) $\frac{1}{s} - \frac{2}{s^2 - 4}$ d) $\frac{1}{s} + \frac{2}{s^2 - 4}$ $\frac{1}{(s+3)^2}$ is the Laplace transform of _____ 11) b) $t^2 e^{-3t}$ a) $t e^{-3t}$ c) e^{-3t} d) $t e^{3t}$ 12) $L^{-1}\left\{\frac{1}{s^2-6s+25}\right\} =$ _____. b) $\frac{e^{-3t}\cos 4t}{4}$ a) $\frac{e^{-3t}}{4}\sin 4t$ c) $e^{-3t} \sin 4t$ d) $e^{3t} \sin 4t$ 13)

13) The directional derivative of $\phi = xy + yz + zx$ at (1,1,1) is maximum in the direction of _____.

a)	l+j+k	D)	l - j + k
C)	2i + 2j + 2k	d)	2i - 2j + 2k

- 14) If $\bar{r} = xi + yj + zk$ and \bar{a} is a constant vector then $\nabla(\bar{a}.\bar{r}) =$ _____.
 - a) \bar{a} b) \bar{r} c) $\bar{a}.\bar{r}$ d) 0

SLR-FM-660

Set

		SLR-FM-6	660
t		Set	S
	Electronics Engineering	c-2019	
	ate: Saturday, 07-12-2019	Max. Mark	s: 56
ucti	 ons: 1) Q. No. 5 & Q. 6 are compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed. 		
	Section – I		
			09
	Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$		
	-		
So			09
a)	$z(p^2 - q^2) = x - y$		
			09
a)			
b)	Find $L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$		
c)	Find the laplace transform of the periodic function defined by		
	$f(t) = \frac{kt}{T}, 0 < t < T$		
	where $f(t+T) = f(t)$		
			03
b)		form of	03
	$\overline{(s-1)(s^2+1)}$		
c)		= 0 using	04
•,	Laplace transform.		
•)	Section – II		
a)	Section – II Find the unit tangent vector at any point on the curve given by $x = t^2 + 2$, $y = 4t - 5$ and $z = 2t^2 - 6t$ where t is any variable		04
	Section – II Find the unit tangent vector at any point on the curve given by		04 03
	& Da & Da : 10 ructi So a) b) c) So c) So a) b) c) So a) b) c) So a) b) c) So a) b) c) So a) b) c) So c) So c) So So So So So So So So So So So So So	tS.E. (Part – I) (Old) (CGPA) Examination Nov/Deta Electronics Engineering ENGINEERING MATHEMATICS – III& S.E. (Part – I) (Old) (CGPA) Examination Nov/Deta Electronics Engineering ENGINEERING MATHEMATICS – III& ENGINEERING MATHEMATICS – III& Distribution of the terms of the compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed.Section – ISolve any three of the following questions. a) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 3D + 2)y = x^2 + 3x + 1$ c) Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$ OR Solve $(D^3 + 1)y = 65 \cos(2x + 1)$ Solve the following questions. a) $z(p^2 - q^2) = x - y$ b) $p^3 + q^3 = 27z$ c) $px^2 + qy^2 = (x + y)z$ Solve the following questions. a) $z(p^2 - q^2) = x - y$ b) $p^3 + q^3 = 27z$ c) $px^2 + qy^2 = (x + y)z$ Solve the following questions. a) $Find L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$ c) Find the laplace transform of the periodic function defined by $f(t) = \frac{kt}{T}, 0 < t < T$ where $f(t + T) = f(t)$ Solve the following questions. a) Find $L^{-1}\left\{\frac{2s^2 + 5s - 4}{s^3 + s^2 - 2s}\right\}$ b) Using the convolution theorem, find the inverse Laplace trans $\frac{1}{(s-1)(s^2+1)}$	Set S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ENGINEERING MATHEMATICS – III & Date: Saturday, 07-12-2019 Max. Mark a: 10:00 AM To 01:00 PM fuctions: 1) Q. No. 5 & Q. 6 are compulsory. 2) Solve any two questions from each section. 2) Figures to the right indicate full marks. 3) Use of calculator is allowed. Section – I Solve any three of the following questions. a) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 4)y = \sin^2 x$ b) Solve $(D^2 + 3D + 2)y = x^2 + 3x + 1$ c) Solve $(D^2 + 2D + 5)y = e^{-x} \sin 2x$ OR Solve $(D^3 + 1)y = 65 \cos(2x + 1)$ Solve the following questions. a) $z(p^2 - q^2) = x - y$ b) $p^3 + q^3 = 27z$ ($p x^2 + qy^2 = (x + y)z$ Solve the following questions. a) Find $L\left\{\frac{\cos 6t - \cos 4t}{t}\right\}$ c) Find the laplace transform of the periodic function defined by $f(t) = \frac{kt}{T}, 0 < t < T$ where $f(t + T) = f(t)$ Solve the following questions. a) Find $L^{-1}\left\{\frac{2s^2 + 5s - 4}{s^3 + s^2 - 2s}\right\}$ b) Using the convolution theorem, find the inverse Laplace transform of

c) Find the angle between the normals to the surface $x^2y + z = 3$ and $x \log z - y^2 + 4 = 0$ at (-1,2,1) 03

SLR-FM-660 Set S **a)** Find the Fourier expansion of $f(x) = 2x - x^2$ in (0,3) Q.7 05 **OR** Find the Fourier series of $f(x) = x^2 - 2$, $-2 \le x \le 2$ **b)** Find the Fourier series of $f(x) = x^3$ in $(-\pi, \pi)$ 05 04 **Q.8** a) Express $f(x) = \begin{cases} \sin x, & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ as a Fourier integral and show that 03 $\int_{0}^{\infty} \frac{\sin wx . \sin \pi w}{1 - w^2} dw = \begin{cases} \frac{\pi}{2} . \sin x , & |x| < \pi \\ 0, & |x| > \pi \end{cases}$ **b)** Find Fourier sine transform of $f(x) = \begin{cases} \sin x, & 0 < x < 1 \\ 0, & x > 1 \end{cases}$ 03 Find the Fourier transform of $f(x) = \begin{cases} \sqrt{2\pi}, & |x| < a \\ 0, & |x| > a \end{cases}$ 03 c)

Q.9 Solve any three of the following questions.

- **a)** Find the inverse z-transform of $\frac{1}{z^2-3z+2}$, |z| > 2
- **b)** Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, $|z| < \frac{1}{5}$

c) Find
$$z\left\{3^k \sin\left(\frac{k\pi}{2}\right)\right\}$$
, $k \ge 0$

d) Find
$$z \left\{ 4^k + \frac{1}{4^k} \right\}$$
, $k \ge 0$

Set

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The load and line regulation of ideal power supply must be . 1)
 - Zero a)

c)

c)

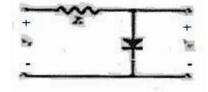
c)

- b) Infinite Large d) None
- 2) If the load resistance of a capacitor filter is increases then ripple factor
 - Increases a)

- Decreases b) d) Exponentionally increases
- 3) The ripple frequency for half wave voltage doubler circuit is
 - Same as input frequency a)

Remains constant

- Half of supply frequency d)
- 4) The function of bleeder resistor in power supply is.
 - to provide discharging path for capacitor a)
 - it improves regulation characteristics b)
 - both a & b c)
 - d) is same as load resistor
- 5) The circuit shown below is _____.



- Positive clipper a)
- Half wave rectifier c)
- d) with increase in temperature.

b) Vm

d) $vm/\sqrt{2}$

b) Decreases

d) Becomes zero

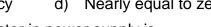
b)

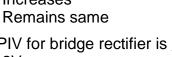
- Forward drop across diode will 6)
 - Increases a)
 - c)
- 7) The PIV for bridge rectifier is _____
 - 2Vm a)
 - vmc) 2

Clamper

Negative clipper

- Twice the input frequency b)
- Nearly equal to zero





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Marks: 14

Max. Marks: 70

			SLR-FM-661
			Set P
	n of an amplifier fall at high free Coupling capacitor Junction capacitance	b)	
a) c)	•	b) d)	in transistor is called as Thermal runaway Compensation Hoe Hre
	voltage gain is	b) d)	
a) b)	JFET is a Current controlled device with Current controlled device with Voltage controlled device with Voltage controlled device with	h low h hig	<i>i</i> input resistance h input resistance
a) b)	correct statement is Monostable converts sine wa Astable converts sine wave to Schmitt converts sine wave to None of these	ive to o sq	uare wave
	msec pulse can be stretched to Astable multivibrator Monostable multivibrator	b)	Schmitt Trigger

8)

9)

10)

11)

12)

13)

14)

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

Section – I

Q.2 Attempt any four

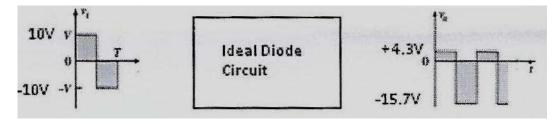
Seat

No.

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- **d)** What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- b) Design a single stage CE amplifier for voltage gain of 200, stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

16

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Max. Marks: 56

Set

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

1)

3)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Gain of an amplifier fall at high frequency due to _____
 - Coupling capacitor a)
 - Junction capacitance d) Both a & b c)
- 2) The process of base width modulation in transistor is called as _____.
 - a) Biasing
 - Early effect c)
 - Input resistance CE amplifier is _
 - hfe b) Hoe a)
 - c) hie d) Hre
- For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω , Rs=0, 4) the voltage gain is .
 - 1666.66 2000.00 b) a)
 - c) 1768.86 d) None of these
- The JFET is a 5)
 - a) Current controlled device with high input resistance
 - Current controlled device with low input resistance b)
 - Voltage controlled device with high input resistance c)
 - d) Voltage controlled device with low input resistance
- 6) The correct statement is
 - Monostable converts sine wave to square wave a)
 - b) Astable converts sine wave to square wave
 - Schmitt converts sine wave to square wave c)
 - None of these d)
- 7) A 1 msec pulse can be stretched to 1 sec using
 - Astable multivibrator b) Schmitt Trigger a) c)
 - Monostable multivibrator d) None of these
- 8) The load and line regulation of ideal power supply must be _____.
 - Zero a)
 - c) Large

b) Infinite d) None

b) Thermal runaway

b) Bypass capacitor

d) Compensation

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Set

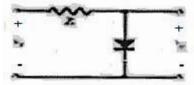
Max. Marks: 70

Marks: 14

9) If the load resistance of a capacitor filter is increases then ripple factor

Increases a)

- b) Decreases
- c) Remains constant
- d) Exponentionally increases
- 10) The ripple frequency for half wave voltage doubler circuit is _
 - Same as input frequency a) Half of supply frequency c)
- d) Nearly equal to zero
- 11) The function of bleeder resistor in power supply is.
 - to provide discharging path for capacitor a)
 - it improves regulation characteristics b)
 - both a & b c)
 - is same as load resistor d)
- 12) The circuit shown below is _____.



- Positive clipper a)
- c) Half wave rectifier
- 13) Forward drop across diode will ____
 - Increases a)
 - Remains same c)
- The PIV for bridge rectifier is ____ 2Vm
- a) vmc) 2

14)

- b) Vm
- d) $vm/\sqrt{2}$

- b) Twice the input frequency
- Set | Q

SLR-FM-661

- b) Negative clipper d) Clamper
- ____ with increase in temperature.

 - b) Decreases d) Becomes zero

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

Section – I

Q.2 Attempt any four

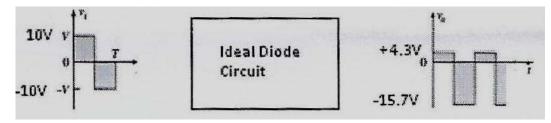
Seat

No.

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- d) What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- b) Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

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Set Q

Max. Marks: 56

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Set S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - 1) The circuit shown below is _____.
 - Positive clipper b) Negative clipper a) Half wave rectifier c) d) Clamper 2) Forward drop across diode will _ with increase in temperature. Increases b) Decreases a) Remains same d) Becomes zero c) 3) The PIV for bridge rectifier is 2Vm b) Vm a) vm c) d) $vm/\sqrt{2}$ 2 4) Gain of an amplifier fall at high frequency due to _____. Coupling capacitor b) Bypass capacitor a) Junction capacitance d) Both a & b c) The process of base width modulation in transistor is called as . 5) Biasing Thermal runaway a) b) Early effect Compensation c) d) Input resistance CE amplifier is ____ 6) b) Hoe hfe a) c) hie d) Hre For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω , Rs=0, 7) the voltage gain is _____. 2000.00 b) 1666.66 a) 1768.86 d) None of these c)

Max. Marks: 70

Marks: 14

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Seat No.

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Set R

- 8) The JFET is a _____.
 - a) Current controlled device with high input resistance
 - b) Current controlled device with low input resistance
 - c) Voltage controlled device with high input resistance
 - d) Voltage controlled device with low input resistance
- 9) The correct statement is _____
 - a) Monostable converts sine wave to square wave
 - b) Astable converts sine wave to square wave
 - c) Schmitt converts sine wave to square wave
 - d) None of these

a)

c)

- 10) A 1 msec pulse can be stretched to 1 sec using _____
 - Astable multivibrator b) Schmitt Trigger
 - Monostable multivibrator d) None of these
- 11) The load and line regulation of ideal power supply must be _____.
 - a) Zero b) Infinite
 - c) Large d) None
- 12) If the load resistance of a capacitor filter is increases then ripple factor
 - a) Increases

- b) Decreases
- c) Remains constant d) Exponentionally increases
- 13) The ripple frequency for half wave voltage doubler circuit is _____
 - a) Same as input frequency
- b) Twice the input frequencyd) Nearly equal to zero
- c) Half of supply frequency
- 14) The function of bleeder resistor in power supply is.
 - a) to provide discharging path for capacitor
 - b) it improves regulation characteristics
 - c) both a & b
 - d) is same as load resistor

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

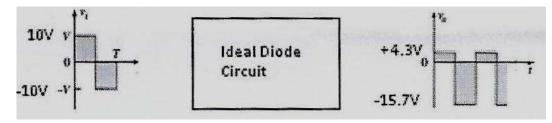
Section – I

Q.2 Attempt any four

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- **d)** What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- **b)** Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

12

16

12

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Set

Max. Marks: 56

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - I**

Day & Date: Tuesday, 10-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

1)

Marks: 14

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - Input resistance CE amplifier is _____
 - hfe a) b) Hoe hie d) Hre c)
 - 2) For amplifier component values are hfe=200, RL=10K Ω , hie=1K Ω , Rs=0, the voltage gain is .
 - 2000.00 b) 1666.66 a)
 - d) None of these
 - 3) The JFET is a

c)

a)

1768.86

- Current controlled device with high input resistance a)
- Current controlled device with low input resistance b)
- Voltage controlled device with high input resistance c)
- Voltage controlled device with low input resistance d)
- 4) The correct statement is
 - Monostable converts sine wave to square wave a)
 - b) Astable converts sine wave to square wave
 - Schmitt converts sine wave to square wave c)
 - None of these d)

5) A 1 msec pulse can be stretched to 1 sec using

- Astable multivibrator b) Schmitt Trigger
- d) None of these c) Monostable multivibrator
- The load and line regulation of ideal power supply must be _____. 6)
 - b) Infinite a) Zero c)
 - Large d) None
- If the load resistance of a capacitor filter is increases then ripple factor 7)
 - a) Increases
- b) Decreases
- Remains constant c)
- Exponentionally increases d)
- 8) The ripple frequency for half wave voltage doubler circuit is _
 - Same as input frequency a) c)
- Twice the input frequency b)
- Half of supply frequency d) Nearly equal to zero

Set

Max. Marks: 70

to provide discharging path for capacitor a) it improves regulation characteristics b) c) both a & b d) is same as load resistor 10) The circuit shown below is _____. Positive clipper b) Negative clipper a) Half wave rectifier d) Clamper c) 11) Forward drop across diode will ____ ____ with increase in temperature. Increases b) Decreases a) d) Becomes zero **Remains same** c) 12) The PIV for bridge rectifier is ____ b) Vm 2Vm a) vmd) $vm/\sqrt{2}$ C) 2 Gain of an amplifier fall at high frequency due to ____ 13) b) Bypass capacitor Coupling capacitor a) C) Junction capacitance d) Both a & b The process of base width modulation in transistor is called as _____. 14) Biasing b) Thermal runaway a)

The function of bleeder resistor in power supply is.

Early effect c)

9)

d) Compensation

SLR-FM-661

Set S

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.
- 4) Use of data sheet is allowed.

Section – I

Q.2 Attempt any four

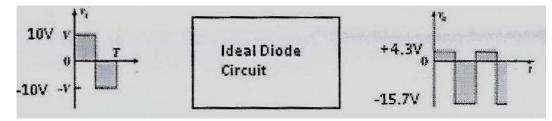
Seat

No.

- a) Explain VI characteristics from diode current equation. What is static and dynamic resistance of diode.
- b) Explain the working of full wave voltage doubler circuit.
- c) Describe operation of series positive and series negative clipper. Also draw transfer characteristics curve.
- d) Explain any three application of Zener diode with suitable circuit diagram.
- e) Design an inductor filter to provide 100V output at 300 Ω load with peak ripple voltage not exceeding 10V. Use bridge rectifier.

Q.3 Attempt any two

- a) Explain working of LC filter. Derive an expression of its ripple factor.
- **b)** Derive an expression of Vdc, Vrms, Rectification efficiency, Ripple factor for full wave rectifier. Draw associate circuit diagram and waveforms.
- c) What is clamper? Describe operation of negative clamper. Draw a suitable circuit to perform function indicated.



Section – II

Q.4 Attempt any four

- a) Draw hybrid model for CE amplifier and explain its h parameters.
- **b)** Explain DC load line for BJT and explain significance of Q point.
- c) Explain drain and transfer characteristics of N channel DMOSFET.
- **d)** What is Early effect? How it affects the BJT characteristics in CB configuration.
- e) Explain working of Schmitt trigger with suitable circuit.

Q.5 Attempt any two

- a) Explain working of as table multivibrator with neat circuit diagram and output waveform. Derive frequency of oscillation of astable multivibrator.
- **b)** Design a single stage CE amplifier for voltage gain of 200,stability factor 5 and operating point(6V,2mA) and frequency range 20Hz to 20KHz. Use transistor BC 547 with PD=250mW, hfe=250, hie=4.8KΩ, 1/hoe=1MΩ.
- c) Draw a circuit diagram of Voltage divider bias circuit and explain how it stabilizes the operating point. Derive an expression of its stability factor.

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Max. Marks: 56

16

NETWORK THEORY & ANALYSIS

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book

- 2) All questions are compulsory.
- 3) Assume the suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

- 1) The time constant of a series RC circuit is
 - a) *RC*
 - $\frac{R}{C}$ d) c)
- 2) The function is said to be having simple poles and zeros only if _____.
 - The poles are not repeated a)
 - The zeros are not repeated b)
 - The poles and zeros are not repeated c)
 - d) none of the above
- 3) Cascade connection of LPF with cutoff frequency f1 and HPF with cutoff frequency f₂ gives band pass filter if
 - a) $f_1 < f_2$
 - c) $f_1 = f_2$ d)
- The Z parameters Z_{11} and Z_{21} are obtained by _ 4)
 - a) by shorting input terminals b) by opening input terminals by shorting output terminals C)
- If the degree of the node is two, then it indicates that two branches are 5)

incident at node and these are in

- Parallel a) Series b) c) Both a) & b) d) None
- Maximum power is transferred when the load impedance is equal to _____. 6)
 - a) Source impedance Zero b)
 - Half of Source Impedance None d) C)
- 7) If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 2800 Hz. what is the bandwidth?
 - a) 400Hz 2400Hz b)
 - c) 2800Hz d) 5200Hz
- 8) The s-domain equivalent of the inductor reduces to an inductor with impedance?
 - a) L b) SL S³L c) S^2L d)

SLR-FM-662

Set

Max. Marks: 70

Marks: 14

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Seat No.

> С b) R e^{-RLC}

b) $f_1 > f_2$

none of the above

by opening output terminals d)

			SLR-FM-662
			Set P
9)	Mesh Analysis is based on a) Kirchhoff's Voltage Law c) None	b)	Kirchhoff's Current Law
10)	For an R-L-C circuit, we get [D - (K1 positive, then the curve will be? a) Damped c) under damped	b))][D - (K1 - K2)] i = 0. If K2 is over damped critically damped
11)	The two port network is said to be sy a) $Y_{11}=Y_{22}$ c) $A = C$	b)	trical if $Z_{12} = Z_{21}$ None
12)	Inductor has a property that it doesn a) Current c) L	't allo b) d)	w sudden changes in Voltages None
13)	lf a series circuit RLC circuit, the qua a) C c) ωC	b) d)	ωRC 1/ωRC
14)	The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is a) $Z_{0T} = \frac{Z1Z1}{Z0\pi}$		
	C) $7_{0}\pi - \frac{Z1Z2}{T}$	d)	None

c) $Z_0\pi = \frac{Z_{1ZZ}}{Z_0T}$

d) None

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Set

Seat No.

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

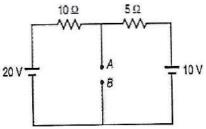
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- **c)** The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

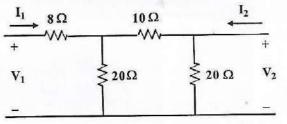
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown



b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

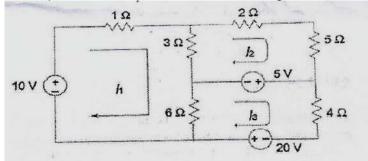
Max. Marks: 56

16

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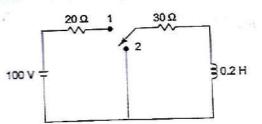
c) Write the mesh equations for the circuit show in Fig 2.31.



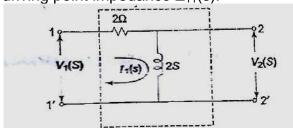


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500 Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

16

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering NETWORK THEORY & ANALYSIS** Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book 2) All questions are compulsory. 3) Assume the suitable data whenever necessary. MCQ/Objective Type Questions **Duration: 30 Minutes**

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

01100			3 nom the o	puons and		Jein
1)	The s-domain	equivalent o	f the inductor	r reduces to	o an inductor	with
	impedance?					

a)		b)	SL
c)	S ² L	d)	S ³ L

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No.

2)	Mesh Analysis is based on		
-	a) Kirchhoff's Voltage Law	b)	Kirchhoff's Current Law
	c) None		

- 3) For an R-L-C circuit, we get [D - (K1 + K2)][D - (K1 - K2)] i = 0. If K2 is positive, then the curve will be? a) Damped over damped b)
 - c) under damped d) critically damped
- The two port network is said to be symmetrical if _____ 4)
 - a) $Y_{11}=Y_{22}$ b) $Z_{12} = Z_{21}$ c) A = Cd) None
- Inductor has a property that it doesn't allow sudden changes in _____. 5) Current b) Voltages a)
- L d) None c) If a series circuit RLC circuit, the quality factor is defined as _____. 6) a) C ωRC b)
 - c) ωC d) $1/\omega RC$

7) The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is given as Z1Z1

$Z_{0T} = \frac{Z1Z1}{Z0\pi}$	b)	$Z_{0T} = \frac{Z2Z2}{Z0\pi}$
$Z_0 \pi = \frac{Z_1 Z_2}{Z_0 T}$	d)	None

- The time constant of a series RC circuit is _ 8)
 - С a) RC b) R $\frac{R}{C}$ e^{-RLC} d) C)

9) The function is said to be having simple poles and zeros only if _____.

- a) The poles are not repeated
- b) The zeros are not repeated
- c) The poles and zeros are not repeated
- d) none of the above

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Set Q

Max. Marks: 70

Marks: 14

- 10) Cascade connection of LPF with cutoff frequency f₁ and HPF with cutoff frequency f₂ gives band pass filter if a) $f_1 < f_2$
 - $f_1 > f_2$ b)
 - c) $f_1 = f_2$

- none of the above d)
- The Z parameters Z_{11} and Z_{21} are obtained by _ 11)
 - a) by shorting input terminals
- by opening input terminals b) d)
- c) by shorting output terminals
- by opening output terminals
- If the degree of the node is two, then it indicates that two branches are 12) incident at node and these are in b) Parallel
 - a) Series
 - None c) Both a) & b) d)

13) Maximum power is transferred when the load impedance is equal to _____. Zero b)

- Source impedance a)
- Half of Source Impedance C) d) None
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 14) 2800 Hz, what is the bandwidth?
 - a) 400Hz
 - c) 2800Hz

- b) 2400Hz
- d) 5200Hz



Set

SLR-FM-662

Set

Seat No.

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

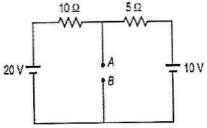
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- c) The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

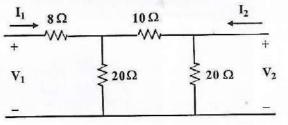
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown



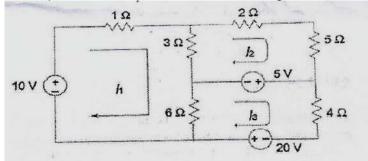
b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

Max. Marks: 56

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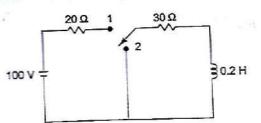
c) Write the mesh equations for the circuit show in Fig 2.31.



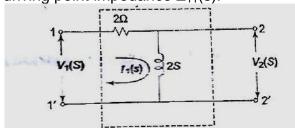


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500 Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
- c) Explain the Routh Criteria for stability. For the given denominator polynomial of the network function, verify the stability of the network function using Routh criteria.

 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

NETWORK THEORY & ANALYSIS

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book

- 2) All questions are compulsory.
- 3) Assume the suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

c)

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Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) If the degree of the node is two, then it indicates that two branches are incident at node and these are in
 - a) Series
 - c) Both a) & b) None d)
- 2) Maximum power is transferred when the load impedance is equal to _____.
 - a) Source impedance Half of Source Impedance c)
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 3) 2800 Hz, what is the bandwidth?
 - a) 400Hz b) 2400Hz
 - 5200Hz c) 2800Hz d)
- 4) The s-domain equivalent of the inductor reduces to an inductor with impedance? SL
 - a) L b) c) S^2L d)
- Mesh Analysis is based on 5)
 - a) Kirchhoff's Voltage Law b) Kirchhoff's Current Law c) None
- For an R-L-C circuit, we get [D (K1 + K2)][D (K1 K2)] i = 0. If K2 is 6) positive, then the curve will be?
 - a) Damped b) over damped c) under damped d) critically damped
- 7) The two port network is said to be symmetrical if _
 - a) $Y_{11}=Y_{22}$ b) $Z_{12} = Z_{21}$ None c) A = Cd)
- Inductor has a property that it doesn't allow sudden changes in . 8)
 - a) Current Voltages b) c) L
 - d) None
- If a series circuit RLC circuit, the quality factor is defined as . 9) a)
 - С ωRC b) 1/ωRC ωC d)

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Max. Marks: 70

Marks: 14

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- - b) Zero
- b)

 - d) None

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The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} is given as _____ 2) Z_{2T} b) $Z_{0T} = \frac{Z2Z2}{T2}$ 10)

c)
$$Z_{0T} = \frac{1}{Z_{0T}}$$
 c) $Z_{0T} = \frac{1}{Z_{0T}}$ d) None

- 11)
- c) $Z_0 \pi = \frac{Z1Z2}{Z0T}$ The time constant of a series RC circuit is b) $\frac{C}{R}$ d) e^{-RLC} $\frac{R}{C}$
- 12) The function is said to be having simple poles and zeros only if _____.
 - a) The poles are not repeated
 - b) The zeros are not repeated
 - c) The poles and zeros are not repeated
 - d) none of the above
- Cascade connection of LPF with cutoff frequency f1 and HPF with cutoff 13) frequency f2 gives band pass filter if _
 - a) $f_1 < f_2$

- $f_1 > f_2$ b)
- c) $f_1 = f_2$ d) none of the above
- 14) The Z parameters Z_{11} and Z_{21} are obtained by ____
 - a) by shorting input terminals
- b) by opening input terminals
- c) by shorting output terminals
- d) by opening output terminals

Set

Seat No.

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

2) Assume the suitable data if necessary.

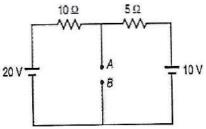
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
- b) A series RLC circuit is supplied at 220v, 50 Hz. At resonance the voltage across the capacitor is 550 V and current I=1A. Determine the circuit constants.
- c) The port currents of a two port network are given by $I_1 = 2.5V_1 V_2$ $I_2 = -V_1 + 5V_2$

Find the equivalent π -network

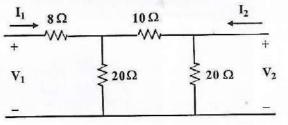
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown

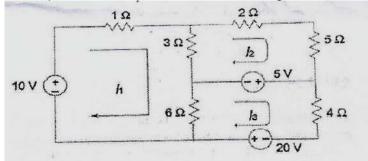


b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

Max. Marks: 56



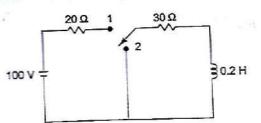
c) Write the mesh equations for the circuit show in Fig 2.31.



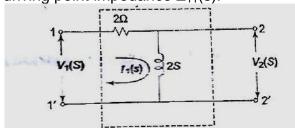


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500 Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
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 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

		NETWORK THEOF	XY &	ANALYSIS
		e: Thursday,12-12-2019 00 AM To 01:00 PM		Max. Marks: 70
Instr	uctio	 ns: 1) Q. No. 1 is compulsory and sho book 2) All questions are compulsory. 3) Assume the suitable data when 		be solved in first 30 minutes in answer necessary.
		MCQ/Objective T		
Dura	tion: 3	30 Minutes	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Marks: 14
Q.1	Cho 1)	ose the correct alternatives from the For an R-L-C circuit, we get [D - (K1 positive, then the curve will be?	+ K2	2)][D - (K1 - K2)] i = 0. If K2 is
		a) Damped c) under damped	b) d)	over damped critically damped
	2)	The two port network is said to be s a) $Y_{11}=Y_{22}$ c) $A = C$	ymme b) d)	
	3)	Inductor has a property that it doesr a) Current c) L	i't allc b) d)	w sudden changes in Voltages None
	4)	If a series circuit RLC circuit, the qua a) C c) ωC	alitý fa b) d)	actor is defined as ωRC 1/ωRC
	5)	The relation between $Z_{0\pi}$, Z_1 , Z_2 , Z_{0T} a) $Z_{0T} = \frac{Z1Z1}{Z0\pi}$	is giv b)	en as $Z_{0T} = \frac{Z2Z2}{Z0\pi}$.
		C) $Z_0 \pi = \frac{Z1Z2}{Z0T}$	d)	None
	6)	The time constant of a series RC cir a) <i>RC</i>	b)	$\frac{C}{R}$
		C) $\frac{R}{C}$	d)	e^{-RLC}
	7)	 The function is said to be having sin a) The poles are not repeated b) The zeros are not repeated c) The poles and zeros are not rep d) none of the above 		
	8)	Cascade connection of LPF with cut frequency f_2 gives band pass filter if a) $f_1 < f_2$ c) $f_1 = f_2$		
	9)	The Z parameters Z_{11} and Z_{21} are o a) by shorting input terminals	b)	ed by by opening input terminals

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S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** NETWORK THEORY & ANALYSIS

Q 4

- b)
- c) by shorting output terminals
- by opening input terminals d) by opening output terminals

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- 10) If the degree of the node is two, then it indicates that two branches are incident at node and these are in _
 - a) Series Parallel b)
 - c) Both a) & b) d) None
- 11) Maximum power is transferred when the load impedance is equal to . Zero
 - Source impedance a) b) C)
 - None Half of Source Impedance d)
- If the lower cutoff frequency is 2400 Hz and the upper cut off frequency is 12) 2800 Hz, what is the bandwidth?
 - a) 400Hz b) 2400Hz
 - c) 2800Hz d) 5200Hz
- 13) The s-domain equivalent of the inductor reduces to an inductor with impedance?
 - a) L b) SL c) S^2L S³L d)
- Mesh Analysis is based on _____. 14)
 - a) Kirchhoff's Voltage Law
 - c) None

Kirchhoff's Current Law b)

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Seat

No.

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering NETWORK THEORY & ANALYSIS

Day & Date: Thursday,12-12-2019 Time: 10.00 AM To 01.00 PM

Instructions: 1) All questions are compulsory.

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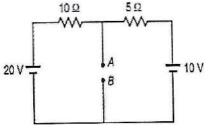
Section - I

Q.2 Attempt any Four:

- a) State and Prove Maximum Power Transfer theorem with an example.
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Find the equivalent π -network

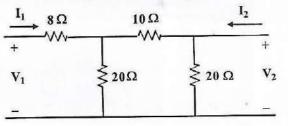
d) Determine the Norton's equivalent circuit at terminals AB for the circuit show below



e) In a series RLC circuit a maximum current of 0.1A flows through circuit when the capacitor is 5µf, inductor is 0.1H with a fixed frequency at voltage of 5V. Determine the frequency at which the circuit resonates, the bandwidth, the quality factor Q and the value of resistance at resonant frequency.

Q.3 Attempt any Two:

a) Find the Z parameters for the circuit shown

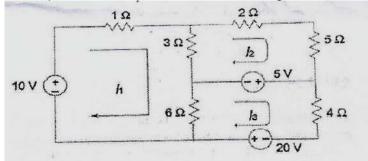


b) Prove that bandwidth of series RLC circuit is $\frac{R}{2\pi L}$. Also prove that $Q = \frac{Xl}{R}$

Max. Marks: 56



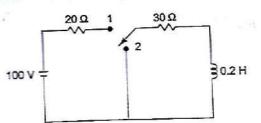
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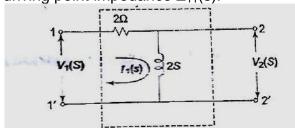


Q.4 Attempt any four:

a) For the circuit shown, find the current equation when the switch is changed from position 1 to position 2 at t=0



- **b)** Enlist the necessary conditions for driving point function.
- c) For the network shown in figure, obtain the transfer functions $G_{21}(s)$ and $Z_{21}(s)$ and the driving point impedance $Z_{11}(s)$.



- d) Design a T section low pass filter having a cut-off frequency of 2kHz to operate with a terminated load resistance of 500Ω .
- e) Design a T -pad attenuator to give an attenuation of 60 dB and to work in a line of 500 Ω impedance.

Q.5 Attempt any two.

- a) Explain in detail the DC response of series RLC circuit.
- **b)** Derive the equations for L_1 , C_1 , L_2 , and C_2 of Band Pass Filter.
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 $Q(S) = S^4 + \tilde{S}^3 + 2S^2 + 2S + 12$

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Seat No.		Se	t	Ρ		
S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN						
		e: Saturday,14-12-2019 Max. Mar 00 AM To 01:00 PM	ks:	70		
Instru	ictior	ns: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in ans book.	we	€r		
		2) Figures to the right indicate full marks.				
Durati		MCQ/Objective Type Questions	l.a.			
		B0 Minutes Mar	KS:			
	Choo 1)	ose the correct alternatives from the options and rewrite the sentence. According to Boolean algebra (A+AB) equals		14		
	,	a) A b) B				
		c) AB d) A+B				
	2)	A Four Variable K map has a a) 8 min-terms b) 16 min-terms				
		c) 32 min-terms d) None of these				
	3)	Each term in standard POS form is called as				
		a) Minterm b) Maxterm c) Don't care d) Literals				
	4)	· · · ·				
	4)	The NAND-NAND realization is equivalent to a) AND-NOT realization b) AND-OR realization				
		c) OR-AND realization d) NOT-OR realization				
:	5)	8421 code is				
		 a) self complimenting code b) weighted code c) non weighted code d) alphanumeric code 				
	6)	The following code is not a BCD code				
	-,	a) Gray code b) XS-3 code				
		c) 8421 code d) all of the above				
	7)	A TTL circuit acts as a current source in the a) low state				
		a) low state b) high state c) high impedance state d) none of these				
	8)	A flip flop has states.				
		a) Four b) One				
	\sim	c) Two d) Three				
	9)	The functional difference between S-R flip-flop and J-K flip flop is that				
		 J-K flip-flop is faster than S-R flip-flop J-K flip-flop has feedback path 				

- b) J-K flip-flop has feedback path
 c) J-K flip-flop accepts both inputs 1
 d) J-K flip flop does not require external clock

- 10) The digital circuit that can count clock pulse is called as _____.
 - a) Latch

c) Shift register

- Counter b)
- d) Trigger

- 11) A PLA is _____.
 - a) a LSI device c) a SSI Device

- b) a MSI device
- d) a discrete Device
- A combinational PLD with a fixed AND array and programmable OR array 12) is called _____.
 - a) PLD b) PROM
 - c) PAL d) PLA
- The output of the Moore machine is the function of _____. 13)
 - a) next state
 - b) present inputs
 - c) present state and present inputs
 - d) present state
- 14 A demultiplexer can be used to realize a _
 - a) Counter

- Shift register b)
- c) Combination circuit d) **Display system**

Set

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN

Day & Date: Saturday,14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four.

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 2) $(DBCA.B)_{16}$ to base 10
- **b)** Design and implement full subtractor using a 4:1 multiplexer.
- c) Define the following terms with examples.
 - 1) Minterm, Maxterm 2) Canonical SOP, Canonical POS
- d) Derive a code table for BCD code 5421 which satisfies self complementary property.
- d) Write both SOP and POS expressions for a two-input EXNOR gate and a two-input OR gate.

Q.3 Attempt any two.

a) Implement the following Boolean function F, using the two-level forms of logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR:

 $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

- b) Design and implement 1:8 de-multiplexer using NAND gates only.
- c) Design and implement an odd parity generator for 3 bit information using an 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- a) Design a 2 bit gray to binary code converter using a PAL.
- **b)** Design a 3-bit ripple counter. What is the modulus of the counter?
- c) Design a D flip-flop using T flip-flop.
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- e) What is a shift register? Explain SISO shift register in detail.

Max. Marks: 56

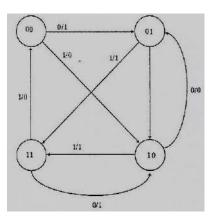
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16

Set P

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



<u>NO.</u>	S.E. (Part – I) (Old) (CGPA) Exa
Seat No.	

mination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) A flip flop has _____ states.
 - a) Four b) One c) Two d) Three
- 2) The functional difference between S-R flip-flop and J-K flip flop is that
 - a) J-K flip-flop is faster than S-R flip-flop
 - b) J-K flip-flop has feedback path
 - c) J-K flip-flop accepts both inputs 1
 - d) J-K flip flop does not require external clock
- The digital circuit that can count clock pulse is called as . 3) b) Counter
 - a) Latch
 - c) Shift register
- A PLA is 4)
 - a) a LSI device

a MSI device b)

Trigger

- c) a SSI Device
- d) a discrete Device
- A combinational PLD with a fixed AND array and programmable OR array 5) is called .

d)

- a) PLD b) PROM c) PAL d) PLA
- The output of the Moore machine is the function of . 6)
 - a) next state
 - b) present inputs
 - c) present state and present inputs
 - d) present state

7) A demultiplexer can be used to realize a

- Counter Shift register a) b)
- c) Combination circuit d) Display system

According to Boolean algebra (A+AB) equals _____. 8)

- a) A b) В c) AB
 - d) A+B
- A Four Variable K map has a ____ 9) a) 8 min-terms b) 16 min-terms
 - c) 32 min-terms d) None of these



Max. Marks: 70

Each term in standard POS form is called as _____. 10) a) Minterm b) Maxterm c) Don't care d) Literals 11) The NAND-NAND realization is equivalent to _____ _-a) AND-NOT realization b) **AND-OR realization** c) OR-AND realization **NOT-OR realization** d) 12) 8421 code is a) self complimenting code weighted code b) c) non weighted code alphanumeric code d) The following code is not a BCD code 13) a) Gray code XS-3 code b) c) 8421 code all of the above d) 14) A TTL circuit acts as a current source in the high state a) low state b) c) high impedance state d) none of these

SLR-FM-663

Set

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Attempt any four. Q.2

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 (DBCA.B)₁₆ to base 10 2)
- Design and implement full subtractor using a 4:1 multiplexer. b)
- C) Define the following terms with examples.
 - Minterm, Maxterm 1) 2) Canonical SOP, Canonical POS
- Derive a code table for BCD code 5421 which satisfies self complementary d) property.
- Write both SOP and POS expressions for a two-input EXNOR gate and a d) two-input OR gate.

Q.3 Attempt any two.

Implement the following Boolean function F, using the two-level forms of a) logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR: $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

Design and implement 1:8 de-multiplexer using NAND gates only.

b) Design and implement an odd parity generator for 3 bit information using an C) 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- Design a 2 bit gray to binary code converter using a PAL. a)
- Design a 3-bit ripple counter. What is the modulus of the counter? b)
- Design a D flip-flop using T flip-flop. c)
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- What is a shift register? Explain SISO shift register in detail. e)

Max. Marks: 56

12

16

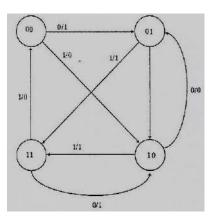
16

Set

Set Q

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



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Set	R

Max. Marks: 70

Marks: 14

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL LOGIC DESIGN

Day & Date: Saturday,14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
 - 1) 8421 code is ____
 - a) self complimenting codec) non weighted code
- b) weighted coded) alphanumeric code
- ted code d) alpha
- The following code is not a BCD code _____
 - a) Gray code b) XS-3 code
 - c) 8421 code d) all of the above

3) A TTL circuit acts as a current source in the _____

- a) low state b) high state
- c) high impedance state d) none of these
- 4) A flip flop has _____ states.
 - a) Four b) One c) Two d) Three
- 5) The functional difference between S-R flip-flop and J-K flip flop is that
 - a) J-K flip-flop is faster than S-R flip-flop
 - b) J-K flip-flop has feedback path
 - c) J-K flip-flop accepts both inputs 1
 - d) J-K flip flop does not require external clock
- 6) The digital circuit that can count clock pulse is called as _____.
 - a) Latch
 - c) Shift register

- b) Counter
- d) Trigger

- 7) A PLA is _____
 - a) a LSI device
 - c) a SSI Device

- b) a MSI device
- d) a discrete Device
- A combinational PLD with a fixed AND array and programmable OR array is called _____.
 - a) PLD b) PROM
 - c) PAL d) PLA
- 9) The output of the Moore machine is the function of _____.
 - a) next state
 - b) present inputs
 - c) present state and present inputs
 - d) present state

A demultiplexer can be used to realize a ____ 10) . a) Counter Shift register b) c) Combination circuit d) **Display system** According to Boolean algebra (A+AB) equals _____. 11) a) A b) В c) AB A+B d) A Four Variable K map has a _____. 12) a) 8 min-terms b) 16 min-terms c) 32 min-terms None of these d) Each term in standard POS form is called as _____. 13) a) Minterm b) Maxterm c) Don't care d) Literals 14) The NAND-NAND realization is equivalent to _____ a) AND-NOT realization **AND-OR** realization b)

c) OR-AND realization d) NOT-OR realization

SLR-FM-663

Set R

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Attempt any four. Q.2

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 (DBCA.B)₁₆ to base 10 2)
- Design and implement full subtractor using a 4:1 multiplexer. b)
- C) Define the following terms with examples.
 - Minterm, Maxterm 2) Canonical SOP, Canonical POS 1)
- Derive a code table for BCD code 5421 which satisfies self complementary d) property.
- Write both SOP and POS expressions for a two-input EXNOR gate and a d) two-input OR gate.

Q.3 Attempt any two.

Implement the following Boolean function F, using the two-level forms of a) logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR: $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

Design and implement 1:8 de-multiplexer using NAND gates only.

b) Design and implement an odd parity generator for 3 bit information using an C) 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- Design a 2 bit gray to binary code converter using a PAL. a)
- Design a 3-bit ripple counter. What is the modulus of the counter? b)
- Design a D flip-flop using T flip-flop. c)
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- What is a shift register? Explain SISO shift register in detail. e)

Max. Marks: 56

12

16

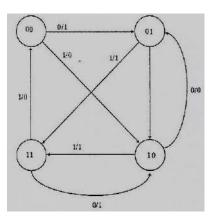
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Set

Set R

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- b) A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



Electronics Engineering DIGITAL LOGIC DESIGN					
Day & Date: Saturday,14-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM					
Instruct	Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.				
	2	Figures to the right indicate full	mark	S.	
		MCQ/Objective Ty	ype (
Duratior	n: 30 Mi	nutes		Marks: 14	
Q.1 C 1)) The	e digital circuit that can count cloc Latch	-	ions and rewrite the sentence. 14 se is called as Counter Trigger	
2)	a)	PLA is a LSI device a SSI Device	b) d)	a MSI device a discrete Device	
3)	is c a)	ombinational PLD with a fixed AN alled PLD PAL	ID arr b) d)	ay and programmable OR array PROM PLA	
 4) The output of the Moore machine is the function of a) next state b) present inputs c) present state and present inputs d) present state 			inction of		
5)) A d a) c)	emultiplexer can be used to realiz Counter Combination circuit	ze a _ b) d)		
6)	a)	cording to Boolean algebra (A+AE A AB	8) equ b) d)	ials B A+B	
7)) A F a) c)	our Variable K map has a 8 min-terms 32 min-terms	b) d)	16 min-terms None of these	
8)) Ead a) c)	ch term in standard POS form is o Minterm Don't care	alled b) d)	as Maxterm Literals	
9)		NAND-NAND realization is equi AND-NOT realization OR-AND realization		t to AND-OR realization NOT-OR realization	
1(,	21 code is self complimenting code non weighted code	b) d)	weighted code alphanumeric code	

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

Seat No.

SLR-FM-663

Set

S

- 11) The following code is not a BCD code
 - a) Gray code

- XS-3 code b)
- c) 8421 code d) all of the above
- A TTL circuit acts as a current source in the _ 12)
 - a) low state
 - c) high impedance state
- A flip flop has _____ states. 13)
 - a) Four c) Two Three d)
- The functional difference between S-R flip-flop and J-K flip flop is that 14)
 - J-K flip-flop is faster than S-R flip-flop a)
 - b) J-K flip-flop has feedback path
 - c) J-K flip-flop accepts both inputs 1
 - d) J-K flip flop does not require external clock

Set S

- b) high state
- none of these d)
- b)
- One

Set

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL LOGIC DESIGN

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Attempt any four. Q.2

- a) Convert the following numbers to indicated bases:
 - 1) $(1010.1101)_2$ to base 8 (DBCA.B)₁₆ to base 10 2)
- Design and implement full subtractor using a 4:1 multiplexer. b)
- C) Define the following terms with examples.
 - 2) Canonical SOP, Canonical POS Minterm, Maxterm 1)
- Derive a code table for BCD code 5421 which satisfies self complementary d) property.
- Write both SOP and POS expressions for a two-input EXNOR gate and a d) two-input OR gate.

Q.3 Attempt any two.

Implement the following Boolean function F, using the two-level forms of a) logic (a) NANDAND, (b) AND-NOR, (c) OR-NAND, and (d) NOR-OR:

 $F(A, B, C, D) = \sum m(0, 1, 2, 8, 11) + d(3, 8, 15)$

- Design and implement 1:8 de-multiplexer using NAND gates only. b)
- Design and implement an odd parity generator for 3 bit information using an C) 8:1 multiplexer and a parity checker for the same using a 16:1 multiplexer.

Section – II

Q.4 Attempt any four.

- Design a 2 bit gray to binary code converter using a PAL. a)
- Design a 3-bit ripple counter. What is the modulus of the counter? b)
- Design a D flip-flop using T flip-flop. c)
- d) Draw and explain a 4-bit twisted ring counter using shift register.
- What is a shift register? Explain SISO shift register in detail. e)

Max. Marks: 56

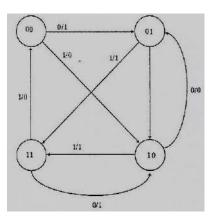
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16

Set S

Q.5 Attempt any two.

- a) Design a mod 6 synchronous up counter using T flip-flop. Draw neat logic diagram and waveforms.
- **b)** A JK flip -flop has four operations no change, clear to 0, set to 1 and complement, when inputs J and K are 00, 01, 10 and 11 respectively. Design a JK flip-flop using SR flip-flop.
- c) Design a sequential circuit specified by state diagram shown using D flipflops.



Assume suitable data if necessary. MCQ/Objective Type Questions Marks: 14 14 Choose the correct alternatives from the options. 1) The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, *is 600 a) b) 350 d) 588 650 C) If the elements "A", "B", "C" and "D" are placed in a queue and are 2) deleted one at a time, in what order will they be removed? a) ABDC DCBA b) c) DCAB d) ABCD A linear collection of data elements where the linear node is given by 3) means of pointer is called a) Linked list b) Node list c) Primitive list None of the mentioned d) Recursion is similar to which of the following _ 4) Switch Case Loop a) b) c) If-else d) None of the mentioned The data structure required to check whether an expression contains 5) balanced parenthesis is Stack b) Queue a) c) Array d) Tree In linked list implementation of a queue, from where is the item deleted? 6) a) At the tail of the link list b) At the centre position in the link list c) At the head of link list d) None of the mentioned 7) What is the complexity of searching for a particular element in a Singly Linked List?

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** DATA STRUCTURES

- 2) Figures to the right indicate full marks.

Duration: 30 Minutes

Q.1

SLR-FM-664



- a) nlogn
- c) logn

Seat No.

Max. Marks: 70

	SLR-FM-664
	Set P
8)	To obtain a prefix expression, which of the tree traversals is used? a) Level-order traversal b) Pre-order traversal c) Post-order traversal d) In-order traversal
9)	Adjacency matrix of all graphs are symmetric. a) False b) True
10)	What is the best case for linear search?a) O(nlogn)b) O(logn)c) O(n)d) O(1)
11)	What is the search complexity in Hashing? a) O(n) b) O(logn) c) O(nlogn) d) O(1)
12)	 What is the advantage of bubble sort over other sorting techniques? a) It is faster b) Consumes less memory c) Detects whether the input is already sorted d) All of the mentioned
13)	For the adjacency matrix of a directed graph the row sum is the degree and the column sum is the degree. a) in, out
14)	In a binary search tree, which of the following traversals would print the numbers in the ascending order?

- a) Level-order traversalc) Post-order traversal
- b) Pre-order traversal
- In-order traversal d)

Seat	
No.	

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Write a short note on deque.
- b) Define stack. Explain the push and pop operations of stack with C routine.
- c) Describe the addition of two polynomials using linked list.
- d) Write a program in 'C' to calculate the factorial of a number using recursion
- e) Evaluate the following postfix expression : 1, 2, 3, *, +, 4,-

Q.3 Attempt any two.

- a) Write a program in 'C' to implement stack using array.
- b) Explain the dynamic storage allocation for recursion using flowchart
- **c)** Write short notes on:
 - 1) Avail list
 - 2) Doubly linked list

Section – II

Q.4 Attempt any four.

- a) How to represent a graph using adjacency linked list?
- b) Explain insertion sort. Sort the following sequence in ascending order using insertion sort.
 - 14, 33, 27, 10, 35, 19, 42, 44
- c) Define hashing. Explain the following hash functions with example.
 - 1) Mid square method
 - 2) Folding method
- d) Compare binary search and linear search.
- e) Explain the different tree traversal method.

Q.5 Attempt any two:

- a) Explain any one graph traversal method with flowchart and example.
- **b)** What is hash collision? Explain open addressing technique in detail.
- c) 1) Define the following terms:
 - i) Depth of the tree
 - ii) Ancestor node
 - iii) Descendent node
 - 2) Explain the threaded binary trees

Max. Marks: 56

Set

12

16

16

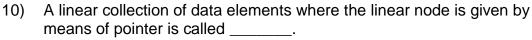
DATA STRUCTURES					
Day & Date: Tuesday,17-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Max. Marks: 70					
Instr	uctio	ns: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer			
	book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary.				
		MCQ/Objective Type Questions			
Dura	ition: 3	30 Minutes Marks: 14			
Q.1	Cho 1)	ose the correct alternatives from the options.14To obtain a prefix expression, which of the tree traversals is used?14a) Level-order traversalb) Pre-order traversalc) Post-order traversald) In-order traversal			
	2)	Adjacency matrix of all graphs are symmetric. a) False b) True			
	3)	What is the best case for linear search?a) O(nlogn)b) O(logn)c) O(n)d) O(1)			
	4)	What is the search complexity in Hashing?a) O(n)b) O(logn)c) O(nlogn)d) O(1)			
	5)	 What is the advantage of bubble sort over other sorting techniques? a) It is faster b) Consumes less memory c) Detects whether the input is already sorted d) All of the mentioned 			
	6)	For the adjacency matrix of a directed graph the row sum is thedegree and the column sum is thedegree.a) in, outb) out, inc) in, totald) total, out			
	7)	In a binary search tree, which of the following traversals would print the numbers in the ascending order? a) Level-order traversal b) Pre-order traversal c) Post-order traversal d) In-order traversal			
	8)	The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, * is a) 600 b) 350 c) 650 d) 588			
	9)	If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?			

Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

Set Q

- - a) ABDC DCBA b) ABCD
 - c) DCAB d)



a) Linked list

c) Primitive list

Switch Case

a)

- b) Node list
- d) None of the mentioned

SLR-FM-664

Set Q

- 11) Recursion is similar to which of the following _____
 - b) Loop
 - c) If-else d) None of the mentioned
- 12) The data structure required to check whether an expression contains balanced parenthesis is _____.
 - a) Stack b) Queue
 - c) Array d) Tree
- 13) In linked list implementation of a queue, from where is the item deleted?
 - a) At the tail of the link list
 - b) At the centre position in the link list
 - c) At the head of link list
 - d) None of the mentioned
- 14) What is the complexity of searching for a particular element in a Singly Linked List?
 - a) nlogn b) O(1)
 - c) logn d) O(n)

Seat	
No.	

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Write a short note on deque.
- **b)** Define stack. Explain the push and pop operations of stack with C routine.
- c) Describe the addition of two polynomials using linked list.
- d) Write a program in 'C' to calculate the factorial of a number using recursion
- e) Evaluate the following postfix expression : 1, 2, 3, *, +, 4,-

Q.3 Attempt any two.

- a) Write a program in 'C' to implement stack using array.
- b) Explain the dynamic storage allocation for recursion using flowchart
- **c)** Write short notes on:
 - 1) Avail list
 - 2) Doubly linked list

Section – II

Q.4 Attempt any four.

- a) How to represent a graph using adjacency linked list?
- b) Explain insertion sort. Sort the following sequence in ascending order using insertion sort.
 - 14, 33, 27, 10, 35, 19, 42, 44
- c) Define hashing. Explain the following hash functions with example.
 - 1) Mid square method
 - 2) Folding method
- d) Compare binary search and linear search.
- e) Explain the different tree traversal method.

Q.5 Attempt any two:

- a) Explain any one graph traversal method with flowchart and example.
- b) What is hash collision? Explain open addressing technique in detail.
- c) 1) Define the following terms:
 - i) Depth of the tree
 - ii) Ancestor node
 - iii) Descendent node
 - 2) Explain the threaded binary trees

Max. Marks: 56

12

16

16

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Seat

2)

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options.

- The data structure required to check whether an expression contains balanced parenthesis is _____.
 - a) Stack b) Queue
 - c) Array d) Tree
 - In linked list implementation of a queue, from where is the item deleted? a) At the tail of the link list
 - b) At the centre position in the link list
 - c) At the head of link list
 - d) None of the mentioned
- 3) What is the complexity of searching for a particular element in a Singly Linked List?
 - a) nlogn b) O(1)
 - c) logn d) O(n)
- 4) To obtain a prefix expression, which of the tree traversals is used?
 - a) Level-order traversal b) Pre-order traversal
 - c) Post-order traversal d) In-order traversal

5) Adjacency matrix of all graphs are symmetric.a) Falseb) True

- 6) What is the best case for linear search?
 - a) O(nlogn) b) O(logn)
 - c) O(n) d) O(1)
- 7) What is the search complexity in Hashing?
 - a) O(n) b) O(logn)
 - c) O(nlogn) d) O(1)
- 8) What is the advantage of bubble sort over other sorting techniques?
 - a) It is faster
 - b) Consumes less memory
 - c) Detects whether the input is already sorted
 - d) All of the mentioned

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R

Max. Marks: 70

Marks: 14

			Set
9)	For the adjacency matrix of a direct degree and the column sum is the _ a) in, out c) in, total		degree. out, in
10)	In a binary search tree, which of the numbers in the ascending order? a) Level-order traversal c) Post-order traversal	b)	owing traversals would print the Pre-order traversal In-order traversal
11)	The result of evaluating the postfix e is a) 600 c) 650	expre b) d)	ession 5, 4, 6, +, *, 4, 9, 3, /, +, * 350 588
12)	If the elements "A", "B", "C" and "D" deleted one at a time, in what order a) ABDC c) DCAB	will	-
13)	 A linear collection of data elements means of pointer is called a) Linked list c) Primitive list 	whei b) d)	
14)	Recursion is similar to which of the a) Switch Case	follo\ b)	ving Loop

c) If-else

b) Loopd) None of the mentioned

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Write a short note on deque.
- **b)** Define stack. Explain the push and pop operations of stack with C routine.
- c) Describe the addition of two polynomials using linked list.
- d) Write a program in 'C' to calculate the factorial of a number using recursion
- e) Evaluate the following postfix expression : 1, 2, 3, *, +, 4,-

Q.3 Attempt any two.

- a) Write a program in 'C' to implement stack using array.
- b) Explain the dynamic storage allocation for recursion using flowchart
- **c)** Write short notes on:
 - 1) Avail list
 - 2) Doubly linked list

Section – II

Q.4 Attempt any four.

- a) How to represent a graph using adjacency linked list?
- b) Explain insertion sort. Sort the following sequence in ascending order using insertion sort.
 - 14, 33, 27, 10, 35, 19, 42, 44
- c) Define hashing. Explain the following hash functions with example.
 - 1) Mid square method
 - 2) Folding method
- d) Compare binary search and linear search.
- e) Explain the different tree traversal method.

Q.5 Attempt any two:

- a) Explain any one graph traversal method with flowchart and example.
- **b)** What is hash collision? Explain open addressing technique in detail.
- c) 1) Define the following terms:
 - i) Depth of the tree
 - ii) Ancestor node
 - iii) Descendent node
 - 2) Explain the threaded binary trees

Max. Marks: 56

Set

12

16

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Electronics Engineering DATA STRUCTURES								
Day & Date: Tuesday,17-12-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM								
Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.								
2) Figures to the right indicate full marks.3) Assume suitable data if necessary.								
MCQ/Objective Type Questions								
Duration: 30 Minutes Marks: 14								
Q.1	1) What is the best case for linear search?				O(logn)			
			O(n)	d)	O(1)			
	2)	2) What is the search complexity in Hashing?						
		a)	O(n)	b)	O(logn)			
		c)	O(nlogn)	d)	O(1)			
	3)	a) b) c)	c) Detects whether the input is already sorted					
	4)	deg a)	the adjacency matrix of a directer ree and the column sum is the _ in, out in, total	-	degree.			
	5)	num a)	binary search tree, which of the bers in the ascending order? Level-order traversal Post-order traversal	follo b) d)	wing traversals would print the Pre-order traversal In-order traversal			
	6)	is a)	result of evaluating the postfix e 600 650	expre b) d)	ession 5, 4, 6, +, *, 4, 9, 3, /, +, * 350 588			
	7)	dele a)	e elements "A", "B", "C" and "D" eted one at a time, in what order ABDC DCAB					
	8)	mea a)	near collection of data elements ans of pointer is called Linked list Primitive list	wher b) d)	e the linear node is given by Node list None of the mentioned			

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

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- 9) Recursion is similar to which of the following _____.
 - a) Switch Case

Stack

a)

b) Loop

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Set

- c) If-else d) None of the mentioned
- 10) The data structure required to check whether an expression contains balanced parenthesis is _____.
 - b) Queue
 - c) Array d) Tree
- 11) In linked list implementation of a queue, from where is the item deleted?
 - a) At the tail of the link list
 - b) At the centre position in the link list
 - c) At the head of link list
 - d) None of the mentioned
- 12) What is the complexity of searching for a particular element in a Singly Linked List?
 - a) nlogn b) O(1) c) logn d) O(n)
- 13) To obtain a prefix expression, which of the tree traversals is used?
 - a) Level-order traversal b) Pre-order traversal
 - c) Post-order traversal d) In-order traversal
- 14) Adjacency matrix of all graphs are symmetric.
 - a) False
- b) True

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DATA STRUCTURES

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four.

- a) Write a short note on deque.
- **b)** Define stack. Explain the push and pop operations of stack with C routine.
- c) Describe the addition of two polynomials using linked list.
- d) Write a program in 'C' to calculate the factorial of a number using recursion
- e) Evaluate the following postfix expression : 1, 2, 3, *, +, 4,-

Q.3 Attempt any two.

- a) Write a program in 'C' to implement stack using array.
- b) Explain the dynamic storage allocation for recursion using flowchart
- **c)** Write short notes on:
 - 1) Avail list
 - 2) Doubly linked list

Section – II

Q.4 Attempt any four.

- a) How to represent a graph using adjacency linked list?
- b) Explain insertion sort. Sort the following sequence in ascending order using insertion sort.
 - 14, 33, 27, 10, 35, 19, 42, 44
- c) Define hashing. Explain the following hash functions with example.
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- d) Compare binary search and linear search.
- e) Explain the different tree traversal method.

Q.5 Attempt any two:

- a) Explain any one graph traversal method with flowchart and example.
- **b)** What is hash collision? Explain open addressing technique in detail.
- c) 1) Define the following terms:
 - i) Depth of the tree
 - ii) Ancestor node
 - iii) Descendent node
 - 2) Explain the threaded binary trees

Max. Marks: 56

12

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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.1 is compulsory; it should be solved in first 30 minutes in Answer book. 2) Assume suitable data if required.

- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1

Choose the correct alternative from the option and rewrite the sentence. 14

- The upper 3dB frequency for N identical stages is given by _____.
 - a) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} + 1}$ b) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} - 1}$ c) $f_{H(n)} = f_H \sqrt{1 - 2^{\frac{1}{n}}}$ d) $f_{H(n)} = \frac{fH}{\sqrt{2^{\frac{1}{n}} + 1}}$
- 2) A multistage amplifier employs three stages each of which has voltage gain of 50, then overall gain of amplifier is _____.
 - a) 101.93dB b) 50.96dB
 - c) 509.6dB d) 1010.96dB
- 3) CLASS AB operation is often used in large signal amplifier in order to _____.
 - a) Get maximum efficiency
 - b) Remove even harmonics
 - c) Overcome cross over distortion
 - d) Reduce collector dissipation
- 4) The efficiency of CLASS C power amplifier is _____
 - a) 100% b) 78.5 % c) 50% to 78.5% d) 78.5 %
- 5) In CLASS A Power amplifier collector current in the output circuit flows for _____.
 - a) 180⁰
 - b) 360⁰
 - c) less than 180°
 - d) greater than 180° & less than 360°
- 6) If we employ voltage series feedback in amplifier then _____.
 - a) Voltage gain increases
 - b) input and output impedance increase
 - c) Bandwidth increases
 - d) input and output impedance decrease
- 7) Distortion with feedback is _____.

a)
$$D_f = \frac{D}{(1+KAv)}$$
 b) $D_f = \frac{(1+KAv)}{D}$

c)
$$D_f = D(1 + KAv)$$
 d) $D_f = \frac{D}{(1 + KAvf)}$

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Set P

Max. Marks: 70

8) A three terminal monolithic IC regulator can be used as _____.

- a) An adjustable O/P voltage regulator alone
- An adjustable O/P voltage regulator and current regulator b)
- c) As a current regulator and a power switch
- d) As a current regulator alone
- 9) Pre regulator in voltage regulator acts as _____
 - Reference voltage source b) Constant current source a)
 - c) Pre amplifier d) All above
- 10) The reference voltage & dropout voltage for fixed voltage regulator Im-337 respectively are _____.
 - b) 1.25V, 3V 1.2V, 9V a)
 - 1.2V, 57V d) 2V, 32V C)
- Schmitt trigger acts as a _____ multivibrator. 11)
 - Monostable b)

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Set

- C) **Bistable** d) None
- 12) It is required to stretch a 5µsec pulse to duration of 5msec. An appropriate circuit to be used for this is .
 - Monostable multivibrator a)

a) Astable

C)

- b) Astable multivibrator Schmitt trigger Bistable multivibrator d)
- 13) For Wein bridge oscillator, $R = 10 \text{ K}\Omega$, find the range of capacitor required to generate variable frequency of 1 KHz to 10 KHz.
 - a) 15.91nF - 1.591nF b) 15.91µF - 1.591µF
 - 1.591µF 15.91µF d) none of these C)
- The condition for sustained oscillation in Hartly oscillator is _____. 14)
 - hfe > $\frac{L1-M}{L2-M}$ b) hfe $\leq \frac{L1+M}{L2+M}$ a) hfe $\geq \frac{L1+M}{L2+M}$ d) hfe $\leq \frac{L1-M}{L2-M}$ c)

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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

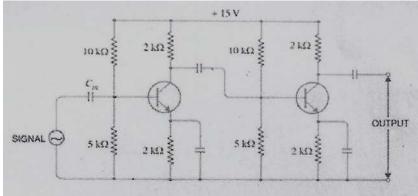
Section I

Q.2 Attempt any four of the following question.

- a) Discuss the effect of Negative feedback on Voltage gain, Stability, Distortion and Bandwidth.
- b) Explain crossover distortion. Describe the method to minimize this distortion.
- c) An amplifier with negative feedback provides an output voltage of 6V with an input voltage of 0.25V. After removal of feedback it needs only 0.15V input to provide same output. Calculate
 - 1) Voltage gain without feedback
 - 2) Voltage gain with feedback
 - 3) Feedback ratio
- d) What is necessity of cascading? Derive an expression for voltage gain of two stage R-C coupled amplifier.
- e) Compare the various method of coupling schemes on the basis of frequency & application.

Q.3 Attempt any two of the following question.

- a) Design a two stage voltage series feedback amplifier for overall gain with feedback 100 to meet the following specification $R_L = 2k\Omega$, $Rs = 600\Omega$, output voltage = 8 V_{pp} with supply voltage 12V, lower 3db frequency is 20Hz, use BC147B h_{fe}=280, h_{ie} = 2.1 k\Omega.
- **b)** Explain working of Class B push pull amplifier. Derive an expression for its maximum efficiency and power dissipation. Sketch suitable waveforms.
- c) Figure shows two stages RC coupled amplifier. If input resistance of each stage is $1K\Omega$. Calculation individual voltage gain and overall voltage gain. Assume hfe₁=hfe₂=100,



16

Set

Max. Marks: 56

Section II

Q.4 Attempt any four of the following question.

- a) Derive an expression for frequency of oscillation & minimum gain for sustained oscillations in case of Wien bridge oscillator.
- **b)** Design a circuit to turn ON LED for 15 seconds after applying trigger pulse, Initially the LED is in off condition.
- c) Explain Thermal shutdown concept in IC- regulator.
- d) Explain Working Principle of Crystal oscillator with its advantages & disadvantages.
- e) Explain Divided by N network using IC-555.

Q.5 Attempt any two of the following question.

- a) Explain Free running oscillator with neat circuitry and Derive the expression for frequency.
- b) Design adjustable voltage regulator for Vo = -5 to -20V at Io = 1A using LM-337 and Explain how 78XX can be used as an adjustable voltage regulator.
- c) Design a transistorized series voltage regulator for 20V at 1.2A, At Vin= 30V (Assume necessary data).

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Set P

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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.1 is compulsory; it should be solved in first 30 minutes in Answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

c)

Q.1 Choose the correct alternative from the option and rewrite the sentence.

- A three terminal monolithic IC regulator can be used as 1)
 - An adjustable O/P voltage regulator alone a)
 - b) An adjustable O/P voltage regulator and current regulator
 - c) As a current regulator and a power switch
 - d) As a current regulator alone
- 2) Pre regulator in voltage regulator acts as a)
 - Reference voltage source b) Constant current source
 - d) All above Pre amplifier
- The reference voltage & dropout voltage for fixed voltage regulator Im-337 3) respectively are _____.
 - b) 1.25V, 3V a) 1.2V, 9V
 - 1.2V, 57V d) 2V, 32V c)
- 4) Schmitt trigger acts as a _____ multivibrator.
 - Astable Monostable a) b) Bistable d) C) none
- 5) It is required to stretch a 5µsec pulse to duration of 5msec. An appropriate circuit to be used for this is
 - Monostable multivibrator a) b) Astable multivibrator
 - Schmitt trigger d) Bistable multivibrator C)
- For Wein bridge oscillator, $R = 10 \text{ K}\Omega$, find the range of capacitor required 6) to generate variable frequency of 1 KHz to 10 KHz.
 - a) 15.91nF 1.591nF b) 15.91µF - 1.591µF 1.591µF - 15.91µF c)
 - none of these d)
- The condition for sustained oscillation in Hartly oscillator is _____. 7)
 - hfe > $\frac{L1-M}{L2-M}$ b) hfe $\leq \frac{L1+M}{L2+M}$ a) d) hfe $\leq \frac{L1-M}{L2-M}$ hfe $\geq \frac{L1+M}{L2+M}$ C)

8)

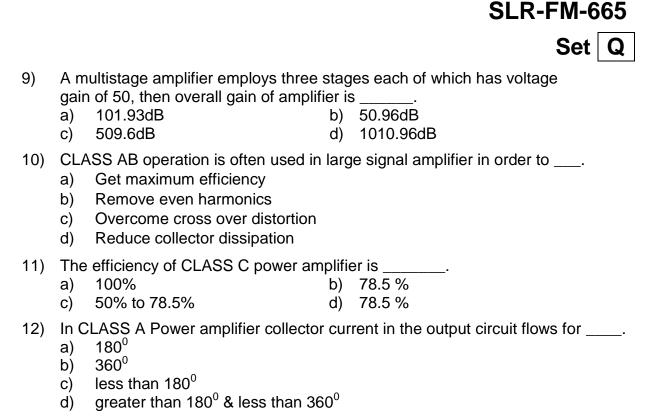
The upper 3dB frequency for N identical stages is given by _____. a) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} + 1}$ b) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} - 1}$ a) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} + 1}$ c) $f_{H(n)} = f_H \sqrt{1 - 2^{\frac{1}{n}}}$ d) $f_{H(n)} = \frac{fH}{\sqrt{2^{\frac{1}{n+1}}}}$

Max. Marks: 70

Marks: 14

14

Set



- 13) If we employ voltage series feedback in amplifier then _____.
 - a) Voltage gain increases
 - b) input and output impedance increase
 - c) Bandwidth increases
 - d) input and output impedance decrease
- 14) Distortion with feedback is _____.

a)
$$D_f = \frac{D}{(1 + KAv)}$$
 b) $D_f = \frac{(1 + KAv)}{D}$

c)
$$D_f = D(1 + KAv)$$

d) $D_f = \frac{D}{(1+KAvf)}$

Seat No.

S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

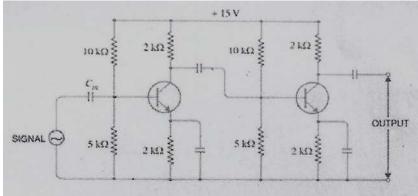
Section I

Q.2 Attempt any four of the following question.

- a) Discuss the effect of Negative feedback on Voltage gain, Stability, Distortion and Bandwidth.
- b) Explain crossover distortion. Describe the method to minimize this distortion.
- c) An amplifier with negative feedback provides an output voltage of 6V with an input voltage of 0.25V. After removal of feedback it needs only 0.15V input to provide same output. Calculate
 - 1) Voltage gain without feedback
 - 2) Voltage gain with feedback
 - 3) Feedback ratio
- d) What is necessity of cascading? Derive an expression for voltage gain of two stage R-C coupled amplifier.
- e) Compare the various method of coupling schemes on the basis of frequency & application.

Q.3 Attempt any two of the following question.

- a) Design a two stage voltage series feedback amplifier for overall gain with feedback 100 to meet the following specification $R_L = 2k\Omega$, $Rs = 600\Omega$, output voltage = 8 V_{pp} with supply voltage 12V, lower 3db frequency is 20Hz, use BC147B h_{fe}=280, h_{ie} = 2.1 k\Omega.
- **b)** Explain working of Class B push pull amplifier. Derive an expression for its maximum efficiency and power dissipation. Sketch suitable waveforms.
- c) Figure shows two stages RC coupled amplifier. If input resistance of each stage is $1K\Omega$. Calculation individual voltage gain and overall voltage gain. Assume hfe₁=hfe₂=100,



16

12

Set Q

Max. Marks: 56

Section II

Q.4 Attempt any four of the following question.

- a) Derive an expression for frequency of oscillation & minimum gain for sustained oscillations in case of Wien bridge oscillator.
- **b)** Design a circuit to turn ON LED for 15 seconds after applying trigger pulse, Initially the LED is in off condition.
- c) Explain Thermal shutdown concept in IC- regulator.
- d) Explain Working Principle of Crystal oscillator with its advantages & disadvantages.
- e) Explain Divided by N network using IC-555.

Q.5 Attempt any two of the following question.

- a) Explain Free running oscillator with neat circuitry and Derive the expression for frequency.
- b) Design adjustable voltage regulator for Vo = -5 to -20V at Io = 1A using LM-337 and Explain how 78XX can be used as an adjustable voltage regulator.
- c) Design a transistorized series voltage regulator for 20V at 1.2A, At Vin= 30V (Assume necessary data).

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Set Q

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Max. Marks: 70

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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.1 is compulsory; it should be solved in first 30 minutes in Answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternative from the option and rewrite the sentence. 14

- In CLASS A Power amplifier collector current in the output circuit flows for 1)
 - 180° a)
 - 360⁰ b)
 - less than 180° C)
 - greater than 180[°] & less than 360[°] d)
- 2) If we employ voltage series feedback in amplifier then .
 - Voltage gain increases a)
 - b) input and output impedance increase
 - Bandwidth increases c)
 - input and output impedance decrease d)
- 3) Distortion with feedback is ____
 - b) $D_{f} = \frac{(1 + KAv)}{D}$ $D_f = \frac{D}{(1 + KAv)}$ a) d) $D_f = \frac{D}{(1+KAvf)}$ $D_f = D(1 + KAv)$ C)
- 4) A three terminal monolithic IC regulator can be used as .
 - a) An adjustable O/P voltage regulator alone
 - b) An adjustable O/P voltage regulator and current regulator
 - c) As a current regulator and a power switch
 - d) As a current regulator alone
- 5) Pre regulator in voltage regulator acts as _____. b) Constant current source
 - Reference voltage source a)
 - Pre amplifier d) All above C)
- The reference voltage & dropout voltage for fixed voltage regulator Im-337 6) respectively are _____.
 - b) 1.25V, 3V a) 1.2V, 9V
 - d) 2V. 32V c) 1.2V. 57V
- Schmitt trigger acts as a _____ multivibrator. 7) a) Astable
 - b) Monostable
 - c) Bistable d) none
- It is required to stretch a 5µsec pulse to duration of 5msec. An appropriate 8) circuit to be used for this is
 - Monostable multivibrator a) b) Astable multivibrator
 - Schmitt trigger **Bistable multivibrator** c) d)

Marks: 14

The condition for sustained oscillation in Hartly oscillator is _____.

- hfe > $\frac{L1-M}{L2-M}$ b) hfe $\leq \frac{L1+M}{L2+M}$ a) hfe $\geq \frac{L1+M}{L2+M}$ d) hfe $\leq \frac{L1-M}{L2-M}$ c)
- The upper 3dB frequency for N identical stages is given by _____.

a)
$$f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} + 1}$$

b) $f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} - 1}$
c) $f_{H(n)} = f_H \sqrt{1 - 2^{\frac{1}{n}}}$
d) $f_{H(n)} = \frac{fH}{\sqrt{2^{\frac{1}{n}} - 1}}$

12) A multistage amplifier employs three stages each of which has voltage gain of 50, then overall gain of amplifier is _

- b) 50.96dB a) 101.93dB
- 509.6dB d) 1010.96dB C)
- 13) CLASS AB operation is often used in large signal amplifier in order to _____.
 - Get maximum efficiency a)

15.91nF - 1.591nF

1.591µF - 15.91µF

- Remove even harmonics b)
- Overcome cross over distortion c)
- Reduce collector dissipation d)
- 14) The efficiency of CLASS C power amplifier is _
 - a) 100% 50% to 78.5% c)

9)

10)

a)

c)

b) 78.5 % 78.5 % d)

to generate variable frequency of 1 KHz to 10 KHz. 15.91µF - 1.591µF b) d) none of these

For Wein bridge oscillator, $R = 10 \text{ K}\Omega$, find the range of capacitor required

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Seat	
No	

S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

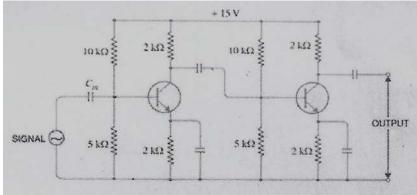
Section I

Q.2 Attempt any four of the following question.

- a) Discuss the effect of Negative feedback on Voltage gain, Stability, Distortion and Bandwidth.
- b) Explain crossover distortion. Describe the method to minimize this distortion.
- c) An amplifier with negative feedback provides an output voltage of 6V with an input voltage of 0.25V. After removal of feedback it needs only 0.15V input to provide same output. Calculate
 - 1) Voltage gain without feedback
 - 2) Voltage gain with feedback
 - 3) Feedback ratio
- d) What is necessity of cascading? Derive an expression for voltage gain of two stage R-C coupled amplifier.
- e) Compare the various method of coupling schemes on the basis of frequency & application.

Q.3 Attempt any two of the following question.

- a) Design a two stage voltage series feedback amplifier for overall gain with feedback 100 to meet the following specification $R_L = 2k\Omega$, $Rs = 600\Omega$, output voltage = 8 V_{pp} with supply voltage 12V, lower 3db frequency is 20Hz, use BC147B h_{fe}=280, h_{ie} = 2.1 k\Omega.
- **b)** Explain working of Class B push pull amplifier. Derive an expression for its maximum efficiency and power dissipation. Sketch suitable waveforms.
- c) Figure shows two stages RC coupled amplifier. If input resistance of each stage is $1K\Omega$. Calculation individual voltage gain and overall voltage gain. Assume hfe₁=hfe₂=100,



Max. Marks: 56

16

Section II

Q.4 Attempt any four of the following question.

- a) Derive an expression for frequency of oscillation & minimum gain for sustained oscillations in case of Wien bridge oscillator.
- **b)** Design a circuit to turn ON LED for 15 seconds after applying trigger pulse, Initially the LED is in off condition.
- c) Explain Thermal shutdown concept in IC- regulator.
- d) Explain Working Principle of Crystal oscillator with its advantages & disadvantages.
- e) Explain Divided by N network using IC-555.

Q.5 Attempt any two of the following question.

- a) Explain Free running oscillator with neat circuitry and Derive the expression for frequency.
- b) Design adjustable voltage regulator for Vo = -5 to -20V at Io = 1A using LM-337 and Explain how 78XX can be used as an adjustable voltage regulator.
- c) Design a transistorized series voltage regulator for 20V at 1.2A, At Vin= 30V (Assume necessary data).

16

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SLR-FM-665

Set R

S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2	019
Electronics Engineering	
ELECTRONICE CIRCUIT ANALYSIC AND DESIGN	

ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q.1 is compulsory; it should be solved in first 30 minutes in Answer book.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternative from the option and rewrite the sentence.

- The reference voltage & dropout voltage for fixed voltage regulator Im-337 1) respectively are _____.
 - a) 1.2V, 9V b) 1.25V, 3V
 - 1.2V, 57V d) 2V, 32V C)
- 2) Schmitt trigger acts as a _____ multivibrator.
 - Astable a) b) Monostable
 - Bistable d) c) none
- It is required to stretch a 5µsec pulse to duration of 5msec. An appropriate 3) circuit to be used for this is
 - a) Monostable multivibrator b) Astable multivibrator
 - C) Schmitt trigger d) Bistable multivibrator
- For Wein bridge oscillator, $R = 10 \text{ K}\Omega$, find the range of capacitor required 4) to generate variable frequency of 1 KHz to 10 KHz.
 - 15.91nF 1.591nF a) c)
- b) 15.91µF - 1.591µF 1.591µF - 15.91µF none of these d)
- 5) The condition for sustained oscillation in Hartly oscillator is _____.
 - hfe > $\frac{L1-M}{L2-M}$ b) hfe $\leq \frac{L1+M}{L2+M}$ a) hfe $\geq \frac{L1+M}{L2+M}$ d) hfe $\leq \frac{L1-M}{L2-M}$ C)

The upper 3dB frequency for N identical stages is given by _____. 6)

a)	$f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} + 1}$	b)	$f_{H(n)} = f_H \sqrt{2^{\frac{1}{n}} - 1}$
c)	$f_{H(n)} = f_H \sqrt{1 - 2^{\frac{1}{n}}}$	d)	$f_{H(n)} = \frac{fH}{\sqrt{2^{\frac{1}{n+1}}}}$

A multistage amplifier employs three stages each of which has voltage 7) gain of 50, then overall gain of amplifier is

a) 101.93dB b) 50.96dB 509.6dB d) 1010.96dB C)

Seat No.

Max. Marks: 70

Marks: 14



- 8) CLASS AB operation is often used in large signal amplifier in order to _____.
 - a) Get maximum efficiency
 - b) Remove even harmonics
 - c) Overcome cross over distortion
 - d) Reduce collector dissipation
- 9) The efficiency of CLASS C power amplifier is _____
 - a) 100% b) 78.5 %
 - c) 50% to 78.5% d) 78.5 %
- 10) In CLASS A Power amplifier collector current in the output circuit flows for _____.
 - a) 180⁰
 - b) 360°
 - \dot{c} less than 180°
 - d) greater than 180° & less than 360°
- 11) If we employ voltage series feedback in amplifier then _____.
 - a) Voltage gain increases
 - b) input and output impedance increase
 - c) Bandwidth increases
 - d) input and output impedance decrease
- 12) Distortion with feedback is _____
 - a) $D_f = \frac{D}{(1+KAv)}$ c) $D_f = D(1 + KAv)$ b) $D_f = \frac{(1+KAv)}{D}$ c) $D_f = D(1 + KAv)$ c) $D_f = \frac{D}{(1+KAvf)}$
- 13) A three terminal monolithic IC regulator can be used as _____.
 - a) An adjustable O/P voltage regulator alone
 - b) An adjustable O/P voltage regulator and current regulator
 - c) As a current regulator and a power switch
 - d) As a current regulator alone
- 14) Pre regulator in voltage regulator acts as _____
 - a) Reference voltage source
- b) Constant current source

c) Pre amplifier

d) All above

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Seat	
No.	

S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRONICS CIRCUIT ANALYSIS AND DESIGN - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if required.
- 3) Figures to right indicate maximum marks.
- 4) Use of data sheet is allowed.

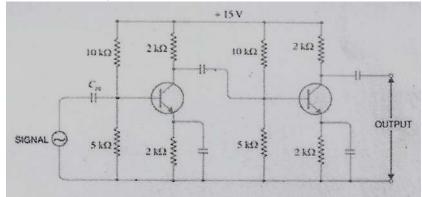
Section I

Q.2 Attempt any four of the following question.

- a) Discuss the effect of Negative feedback on Voltage gain, Stability, Distortion and Bandwidth.
- b) Explain crossover distortion. Describe the method to minimize this distortion.
- c) An amplifier with negative feedback provides an output voltage of 6V with an input voltage of 0.25V. After removal of feedback it needs only 0.15V input to provide same output. Calculate
 - 1) Voltage gain without feedback
 - 2) Voltage gain with feedback
 - 3) Feedback ratio
- d) What is necessity of cascading? Derive an expression for voltage gain of two stage R-C coupled amplifier.
- e) Compare the various method of coupling schemes on the basis of frequency & application.

Q.3 Attempt any two of the following question.

- a) Design a two stage voltage series feedback amplifier for overall gain with feedback 100 to meet the following specification $R_L = 2k\Omega$, $Rs = 600\Omega$, output voltage = 8 V_{pp} with supply voltage 12V, lower 3db frequency is 20Hz, use BC147B h_{fe}=280, h_{ie} = 2.1 k\Omega.
- **b)** Explain working of Class B push pull amplifier. Derive an expression for its maximum efficiency and power dissipation. Sketch suitable waveforms.
- c) Figure shows two stages RC coupled amplifier. If input resistance of each stage is $1K\Omega$. Calculation individual voltage gain and overall voltage gain. Assume hfe₁=hfe₂=100,



Max. Marks: 56

16

Section II

Q.4 Attempt any four of the following question.

- a) Derive an expression for frequency of oscillation & minimum gain for sustained oscillations in case of Wien bridge oscillator.
- **b)** Design a circuit to turn ON LED for 15 seconds after applying trigger pulse, Initially the LED is in off condition.
- c) Explain Thermal shutdown concept in IC- regulator.
- d) Explain Working Principle of Crystal oscillator with its advantages & disadvantages.
- e) Explain Divided by N network using IC-555.

Q.5 Attempt any two of the following question.

- a) Explain Free running oscillator with neat circuitry and Derive the expression for frequency.
- b) Design adjustable voltage regulator for Vo = -5 to -20V at Io = 1A using LM-337 and Explain how 78XX can be used as an adjustable voltage regulator.
- c) Design a transistorized series voltage regulator for 20V at 1.2A, At Vin= 30V (Assume necessary data).

16

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SLR-FM-665

Set S

book. Figures to the right indicate full marks. 3) Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Marks: 14 Choose the correct alternatives from the options and rewrite the sentence. 1) The wavelength λ frequency f and the velocity of the light are related to each other by the relation, ____. a) $\lambda = f/c$ b) $\lambda fc = 1$ c) $\lambda f = c$ d) $\lambda c = f$ 2) Most of the power in an AM signal is in the _____. al

a) Carrier	b) Upper side	band
c) Lower sideband	d) Modulating	signa

3) Ceramic filters upper limit frequency is, __ 20Khz a) 20hz b)

- c) 200khz d) 20Mhz
- The modulation index of an AM WAVE is changed from 0 to 1. The 4) transmitted power is _____.
 - a) Unchanged b) Half c) Double d) Increase by 50 percent
- In low level AM systems amplifiers following the modulated stages must 5) be,
 - a) Linear Devices b) Harmonic devices c) Class C amplifiers d) Nonlinear devices
- The Modulation Index is given by, _ 6) a) M= Em/Ec b) M= Ec/Em c) M = 2Ec/EmM = Em/2d)
- A 400W carrier is modulated with a modulation Index of 75%. Calculate the 7) DSBSC power, _____.
 - a) 113.6W b) 112.5W c) 121.5W d) 122.5W
- Thermal noise voltage in a resistor R is given by _____. 8)
 - b) KTB a) $\sqrt{4RkTB}$ c) TBk2 d) None
- Which of the following method is employed in telephony, _____ 9)
 - TDM FDM a) b) c) Both a & b d) None of above

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 **Electronics Engineering** ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Q.1

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer



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Max. Marks: 70

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- 10) In FM for a given frequency deviation the modulation index varies, ____
 - a) inversely as the modulating frequency
 - b) directly as the modulating frequency
 - c) independent of the changes in modulating signal
 - d) None of above
- 11) Diffraction of electromagnetic waves is caused by _____.
 - a) the edges of shape obstacles
 - b) the reflection from the ground
 - c) the spherical wave fronts
 - d) The wave passing through a slot
- 12) An interfering signal with a frequency equal to the received signal plus twice the if is called, _____.
 - a) Image frequency
 - b) Center frequency
 - c) Rest frequency d) Interference frequency
- 13) Which of the following is considered as an indirect method of generating FM?
 - a) Reactance modulator
- b) Balanced modulator
- c) Varactor diode modulator
- d) Armstrong system
- 14) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
 - a) VSB
 - c) DSB-SC

- b) SSB
- d) AM

Set

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four:

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal?
- b) Explain the problems occurring in the TRF receivers?
- c) With suitable diagram and waveforms explain a diode demodulator?
- d) A carrier of 1000 kHz is Simultaneously modulated by signals of 2KHz 6KHz & 2KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power.
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Attempt any two:

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's?
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier?
- c) With suitable block diagram explain superhetrodyne communication receiver?

Section – II

Q.4 Attempt any four:

- a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
- b) Illustrate with a diagram the Telephone Transmitter set, Receiver set?
- c) Discuss the different types of noises in detail?
- d) Discuss the concept of LOS & radiation with respect to wave propagation?
- e) Define antenna gain and explain polarization of an antenna?

Q.5 Attempt any two:

- a) Discuss the different characteristics of an antenna?
- **b)** Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram?
- c) Discuss the different methods of Noise calculation?

Max. Marks: 56

16

16

12

3) Assume suitable data if necessary.					
		MCQ/Objective Type Qu	estions		
Dura	tion: 3	30 Minutes	Marks:		
Q.1	Choo 1)				
	2)	, , , , , , , , , , , , , , , , , , , ,	n telephony, FDM None of above		
	3)	 In FM for a given frequency deviation the model a) inversely as the modulating frequency b) directly as the modulating frequency c) independent of the changes in modulating d) None of above 			
	4)	 Diffraction of electromagnetic waves is cause a) the edges of shape obstacles b) the reflection from the ground c) the spherical wave fronts d) The wave passing through a slot 	ed by		
	5)		to the received signal plus Center frequency nterference frequency		
	6)	, , , ,	direct method of generating Balanced modulator Armstrong system		
	7)	, , , , , , , , , , , , , , , , , , , ,			
	8)	The wavelength λ frequency f and the veloci each other by the relation, a) $\lambda = f/c$ b) λ			

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 **Electronics Engineering**

ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

Seat

No.

14

14

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Set Q

Max. Marks: 70

a) $\lambda = f/c$ $\lambda fc = 1$ b) $\lambda c = f$ c) $\lambda f = c$ d)

			SLR-FM-666
			Set Q
9)	Most of the power in an AM signal is a) Carrier c) Lower sideband		e Upper sideband Modulating signal
10)	Ceramic filters upper limit frequency a) 20hz c) 200khz	r is, b) d)	 20Khz 20Mhz
11)	The modulation index of an AM WA' transmitted power is a) Unchanged c) Double	VE is b) d)	changed from 0 to 1. The Half Increase by 50 percent
12)	In low level AM systems amplifiers for be, a) Linear Devices c) Class C amplifiers	ollowi b) d)	ng the modulated stages must Harmonic devices Nonlinear devices
13)	The Modulation Index is given by, _ a) M= Em/Ec c) M= 2Ec/Em	b) d)	 M= Ec/Em M= Em/2
14)	A 400W carrier is modulated with a DSBSC power, a) 113.6W c) 121.5W	modu b) d)	lation Index of 75%. Calculate the 112.5W 122.5W

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four:

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal?
- b) Explain the problems occurring in the TRF receivers?
- c) With suitable diagram and waveforms explain a diode demodulator?
- d) A carrier of 1000 kHz is Simultaneously modulated by signals of 2KHz 6KHz & 2KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power.
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Attempt any two:

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's?
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier?
- c) With suitable block diagram explain superhetrodyne communication receiver?

Section – II

Q.4 Attempt any four:

- a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
- **b)** Illustrate with a diagram the Telephone Transmitter set, Receiver set?
- c) Discuss the different types of noises in detail?
- d) Discuss the concept of LOS & radiation with respect to wave propagation?
- e) Define antenna gain and explain polarization of an antenna?

Q.5 Attempt any two:

- a) Discuss the different characteristics of an antenna?
- **b)** Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram?
- c) Discuss the different methods of Noise calculation?

Max. Marks: 56

16

16

12

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In low level AM systems amplifiers following the modulated stages must
 - be, ____. a) ___inear
 - a) Linear Devicesb) Harmonic devicesc) Class C amplifiersd) Nonlinear devices
- 2) The Modulation Index is given by, _____.
 a) M= Em/Ec
 b) M= Ec/Em
 - c) M = 2Ec/Em d) M = Em/2
- 3) A 400W carrier is modulated with a modulation Index of 75%. Calculate the DSBSC power, _____.
 - a) 113.6W b) 112.5W c) 121.5W d) 122.5W
- 4) Thermal noise voltage in a resistor R is given by _____.
 - a) $\sqrt{4RkTB}$ b) KTB
 - c) TBk2 d) None
- 5) Which of the following method is employed in telephony, _____
 - a) TDM b) FDM
 - c) Both a & b d) None of above
- 6) In FM for a given frequency deviation the modulation index varies, _____.
 - a) inversely as the modulating frequency
 - b) directly as the modulating frequency
 - c) independent of the changes in modulating signal
 - d) None of above
- 7) Diffraction of electromagnetic waves is caused by _____.
 - a) the edges of shape obstacles
 - b) the reflection from the ground
 - c) the spherical wave fronts
 - d) The wave passing through a slot
- 8) An interfering signal with a frequency equal to the received signal plus twice the if is called, _____.
 - a) Image frequency
 - c) Rest frequency
- b) Center frequency
- d) Interference frequency



Marks: 14

Set I

			Set R		
9)	Which of the following is considered as an indirect method of generating FM?				
	a) Reactance modulatorc) Varactor diode modulator		Balanced modulator Armstrong system		
10)	Which of the following analog modula transmitted power and minimum cha a) VSB c) DSB-SC		•		
11)	The wavelength λ frequency f and th each other by the relation, a) $\lambda = f/c$ c) $\lambda f = c$	b)	both points of the light are related to $\lambda fc = 1$ $\lambda c = f$		
12)	Most of the power in an AM signal is a) Carrier c) Lower sideband		e Upper sideband Modulating signal		
13)	Ceramic filters upper limit frequency a) 20hz c) 200khz	is, b) d)			
14)	The modulation index of an AM WAN transmitted power is a) Unchanged c) Double	/E is d b) d)	changed from 0 to 1. The Half Increase by 50 percent		

Page **8** of **12**

SLR-FM-666

Seat	
No.	

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four:

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal?
- b) Explain the problems occurring in the TRF receivers?
- c) With suitable diagram and waveforms explain a diode demodulator?
- d) A carrier of 1000 kHz is Simultaneously modulated by signals of 2KHz 6KHz & 2KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power.
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

Q.3 Attempt any two:

- a) Discuss principle of Balance Modulator and with suitable diagram give the working of Balanced modulator using FET's?
- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier?
- c) With suitable block diagram explain superhetrodyne communication receiver?

Section – II

Q.4 Attempt any four:

- a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
- **b)** Illustrate with a diagram the Telephone Transmitter set, Receiver set?
- c) Discuss the different types of noises in detail?
- d) Discuss the concept of LOS & radiation with respect to wave propagation?
- e) Define antenna gain and explain polarization of an antenna?

Q.5 Attempt any two:

- a) Discuss the different characteristics of an antenna?
- **b)** Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram?
- c) Discuss the different methods of Noise calculation?

Max. Marks: 56

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16

16

12

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In FM for a given frequency deviation the modulation index varies, _____.
 - a) inversely as the modulating frequency
 - b) directly as the modulating frequency
 - c) independent of the changes in modulating signal
 - d) None of above
- 2) Diffraction of electromagnetic waves is caused by _____.
 - a) the edges of shape obstacles
 - b) the reflection from the ground
 - c) the spherical wave fronts
 - d) The wave passing through a slot
- 3) An interfering signal with a frequency equal to the received signal plus twice the if is called, _____.
 - a) Image frequency b) Center frequency
 - c) Rest frequency d) Interference frequency
- 4) Which of the following is considered as an indirect method of generating FM?
 - a) Reactance modulator
 - c) Varactor diode modulator d) Armstrong system

b)

Balanced modulator

- 5) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
 - a) VSB b) SSB
 - c) DSB-SC d) AM
- 6) The wavelength λ frequency f and the velocity of the light are related to each other by the relation, _____.
 - a) $\lambda = f/c$ b) $\lambda fc = 1$
 - c) $\lambda f = c$ d) $\lambda c = f$
- 7) Most of the power in an AM signal is in the _____
 - a) Carrier b) Upper sideband
 - c) Lower sideband d) Modulating signal

Set S



Max. Marks: 70

Set S 8) Ceramic filters upper limit frequency is, ____ a) 20hz 20Khz b) c) 200khz d) 20Mhz The modulation index of an AM WAVE is changed from 0 to 1. The 9) transmitted power is _____. a) Unchanged b) Half c) Double d) Increase by 50 percent 10) In low level AM systems amplifiers following the modulated stages must be, __ a) Linear Devices Harmonic devices b) c) Class C amplifiers Nonlinear devices d) The Modulation Index is given by, ____ 11) a) M = Em/Ecb) M = Ec/EmM = Em/2c) M = 2Ec/Emd) A 400W carrier is modulated with a modulation Index of 75%. Calculate the 12) DSBSC power, _____. a) 113.6W b) 112.5W c) 121.5W d) 122.5W Thermal noise voltage in a resistor R is given by _____. 13) KTB b) a) $\sqrt{4RkTB}$ c) TBk2 d) None 14) Which of the following method is employed in telephony, _____ TDM b) FDM a)

c) Both a & b d) None of above

SLR-FM-666

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec -2019 Electronics Engineering ANALOG COMMUNICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any four:

- a) Derive the expression for equation of AM wave and its instantaneous value of AM signal?
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- d) A carrier of 1000 kHz is Simultaneously modulated by signals of 2KHz 6KHz & 2KHz with modulation indices of 35%, 55% and 75% respectively. What are the frequencies present in modulated wave and what is radiated power.
- e) Discuss the advantages of SSB over DSB and AM and also disadvantages of SSB?

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- **b)** With suitable circuit diagram, waveforms, advantages & disadvantages give the working of Grid Modulated Class C Amplifier?
- c) With suitable block diagram explain superhetrodyne communication receiver?

Section – II

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- a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
- **b)** Illustrate with a diagram the Telephone Transmitter set, Receiver set?
- c) Discuss the different types of noises in detail?
- d) Discuss the concept of LOS & radiation with respect to wave propagation?
- e) Define antenna gain and explain polarization of an antenna?

Q.5 Attempt any two:

- a) Discuss the different characteristics of an antenna?
- **b)** Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram?
- c) Discuss the different methods of Noise calculation?

Max. Marks: 56

16

16

12

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) The rotor slots in three phase squirrel cage I.M. are kept .
 - Parallel a) Skewed b)
 - c) Twisted None of the above d)
- 2) The back emf of a 250 V dc motor with armature resistance 1 ohm and la=50 A is
 - a) 200 V b) 230 V
 - c) 260 V d) 180 V

3) For application traction following motor is suitable ____

- a) dc series motor b) dc shunt motor c) both a and b d) none
- 4) The dc motor never be switched ON no load.
 - a) Shunt Series b)
 - c) Compound d) None
- 5) Following is not three phase transformer connection.
 - a) V V b) T - T
 - c) Y Y I - Id)
- In case of _____ three phase transformer Line voltages of both sides are 6) in phase with each other.
 - V-V a) Star-star b)
 - d) T-T Delta-Delta c)
- 7) Stepper motor is basically .
 - a) D.C. motor
 - b) Synchronous motor
 - Slip ring 3 phase induction motor C)
 - d) None of the above
- In case of Scott connection for both primary and secondary winding of 8) main transformer consists of _____ % tapping.
 - a) 83 b) 66.66
 - 50 c) d) 58

SLR-FM-667

Set

Max. Marks: 70

Marks: 14



			SLR-FM-667
			Set P
	in cause of poor lagging power fa	actor	is due to use of
	Filament lamp	b)	Resistive load
	Induction motor	d)	Water heater
A p	0	notor	does not have
a)		b)	Starting winding
c)		d)	High power factor
Th	Shaft load	er mo	tor is determined by solely by
a)		b)	Step pulse frequency
c)		d)	Magnitude of stator current
One of the basic requirement of servo motor is that it must produce high			

- One of the basic requirement of servo motor is that it must produce high 12) torque at all _____. Frequencies
 - b) a) Loads c) Speed
 - d) Voltages
- According to Fleming's left-hand rule, when the forefinger points in the direction 13) of the field or flux, the middle finger will point the direction of _____.
 - a) Current in the conductor b)
 - c) Resultant force on conductor d) None of the above
- 14) Armature current in D.C. generators is given to the external circuit through _____.
 - a) Strips

9)

10)

11)

c) Solid connection

- b) Commutator
- d) Slip rings

Flux

Seat No.

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRICAL MACHINES

Day & Date: Monday,25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four:

- a) Write short note on swinburns test on DC motor.
- **b)** Draw and explain characteristics of D.C. motor.
- c) The armature of a 4 pole dc generator is required to generate an emf of 520 V on open circuit when revolving at a speed of 660 rpm. Calculate the magnetic flux per pole required if the armature has 144 slots with 2 coil sides per slot, each coil consisting of three turns. The armature is wave wound.
- d) Draw neat diagram of 3 point starter and explain its working.
- e) Drive the EMF equation for generator.
- f) Write short note on electric drive.

Q.3 Attempt following:

- a) Write short note on
 - 1) capacitor start capacitor run single phase induction motor
 - 2) Servo motor

OR

- a) A shunt motor runs at a 500 rpm on 200V. Its armature resistance is 0.5 ohm and the current taken is 30A in addition to field current. What resistance must be placed in series in order that the speed may be reduced to 300 rpm. The current in armature remaining the same.
- **b)** What are the advantages of electrical braking? Elaborate plugging and rheostatic breaking used for dc shunt motor.

Section – II

Q.4 Attempt any four.

- a) Drive the torque equation of three phase induction motor and write conditions for maximum torque under various conditions.
- b) A three phase induction motor having star connected rotor has an induced emf of 80 volts between slip rings at standstill on open circuit. The rotor has a resistance and reactance per phase of 1 ohm and 4 ohm respectively. Calculate current/phase and power factor when
 - 1) Slip rigs are short circuited
 - 2) Slip rings are connected to a star connected rheostat of 3 ohm per phase
- c) Draw neat diagram of star delta starter and explain its operation.
- d) Write needs and methods of power factor improvement.
- e) Write note on power factor and causes of low power factor.

Max. Marks: 70

Set

12

16





- f) Two wattmeters connected to measure the input to a balanced 3 phase circuit indicate 2000W and 500W respectively. Find the power factor of the circuit
 - 1) When both readings are positive?
 - 2) When latter reading is obtained after reversing the connection to the current coil of one instrument?

Q.5 Attempt any two.

- a) Drive the expression for power factor of three phase inductive load in terms of wattmeters reading. Draw phasor diagram.
- **b)** Describe the construction of three phase transformer and write working principle of its.
- c) Two wattmeters connected on 3 line, 3 phase ac line to measure ac power and read 6717 watts and 2558 watts. Find the power drawn by the balanced load and its power factor.

SLR-FM-667

Seat	
No.	

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- In case of Scott connection for both primary and secondary winding of 1) main transformer consists of _____ % tapping.
 - a) 83 b) 66.66 d) c) 50 58
- 2) Main cause of poor lagging power factor is due to use of _
- Filament lamp b) Resistive load a) c) Induction motor d) Water heater

A permanent split phase capacitor motor does not have ____ 3)

- a) Centrifugal switch b) Starting winding
 - c) Squirrel case rotor High power factor d)
- The rotational speed of given stepper motor is determined by solely by _____. 4)
 - a) Shaft load
 - Step pulse frequency b) c) Polarity of stator current Magnitude of stator current d)
- 5) One of the basic requirement of servo motor is that it must produce high torque at all _____.
 - a) Loads b)
 - Frequencies c) Speed d) Voltages

6) According to Fleming's left-hand rule, when the forefinger points in the direction of the field or flux, the middle finger will point the direction of _____.

- a) Current in the conductor
- b) Flux c) Resultant force on conductor d) None of the above
- Armature current in D.C. generators is given to the external circuit 7) through _____
 - a) Strips b) Commutator
 - c) Solid connection d) Slip rings
- The rotor slots in three phase squirrel cage I.M. are kept _____. 8) Parallel
 - a) Skewed b)
 - c) Twisted d) None of the above

Set

Max. Marks: 70



Marks: 14



- 9) The back emf of a 250 V dc motor with armature resistance 1 ohm and la=50 A is _____.
 - a) 200 V b) 230 V
 - c) 260 V d) 180 V
- For application traction following motor is suitable ____ 10) a) dc series motor
 - b) dc shunt motor
 - c) both a and b d) none
- The dc _____ motor never be switched ON no load. 11)
 - a) Shunt b) Series
 - c) Compound None d)
- Following is not three phase transformer connection. 12)
 - a) V V b) T –T
 - c) Y Y d) I - I
- In case of _____ three phase transformer Line voltages of both sides are 13) in phase with each other.
 - b) a) Star-star V-V
 - c) Delta-Delta d) T-T
- Stepper motor is basically _____. 14)
 - a) D.C. motor
 - b) Synchronous motor
 - c) Slip ring 3 phase induction motor
 - d) None of the above



Day & Date: Monday,25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four:

- a) Write short note on swinburns test on DC motor.
- **b)** Draw and explain characteristics of D.C. motor.
- c) The armature of a 4 pole dc generator is required to generate an emf of 520 V on open circuit when revolving at a speed of 660 rpm. Calculate the magnetic flux per pole required if the armature has 144 slots with 2 coil sides per slot, each coil consisting of three turns. The armature is wave wound.
- d) Draw neat diagram of 3 point starter and explain its working.
- e) Drive the EMF equation for generator.
- f) Write short note on electric drive.

Q.3 Attempt following:

- a) Write short note on
 - 1) capacitor start capacitor run single phase induction motor
 - 2) Servo motor

OR

- a) A shunt motor runs at a 500 rpm on 200V. Its armature resistance is 0.5 ohm and the current taken is 30A in addition to field current. What resistance must be placed in series in order that the speed may be reduced to 300 rpm. The current in armature remaining the same.
- **b)** What are the advantages of electrical braking? Elaborate plugging and rheostatic breaking used for dc shunt motor.

Section – II

Q.4 Attempt any four.

- a) Drive the torque equation of three phase induction motor and write conditions for maximum torque under various conditions.
- b) A three phase induction motor having star connected rotor has an induced emf of 80 volts between slip rings at standstill on open circuit. The rotor has a resistance and reactance per phase of 1 ohm and 4 ohm respectively. Calculate current/phase and power factor when
 - 1) Slip rigs are short circuited
 - 2) Slip rings are connected to a star connected rheostat of 3 ohm per phase
- c) Draw neat diagram of star delta starter and explain its operation.
- d) Write needs and methods of power factor improvement.
- e) Write note on power factor and causes of low power factor.

Max. Marks: 70

12

16





- f) Two wattmeters connected to measure the input to a balanced 3 phase circuit indicate 2000W and 500W respectively. Find the power factor of the circuit
 - 1) When both readings are positive?
 - 2) When latter reading is obtained after reversing the connection to the current coil of one instrument?

Q.5 Attempt any two.

- a) Drive the expression for power factor of three phase inductive load in terms of wattmeters reading. Draw phasor diagram.
- **b)** Describe the construction of three phase transformer and write working principle of its.
- c) Two wattmeters connected on 3 line, 3 phase ac line to measure ac power and read 6717 watts and 2558 watts. Find the power drawn by the balanced load and its power factor.

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

- 1) Following is not three phase transformer connection.
 - a) V V T-T b)
 - c) Y Y d) |-|
- In case of _____ three phase transformer Line voltages of both sides are 2) in phase with each other. b) V-V
 - a) Star-star
 - c) Delta-Delta d) T-T
- 3) Stepper motor is basically _____.
 - a) D.C. motor
 - b) Synchronous motor
 - c) Slip ring 3 phase induction motor
 - d) None of the above
- 4) In case of Scott connection for both primary and secondary winding of main transformer consists of _____ % tapping.
 - 66.66 a) 83 b)
 - c) 50 d) 58

5) Main cause of poor lagging power factor is due to use of ____

- a) Filament lamp Resistive load b)
- c) Induction motor d) Water heater

A permanent split phase capacitor motor does not have _ 6)

- a) Centrifugal switch Starting winding b)
 - c) Squirrel case rotor High power factor d)
- 7) The rotational speed of given stepper motor is determined by solely by _____.
 - a) Shaft load
- Step pulse frequency b) Magnitude of stator current d)
- c) Polarity of stator current
- One of the basic requirement of servo motor is that it must produce high 8) torque at all _____.
 - a) Loads b) Frequencies Voltages c) Speed d)

Max. Marks: 70



SLR-FM-667



- 9) According to Fleming's left-hand rule, when the forefinger points in the direction of the field or flux, the middle finger will point the direction of _____.
 - a) Current in the conductor
- b) Flux None of the above
- c) Resultant force on conductor d)
- Armature current in D.C. generators is given to the external circuit 10) through _____.
 - a) Strips

a) Skewed

b) Commutator

Series

- c) Solid connection d) Slip rings
- The rotor slots in three phase squirrel cage I.M. are kept _____. 11)
 - b) Parallel

b)

- c) Twisted d) None of the above
- 12) The back emf of a 250 V dc motor with armature resistance 1 ohm and la=50 A is _____.
 - a) 200 V b) 230 V
 - c) 260 V 180 V d)

13) For application traction following motor is suitable _____

- a) dc series motor b) dc shunt motor none
- c) both a and b d)
- The dc _____ motor never be switched ON no load. 14)
 - a) Shunt
 - c) Compound d) None

Seat No.

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTRICAL MACHINES

Day & Date: Monday,25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four:

- a) Write short note on swinburns test on DC motor.
- **b**) Draw and explain characteristics of D.C. motor.
- c) The armature of a 4 pole dc generator is required to generate an emf of 520 V on open circuit when revolving at a speed of 660 rpm. Calculate the magnetic flux per pole required if the armature has 144 slots with 2 coil sides per slot, each coil consisting of three turns. The armature is wave wound.
- d) Draw neat diagram of 3 point starter and explain its working.
- e) Drive the EMF equation for generator.
- f) Write short note on electric drive.

Q.3 Attempt following:

- a) Write short note on
 - 1) capacitor start capacitor run single phase induction motor
 - 2) Servo motor

OR

- a) A shunt motor runs at a 500 rpm on 200V. Its armature resistance is 0.5 ohm and the current taken is 30A in addition to field current. What resistance must be placed in series in order that the speed may be reduced to 300 rpm. The current in armature remaining the same.
- **b)** What are the advantages of electrical braking? Elaborate plugging and rheostatic breaking used for dc shunt motor.

Section – II

Q.4 Attempt any four.

- a) Drive the torque equation of three phase induction motor and write conditions for maximum torque under various conditions.
- b) A three phase induction motor having star connected rotor has an induced emf of 80 volts between slip rings at standstill on open circuit. The rotor has a resistance and reactance per phase of 1 ohm and 4 ohm respectively. Calculate current/phase and power factor when
 - 1) Slip rigs are short circuited
 - 2) Slip rings are connected to a star connected rheostat of 3 ohm per phase
- c) Draw neat diagram of star delta starter and explain its operation.
- d) Write needs and methods of power factor improvement.
- e) Write note on power factor and causes of low power factor.

Max. Marks: 70

Set

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- f) Two wattmeters connected to measure the input to a balanced 3 phase circuit indicate 2000W and 500W respectively. Find the power factor of the circuit
 - 1) When both readings are positive?
 - 2) When latter reading is obtained after reversing the connection to the current coil of one instrument?

Q.5 Attempt any two.

12

- a) Drive the expression for power factor of three phase inductive load in terms of wattmeters reading. Draw phasor diagram.
- **b)** Describe the construction of three phase transformer and write working principle of its.
- c) Two wattmeters connected on 3 line, 3 phase ac line to measure ac power and read 6717 watts and 2558 watts. Find the power drawn by the balanced load and its power factor.

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Seat	
No.	

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering ELECTRICAL MACHINES**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- A permanent split phase capacitor motor does not have 1)
 - a) Centrifugal switch c) Squirrel case rotor
 - Starting winding b) High power factor d)
- 2) The rotational speed of given stepper motor is determined by solely by _____.
 - Step pulse frequency a) Shaft load b)
 - c) Polarity of stator current d) Magnitude of stator current
- 3) One of the basic requirement of servo motor is that it must produce high torque at all _____.
 - a) Loads b) Frequencies
 - Voltages c) Speed d)
- According to Fleming's left-hand rule, when the forefinger points in the direction 4) of the field or flux, the middle finger will point the direction of _____. Flux
 - a) Current in the conductor b)
 - d) c) Resultant force on conductor None of the above
- Armature current in D.C. generators is given to the external circuit 5) through .
 - a) Strips b)
 - d) c) Solid connection Slip rings
- 6) The rotor slots in three phase squirrel cage I.M. are kept
 - Parallel a) Skewed b)
 - c) Twisted d) None of the above
- 7) The back emf of a 250 V dc motor with armature resistance 1 ohm and la=50 A is
 - a) 200 V b) 230 V
 - c) 260 V 180 V d)
- For application traction following motor is suitable ____ 8)
 - a) dc series motor
- dc shunt motor b)

Commutator

c) both a and b d) none Set

Max. Marks: 70

Marks: 14

- 9) The dc _____ motor never be switched ON no load.
 - b) Series
 - c) Compound d) None
- 10) Following is not three phase transformer connection.
 - a) V V b) T T
 - c) Y Y d) I I
- 11) In case of _____ three phase transformer Line voltages of both sides are in phase with each other.
 - a) Star-star b) V-V
 - c) Delta-Delta d) T-T
- 12) Stepper motor is basically _____.
 - a) D.C. motor

a) Shunt

- b) Synchronous motor
- c) Slip ring 3 phase induction motor
- d) None of the above

 In case of Scott connection for both primary and secondary winding of main transformer consists of _____ % tapping.

- a) 83 b) 66.66
- c) 50 d) 58
- 14) Main cause of poor lagging power factor is due to use of _____.
 - a) Filament lamp b) Resistive load
 - c) Induction motor d) Water heater

S.E. (Part -II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTRICAL MACHINES

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Draw neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four:

- Write short note on swinburns test on DC motor. a)
- Draw and explain characteristics of D.C. motor. b)
- The armature of a 4 pole dc generator is required to generate an emf of c) 520 V on open circuit when revolving at a speed of 660 rpm. Calculate the magnetic flux per pole required if the armature has 144 slots with 2 coil sides per slot, each coil consisting of three turns. The armature is wave wound.
- d) Draw neat diagram of 3 point starter and explain its working.
- Drive the EMF equation for generator. e)
- Write short note on electric drive. **f**)

Q.3 Attempt following:

- Write short note on a)
 - 1) capacitor start capacitor run single phase induction motor
 - 2) Servo motor

OR

- A shunt motor runs at a 500 rpm on 200V. Its armature resistance is 0.5 a) ohm and the current taken is 30A in addition to field current. What resistance must be placed in series in order that the speed may be reduced to 300 rpm. The current in armature remaining the same.
- What are the advantages of electrical braking? Elaborate plugging and b) rheostatic breaking used for dc shunt motor.

Section – II

Q.4 Attempt any four.

- Drive the torque equation of three phase induction motor and write a) conditions for maximum torque under various conditions.
- A three phase induction motor having star connected rotor has an induced b) emf of 80 volts between slip rings at standstill on open circuit. The rotor has a resistance and reactance per phase of 1 ohm and 4 ohm respectively. Calculate current/phase and power factor when
 - Slip rigs are short circuited 1)
 - 2) Slip rings are connected to a star connected rheostat of 3 ohm per phase
- Draw neat diagram of star delta starter and explain its operation. c)
- Write needs and methods of power factor improvement. d)
- Write note on power factor and causes of low power factor. e)

Max. Marks: 70

12

16

16

Seat No.



- f) Two wattmeters connected to measure the input to a balanced 3 phase circuit indicate 2000W and 500W respectively. Find the power factor of the circuit
 - 1) When both readings are positive?
 - 2) When latter reading is obtained after reversing the connection to the current coil of one instrument?

Q.5 Attempt any two.

- a) Drive the expression for power factor of three phase inductive load in terms of wattmeters reading. Draw phasor diagram.
- **b)** Describe the construction of three phase transformer and write working principle of its.
- c) Two wattmeters connected on 3 line, 3 phase ac line to measure ac power and read 6717 watts and 2558 watts. Find the power drawn by the balanced load and its power factor.

No.					Set	Р
S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS						
-	Date: Tuesday, 26-1 02:30 PM To 05:30 F			1	Max. Marks	s: 70
Instru	book			e solved in first 30 minu	ites in ans	wer
	3) Assume s	the right indicate fu uitable data if neces	ssary.			
Durati	n: 30 Minutes	ICQ/Objective 1	Гуре	Questions	Morte	0.14
		alternatives from 1	the en	tions and rowrite the	Marks	5. 14 14
	sentence.	alternatives nom	ine op	tions and rewrite the		14
	 Schmitt trigger a) triangular v c) saw tooth v 		sine w b) d)	ave input. Square wave None of these		
4	2) In a sample and a) sample circ c) Hold circuit		np is us b) d)	ed as voltage follower Peak detector		
(3) Pin number 3 o a) Inverting in c) +V _{cc}		b) d)	Non inverting input -V _{EE}		
2	4) Output resistan a) Μ΄Ω c) Ώ	ce of a 741C is in	b) d)	μΏ None of these		
Ę	5) Output offset vo a) Time c) Supply volt	bltage changes with age		Temperature All of these		
(6) Find out the res a) 562 c) 256	solution of 8 bit DAC	C/ADC′ b) d)	? 625 265		
ī	7) In VLSI IC, the a) <10 c) >100	no. of components	integra b) d)	ted on the same chip <100 >1000		
٤	 A notch filter is a) wide band c) narrow bar 	stop	b) d)	wide band pass narrow band pass		
ç	 A triangular wa a) Differentiat c) Adder 	ve form generator h or	as a c b) d)	omparator and Subtractor Integrator		

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- Set P
- 10) Average of the two input currents of op amp is called as
 - a) offset current

- b) input differential current
- c) input bias current d) none of these
- 11) The pins of 741 op amp used for voltage offset null are
 - a) 1,4,5 b) 1,6
 - c) 1,5 d) 2,4,5
- 12) For a Schmitt trigger , V_{ut}-V_{lt} is called as a) differential voltage b) loop gain
 - c) Hysteresis d) Trigger
- 13) For a phase shift oscillator, gain must be _
 - a) 3 b) 29
 - c) Less than 1 d) None of these

14) The gain bandwidth product of 741 is

- a) 4 MHz b) 5 MHz
- c) 1 MHz d) 10 MHz

Seat	
No.	

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Draw & explain any four circuits mentioned below:

- a) Op amp as integrator
- b) Summing and scaling amplifier
- c) V to I converter with grounded load
- d) High frequency op amp equivalent
- e) Voltage transfer curve with a comment on significance of its slope.

Q.3 Attempt any two.

- a) The 741 C op amp having below parameters is connected as a non inverting amplifier with R1=1KΩ and RF=10KΩ.Compute A_F,Ri_F,Ro_F,f_F and V_{OOT} · Given: A=200,000, Ri=2MΩ, Ro=75Ω, fo=5KHz, Supply voltage=+/_15V output voltage swing=+/_13 V
- **b)** What is slew rate? How it is specified? What is significance? Show with an example how it limits close loop applications of op amp.
- c) What is input bias current? How to compensate for it? Derive equation for it.

Section – II

Q.4 Attempt any four

- a) Draw and explain precision full wave rectifier.
- b) Explain antilog amplifier using op amp.
- c) Describe Schmitt trigger with UTP and LTP.
- d) Draw and explain square wave generator.
- e) Explain positive and negative clamper circuits.

Q.5 Attempt any two.

- a) Design and explain a phase shift oscillator to generate a sinusoidal signal of 200 Hz.
- **b)** Draw & explain band pass filter.
- c) Explain first order LPF. Design LPF at a cutoff frequency of 1KHz with a passband gain of 2.

Max. Marks: 56

Set

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	:	S.E.	. (Part – II) (Old) (CGPA) E Electronics Er LINEAR INTEGRA	ngine	eering	019
			esday, 26-11-2019 1 To 05:30 PM			Max. Marks: 70
Instr	uction	is: 1) Q. No. 1 is compulsory and sho	uld b	e solved in first 30 minu	ites in answer
			book 2) Figures to the right indicate full 3) Assume suitable data if necess		S.	
			MCQ/Objective Ty	vpe Q	Questions	
Durat	ion: 3	0 Mi	nutes			Marks: 14
Q.1	Choo sente		the correct alternatives from th	e opt	ions and rewrite the	14
	1)		otch filter is a filter.			
	,	a) c)	wide band stop narrow band stop	b) d)	wide band pass narrow band pass	
	2)		iangular wave form generator ha Differentiator Adder	s a co b) d)	omparator and Subtractor Integrator	
	3)	Ave a)	erage of the two input currents of offset current	op an b)	np is called as input differential currer	nt
		c)	input bias current	d)	none of these	
	4)	The	e pins of 741 op amp used for vol	tage o	offset null are	
		a) c)	1,4,5 1,5	b) d)	1,6 2,4,5	
	5)		a Schmitt trigger , V_{ut} - V_{lt} is called			
			differential voltage Hysteresis	b) d)	loop gain Trigger	
	6)		a phase shift oscillator, gain mus			
		a) c)	3 Less than 1	b) d)	29 None of these	
	7)	The	e gain bandwidth product of 741 is	S		
		a) c)	4 MHz 1 MHz	b) d)	5 MHz 10 MHz	
	8)		mitt trigger output is for si		•	
		a) c)	triangular wave saw tooth wave	b) d)	Square wave None of these	

In a sample and hold circuit, op amp is used as a) sample circuit b) voltage

voltage follower

Peak detector

d)

9)

c) Hold circuit

Seat	
No.	

SLR-FM-668

Set Q

Pin number 3 of a 741 is

- a) Inverting input
- c) $+V_{cc}$

10)

b) Non inverting input

SLR-FM-668

Set Q

d) $-V_{EE}$

μΏ

- Output resistance of a 741C is in 11)
 - a) Μ'Ω b)
 - c) Ώ d) None of these
- Output offset voltage changes with 12)
 - a) Time b) Temperature All of these
 - c) Supply voltage d)
- 13) Find out the resolution of 8 bit DAC/ADC?
 - a) 562 b) 625
 - c) 256 d) 265
- In VLSI IC, the no. of components integrated on the same chip 14)
 - b) <100 a) <10
 - >1000 c) >100 d)

Set Q

Max. Marks: 56

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Draw & explain any four circuits mentioned below:

- a) Op amp as integrator
- b) Summing and scaling amplifier
- c) V to I converter with grounded load
- d) High frequency op amp equivalent
- e) Voltage transfer curve with a comment on significance of its slope.

Q.3 Attempt any two.

- a) The 741 C op amp having below parameters is connected as a non inverting amplifier with R1=1KΩ and RF=10KΩ.Compute A_F,Ri_F,Ro_F,f_F and V_{OOT} · Given: A=200,000, Ri=2MΩ, Ro=75Ω, fo=5KHz, Supply voltage=+/_15V output voltage swing=+/_13 V
- **b)** What is slew rate? How it is specified? What is significance? Show with an example how it limits close loop applications of op amp.
- c) What is input bias current? How to compensate for it? Derive equation for it.

Section – II

Q.4 Attempt any four

- a) Draw and explain precision full wave rectifier.
- b) Explain antilog amplifier using op amp.
- c) Describe Schmitt trigger with UTP and LTP.
- d) Draw and explain square wave generator.
- e) Explain positive and negative clamper circuits.

Q.5 Attempt any two.

- a) Design and explain a phase shift oscillator to generate a sinusoidal signal of 200 Hz.
- b) Draw & explain band pass filter.
- c) Explain first order LPF. Design LPF at a cutoff frequency of 1KHz with a passband gain of 2.

12

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Seat No.		Set R				
	S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS					
		Tuesday, 26-11-2019 Max. Marks: 70 PM To 05:30 PM				
Instru	ction	 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. 				
		MCQ/Objective Type Questions				
Duratio	on: 3(Minutes Marks: 14				
		e the correct alternatives from the options and rewrite the 14				
	sente 1)	Dutput offset voltage changes with) Time b) Temperature) Supply voltage d) All of these				
4	2)	Find out the resolution of 8 bit DAC/ADC? a) 562 b) 625 b) 256 d) 265				
;	3)	n VLSI IC, the no. of components integrated on the same chip b) <10 b) <100 d) >100				
2	4)	(notch filter is a filter.) wide band stop b) wide band pass) narrow band stop d) narrow band pass				
Ę	5)	x triangular wave form generator has a comparator and b) Differentiator b) Subtractor c) Adder d) Integrator				
(6)	Average of the two input currents of op amp is called as a) offset current b) input differential current b) input bias current d) none of these				
7	7)	The pins of 741 op amp used for voltage offset null are a) 1,4,5 b) 1,6 b) 1,5 d) 2,4,5				
8	8)	For a Schmitt trigger , V _{ut} -V _{lt} is called as a) differential voltage b) loop gain b) Hysteresis d) Trigger				
ę	9)	For a phase shift oscillator, gain must be b) 3 b) 29 c) Less than 1 d) None of these				

Seat No.

SLR-FM-668

SLR-FM-668 Set R

- 10) The gain bandwidth product of 741 is
 - a) 4 MHz b) 5 MHz
 - c) 1 MHz d) 10 MHz
- Schmitt trigger output is _____ for sine wave input. 11)
 - a) triangular wave b) Square wave
 - c) saw tooth wave d) None of these
- 12) In a sample and hold circuit, op amp is used as
 - voltage follower b)
 - d) Peak detector
- Pin number 3 of a 741 is 13)

a) sample circuit

c) Hold circuit

- a) Inverting input
- c) $+V_{cc}$
- d)
- 14) Output resistance of a 741C is in
 - a) Μ'Ω
 - c) Ώ

- b) Non inverting input
- -V_{EE}
- b) μΏ
- None of these d)

Set R

Max. Marks: 56

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Draw & explain any four circuits mentioned below:

- a) Op amp as integrator
- b) Summing and scaling amplifier
- c) V to I converter with grounded load
- d) High frequency op amp equivalent
- e) Voltage transfer curve with a comment on significance of its slope.

Q.3 Attempt any two.

- a) The 741 C op amp having below parameters is connected as a non inverting amplifier with R1=1KΩ and RF=10KΩ.Compute A_F,Ri_F,Ro_F,f_F and V_{OOT} · Given: A=200,000, Ri=2MΩ, Ro=75Ω, fo=5KHz, Supply voltage=+/_15V output voltage swing=+/_13 V
- **b)** What is slew rate? How it is specified? What is significance? Show with an example how it limits close loop applications of op amp.
- c) What is input bias current? How to compensate for it? Derive equation for it.

Section – II

Q.4 Attempt any four

- a) Draw and explain precision full wave rectifier.
- b) Explain antilog amplifier using op amp.
- c) Describe Schmitt trigger with UTP and LTP.
- d) Draw and explain square wave generator.
- e) Explain positive and negative clamper circuits.

Q.5 Attempt any two.

- a) Design and explain a phase shift oscillator to generate a sinusoidal signal of 200 Hz.
- b) Draw & explain band pass filter.
- c) Explain first order LPF. Design LPF at a cutoff frequency of 1KHz with a passband gain of 2.

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** LINEAR INTEGRATED CIRCUITS Max. Marks: 70

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Duration: 30 Minutes

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Q.1 14 Choose the correct alternatives from the options and rewrite the sentence. Average of the two input currents of op amp is called as 1) a) offset current b) input differential current c) input bias current d) none of these 2) The pins of 741 op amp used for voltage offset null are a) 1,4,5 b) 1,6 c) 1,5 d) 2,4,5 3) For a Schmitt trigger , Vut-VIt is called as a) differential voltage b) loop gain c) Hysteresis d) Trigger 4) For a phase shift oscillator, gain must be 29 a) 3 b) c) Less than 1 d) None of these 5) The gain bandwidth product of 741 is a) 4 MHz b) 5 MHz c) 1 MHz d) 10 MHz 6) Schmitt trigger output is _____ for sine wave input. a) triangular wave b) Square wave c) saw tooth wave d) None of these 7) In a sample and hold circuit, op amp is used as sample circuit voltage follower a) b) c) Hold circuit d) Peak detector 8) Pin number 3 of a 741 is a) Inverting input Non inverting input b) c) $+V_{cc}$ d) -V_{EE} Output resistance of a 741C is in 9) μΏ b) a) M Ώ c) Ώ d) None of these

SLR-FM-668

Set

Marks: 14

SLR-FM-668 Set S

10) Output offset voltage changes with

- a) Time b) Temperature
- c) Supply voltage d) All of these
- Find out the resolution of 8 bit DAC/ADC? 11)
 - a) 562 b) 625
 - c) 256 d) 265

12) In VLSI IC, the no. of components integrated on the same chip

- <100 a) <10 b) c) >100
 - d) >1000
- A notch filter is a _____ filter. 13)
 - a) wide band stop b) wide band pass
 - c) narrow band stop d) narrow band pass
- 14) A triangular wave form generator has a comparator and
 - a) Differentiator c) Adder
- Subtractor b)
- d) Integrator

Set S

Max. Marks: 56

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering LINEAR INTEGRATED CIRCUITS

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Draw & explain any four circuits mentioned below:

- a) Op amp as integrator
- b) Summing and scaling amplifier
- c) V to I converter with grounded load
- d) High frequency op amp equivalent
- e) Voltage transfer curve with a comment on significance of its slope.

Q.3 Attempt any two.

- a) The 741 C op amp having below parameters is connected as a non inverting amplifier with R1=1KΩ and RF=10KΩ.Compute A_F,Ri_F,Ro_F,f_F and V_{OOT} · Given: A=200,000, Ri=2MΩ, Ro=75Ω, fo=5KHz, Supply voltage=+/_15V output voltage swing=+/_13 V
- **b)** What is slew rate? How it is specified? What is significance? Show with an example how it limits close loop applications of op amp.
- c) What is input bias current? How to compensate for it? Derive equation for it.

Section – II

Q.4 Attempt any four

- a) Draw and explain precision full wave rectifier.
- b) Explain antilog amplifier using op amp.
- c) Describe Schmitt trigger with UTP and LTP.
- d) Draw and explain square wave generator.
- e) Explain positive and negative clamper circuits.

Q.5 Attempt any two.

- a) Design and explain a phase shift oscillator to generate a sinusoidal signal of 200 Hz.
- b) Draw & explain band pass filter.
- c) Explain first order LPF. Design LPF at a cutoff frequency of 1KHz with a passband gain of 2.

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Set S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

4)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Given a unit step function u(t), its time derivative is _____ 1)
 - a) A unit impulse
 - b) Another step function d) A sine function c) A unit ramp function
- 2) If the signal $x(t) = (1/2)^n u(n-2)$, then signal x(n+3) is guaranteed to be zero for values of n _____.
 - $-\infty \le n \le -1$ a) c) $-\infty \le n \le 2$
- The impulse response of discrete time is $h[n] = (1/3)^n u[n 3]$, the system 3) is __ ____·
 - Casual a)
 - c) unstable and casual
 - u(n+1) u(n) =_____. b) u(2n-1)a) u(n + 1)
 - $u(n^2 1)$ d) $\delta(n+1)$ c)
- If h1(t) is the impulse response of invertible system and h2(t) is the 5) impulse response of its inverse system then their convolution h1(t)*h2(t)will be
 - a) u(t) b) $\delta(t)$
 - d) None of these C) $\delta(-t)$
- 6) The Fourier transform of impulse response of differentiator is
 - a) Jω b) $2\pi\delta(\omega)$ d) None of these c) ω
- 7) If $X(\omega)$ is the Fourier transform of the signal x(n), then what is the Fourier
 - transform of the signal x(n-k)? $e^{j\omega k}$. X($-\omega$) b) $e^{j\omega k}$. X(ω) a)
 - c) $e^{-j\omega k}$. X($-\omega$) d) $e^{-j\omega k} X(\omega)$
- What would be the probability of an event 'G' if G1 denotes its 8) complement, according to the axioms of probability?
 - P(G) = 1 / P(G1)b) P(G) = 1 - P(G1)a)
 - P(G) = 1 + P(G1)d) P(G) = 1 * P(G1)c)

Seat

No.

SLR-FM-669

Max. Marks: 70

Marks: 14

- b) $-\infty \le n \le -2$
 - d) $2 \le n \le \infty$
- - b) Stable and non causal
 - d) Stable and casual

- 9) Which function has a provision of determining the similarity between the signal and its delayed version?
 - a) Auto-correlation Function
 - c) Both a & b
- 10) X(n)={1, 2, 3, 4, 5, 6} has ROC
 - a) Entire z plane Expect z = 0 and $z = \infty$
 - b) Entire z plane Expect z = 0
 - c) Entire z plane Expect $z = \infty$
 - d) z = 0 only

11) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?

- a) Only if all the poles of system transfer function lie in left-half of S-plane
- b) Only if all the poles of system transfer function lie in right-half of S-plane
- c) Only if all the poles of system transfer function lie at the centre of S-plane
- d) None of the above
- 12) If x(t) signal is multiplied with train of impulses, the process is _____.
 - a) Convolution b) Z transform
 - c) Sampling d) Laplace transform
- 13) The analog signal $m(t) = 4 \cos 50 \pi t + 3 \sin 300 \pi t \cos 150 \pi t$. Then the value of nyquist are Fs is _____.
 - a) 300 Hz b) 150 Hz
 - c) 200 Hz d) 100 Hz
- 14) Which among the below mentioned standard PDFs is/are applicable to discrete random variables?
 - a) Gaussian distribution
 - c) Poisson distribution
- b) Rayleigh distribution
- d) All of the above

- b) Cross-correlation Function
- d) None of the above





Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

Section – I

Q.2 Solve any FOUR of the Following.

A discrete time signal x[n] is given below. Sketch and label each of the a) following signals.

$$x[n] = \{2,3,1,4,2\}$$

- 1) x[n-1]
- 2) x[n/2]
- 3) $x[n+1]\delta[n-1]$
- 4) $\{x[n] + x[-n]\}u[n]$
- Explain how to represent periodic signal using Fourier transform. b)
- Consider the LTI systems with following impulse responses. c)
 - $h[n] = (1/3)^n u[n]$ 1)
 - $h(t) = e^{-3t}u(t-3)$ 2)

Determine whether each of the above system is causal and or stable. Justify your answer.

- Determine and sketch the even and odd parts of a signal d) x(t) = u(t+1)-u(t-3)
- What is an invertible system? Determine whether the following system is e) invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$\mathbf{y}(\mathbf{t}) = 2\mathbf{x}(\mathbf{t} - 3/2)$$

Ρ

f) Determine and sketch the inverse Fourier transform of following.

$$\mathbf{x}(\mathbf{j}\omega) = \begin{cases} 1 & |\omega| < 0 \\ 0 & |\omega| > P \end{cases}$$

Q.3 Solve any TWO of the Following.

- Compute convolution integral of x(t) = u(t+1)-u(t-1) and h(t) = u(t-1). a)
- For the continuous time periodic signal. b)

$$x(t) = 2 + \cos\left(\frac{4\pi}{3}t\right) + 4\sin\left(\frac{9\pi}{3}t\right)$$

Determine the fundamental frequency Ω_0 and the Fourier series coefficient of Exponential Fourier series ak. Sketch the magnitude

- Obtain the Fourier transform of following signals
 - 1) $x(t) = e^{-3|t|}$

c)

2) $x(t) = \delta(t+2)$

Sketch the magnitude.

12

Max. Marks: 56

16

SLR-FM-669



Section – II

Q.4 Solve any FOUR of the Following.

- Explain impulse train sampling with neat diagram. a)
- Consider an LTI system with the system function. b)

$$H(s) = \frac{s-1}{(s+1)(s-2)}$$

Obtain the impulse response h(t) of the system and state the region of convergence of the system if the system is.

- 1) Causal
- 2) anti causal & stable
- What is cross correlation? State its properties. c)
- Define probability density function & state its properties. d)
- Find the Nyquist rate for the signal. e)

$$x(t) = \frac{1}{2\pi} \cos(4000\pi t) \cos(100\pi t)$$

Q.5 Solve any TWO of the Following.

- Define & sketch following distribution function. a)
 - 1) Uniform distribution
 - 2) Gaussian distribution

Obtain the expression for mean of Uniform distribution

Consider the Parallel connection of two LTI systems whose system b) transfer functions are as given below.

1)
$$H_1(z) = \frac{z}{z - 1/3}$$
 ROC: $|z| > 1/3$

2)
$$H_2(z) = \frac{z}{z-2}$$
 ROC: $|z| < 2$

Obtain the overall transfer function. Also determine whether the overall system is stable and or causal. Justify your answer.

A continuous time random variable has probability density function (PDF) c) expressed as

$$fx(x) = 2e^{-2x} \text{ for } x \ge 0$$

- 1) Determine the probability that it will take a value between 1 & 3.
- Also determine cumulative distribution function for the random 2) variable.

16

12

SLR-FM-669

Set

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- What would be the probability of an event 'G' if G1 denotes its 1) complement, according to the axioms of probability?
 - P(G) = 1 / P(G1)a)
 - c) P(G) = 1 + P(G1)
- b) P(G) = 1 P(G1)d) P(G) = 1 * P(G1)
- 2) Which function has a provision of determining the similarity between the signal and its delayed version?
 - a) Auto-correlation Function
 - Both a & b c)

- b) Cross-correlation Function
- d) None of the above
- 3) X(n)={1, 2, 3, 4, 5, 6} has ROC
 - Entire z plane Expect z = 0 and $z = \infty$ a)
 - Entire z plane Expect z = 0b)
 - Entire z plane Expect $z = \infty$ C)
 - z = 0 only d)
- 4) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?
 - Only if all the poles of system transfer function lie in left-half of S-plane a)
 - Only if all the poles of system transfer function lie in right-half of S-plane b)
 - c) Only if all the poles of system transfer function lie at the centre of S-plane
 - None of the above d)
- 5) If x(t) signal is multiplied with train of impulses, the process is _____.
 - a) Convolution b) Z transform
 - Sampling d) Laplace transform c)
- The analog signal $m(t) = 4 \cos 50 \pi t + 3 \sin 300 \pi t \cos 150 \pi t$. Then the 6) value of nyquist are Fs is .
 - 300 Hz a) b) 150 Hz
 - 200 Hz c) d) 100 Hz
- Which among the below mentioned standard PDFs is/are applicable to 7) discrete random variables?
 - Gaussian distribution Rayleigh distribution a) b)
 - d) All of the above c) Poisson distribution

Marks: 14

Set

Max. Marks: 70

				Set	Q
8)	a)	en a unit step function u(t), its tim A unit impulse A unit ramp function	b)	Another step function	
9)	zero a)		b)	$-\infty \le n \le -2$	
10)	, The is _	·	ne is	$s h[n] = (1/3)^n u[n - 3], the system$	
	,	Casual unstable and casual	'	Stable and non causal Stable and casual	
11)	a)	+1) - u(n) = u(n + 1) u(n ² - 1)		$u(2n-1) \\ \delta(n+1)$	
12)	If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h1(t)*h2(t) will be				
		$u(t) \\ \delta(-t)$		$\delta(t)$ None of these	
13)		Fourier transform of impulse response $J\omega$	b)	se of differentiator is $2\pi\delta(\omega)$ None of these	

- 14) If $X(\omega)$ is the Fourier transform of the signal x(n), then what is the Fourier transform of the signal x(n-k)? a) $e^{j\omega k}.X(-\omega)$ b) $e^{j\omega k}.X(\omega)$ c) $e^{-j\omega k}.X(-\omega)$ d) $e^{-j\omega k}.X(\omega)$

Seat No. S.E. (Part – II) (Old)

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

Section – I

Q.2 Solve any FOUR of the Following.

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

$$x[n] = \{2,3,1,4,2\}$$

- 1) x[n-1]
- 2) x[n/2]
- 3) $x[n+1]\delta[n-1]$
- 4) $\{x[n] + x[-n]\}u[n]$
- b) Explain how to represent periodic signal using Fourier transform.
- c) Consider the LTI systems with following impulse responses.
 - 1) $h[n] = (1/3)^n u[n]$
 - 2) $h(t) = e^{-3t}u(t-3)$

Determine whether each of the above system is causal and or stable. Justify your answer.

- d) Determine and sketch the even and odd parts of a signal x(t) = u(t+1)-u(t-3)
- e) What is an invertible system? Determine whether the following system is invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$\mathbf{y}(\mathbf{t}) = 2\mathbf{x}(\mathbf{t} - 3/2)$$

Ρ

f) Determine and sketch the inverse Fourier transform of following.

$$\mathbf{x}(\mathbf{j}\boldsymbol{\omega}) = \begin{cases} 1 & |\boldsymbol{\omega}| < \\ 0 & |\boldsymbol{\omega}| > P \end{cases}$$

Q.3 Solve any TWO of the Following.

- a) Compute convolution integral of x(t) = u(t+1)-u(t-1) and h(t) = u(t-1).
- b) For the continuous time periodic signal.

$$x(t) = 2 + \cos\left(\frac{4\pi}{3}t\right) + 4\sin\left(\frac{9\pi}{3}t\right)$$

Determine the fundamental frequency Ω_o and the Fourier series coefficient of Exponential Fourier series a_k . Sketch the magnitude

- Obtain the Fourier transform of following signals
 - 1) $x(t) = e^{-3|t|}$

c)

2) $x(t) = \delta(t+2)$

Sketch the magnitude.

12



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Section – II

Q.4 Solve any FOUR of the Following.

- a) Explain impulse train sampling with neat diagram.
- b) Consider an LTI system with the system function.

$$H(s) = \frac{s-1}{(s+1)(s-2)}$$

Obtain the impulse response h(t) of the system and state the region of convergence of the system if the system is.

- 1) causal
- 2) anti causal & stable
- c) What is cross correlation? State its properties.
- d) Define probability density function & state its properties.
- e) Find the Nyquist rate for the signal.

$$x(t) = \frac{1}{2\pi} \cos(4000\pi t) \cos(100\pi t)$$

Q.5 Solve any TWO of the Following.

- a) Define & sketch following distribution function.
 - 1) Uniform distribution
 - 2) Gaussian distribution

Obtain the expression for mean of Uniform distribution

b) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

1)
$$H_1(z) = \frac{z}{z - 1/3}$$
 ROC: $|z| > 1/3$

2)
$$H_2(z) = \frac{z}{z-2}$$
 ROC: $|z| < 2$

Obtain the overall transfer function. Also determine whether the overall system is stable and or causal. Justify your answer.

c) A continuous time random variable has probability density function (PDF) expressed as

$$fx(x) = 2e^{-2x}$$
 for $x \ge 0$

- 1) Determine the probability that it will take a value between 1 & 3.
- 2) Also determine cumulative distribution function for the random variable.

16

12

SLR-FM-669

Set

Set

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- If h1(t) is the impulse response of invertible system and h2(t) is the 1) impulse response of its inverse system then their convolution h1(t)*h2(t) will be
 - a) u(t)

a)

6)

- d) None of these C) $\delta(-t)$
- 2) The Fourier transform of impulse response of differentiator is
 - Jω b) $2\pi\delta(\omega)$
 - d) None of these C) ω
- If $X(\omega)$ is the Fourier transform of the signal x(n), then what is the Fourier 3) transform of the signal x(n-k)?
 - $e^{j\omega k}$. X($-\omega$) b) $e^{j\omega k}$. X(ω) a) $e^{-j\omega k}$. X($-\omega$) d) $e^{-j\omega k}X(\omega)$ c)
- What would be the probability of an event 'G' if G1 denotes its 4) complement, according to the axioms of probability?
 - a) P(G) = 1 / P(G1)b) P(G) = 1 - P(G1)d) P(G) = 1 * P(G1)
 - P(G) = 1 + P(G1)c)
- 5) Which function has a provision of determining the similarity between the signal and its delayed version?
 - Auto-correlation Function a)
 - Both a & b
- b) Cross-correlation Function d) None of the above
- C) X(n)={1, 2, 3, 4, 5, 6} has ROC
 - Entire z plane Expect z = 0 and $z = \infty$ a)
 - b) Entire z plane Expect z = 0
- Entire z plane Expect $z = \infty$ c)
- z = 0 only d)
- 7) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?
 - Only if all the poles of system transfer function lie in left-half of S-plane a)
 - b) Only if all the poles of system transfer function lie in right-half of S-plane
 - Only if all the poles of system transfer function lie at the centre of S-plane c)
 - None of the above d)

Max. Marks: 70

Marks: 14



b) $\delta(t)$

SLR-FM-669

R

- If x(t) signal is multiplied with train of impulses, the process is . 8)
 - a) Convolution

C)

b) Z transform

d) Laplace transform

- Sampling C)
- The analog signal $m(t) = 4 \cos 50 \pi t + 3 \sin 300 \pi t \cos 150 \pi t$. Then the 9) value of nyquist are Fs is _____. a)
 - b) 300 Hz 150 Hz 200 Hz
 - d) 100 Hz
- Which among the below mentioned standard PDFs is/are applicable to 10) discrete random variables?
 - a) Gaussian distribution
- b) Rayleigh distribution
- d) All of the above c) Poisson distribution

Given a unit step function u(t), its time derivative is ____ 11)

- b) Another step function
- c) A unit ramp function

a) A unit impulse

- d) A sine function
- If the signal $x(t) = (1/2)^n u(n-2)$, then signal x(n+3) is guaranteed to be 12) zero for values of n _____. b) $-\infty \le n \le -2$
 - a) $-\infty \le n \le -1$
 - d) $2 \le n \le \infty$ c) $-\infty \le n \le 2$
- The impulse response of discrete time is $h[n] = (1/3)^n u[n 3]$, the system 13) is
 - Casual a)
 - unstable and casual C)
- b) Stable and non causal
- d) Stable and casual
- u(n+1) u(n) = _____. 14)
 - a) u(n+1)
 - c) $u(n^2 - 1)$

- b) u(2n-1)
- d) $\delta(n+1)$



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Seat No. S.E. (Part – II) (Old) (C

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume Suitable data if required & state the assumptions.
- 3) Figure to the right indicates full marks.

Section – I

Q.2 Solve any FOUR of the Following.

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

$$x[n] = \{2,3,1,4,2\}$$

- 1) x[n-1]
- 2) x[n/2]
- 3) $x[n+1]\delta[n-1]$
- 4) $\{x[n] + x[-n]\}u[n]$
- b) Explain how to represent periodic signal using Fourier transform.
- c) Consider the LTI systems with following impulse responses.
 - 1) $h[n] = (1/3)^n u[n]$
 - 2) $h(t) = e^{-3t}u(t-3)$

Determine whether each of the above system is causal and or stable. Justify your answer.

- d) Determine and sketch the even and odd parts of a signal x(t) = u(t+1)-u(t-3)
- e) What is an invertible system? Determine whether the following system is invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$\mathbf{y}(\mathbf{t}) = 2\mathbf{x}(\mathbf{t} - 3/2)$$

Ρ

f) Determine and sketch the inverse Fourier transform of following.

$$\mathbf{x}(\mathbf{j}\omega) = \begin{cases} 1 & |\omega| < 0 \\ 0 & |\omega| > P \end{cases}$$

Q.3 Solve any TWO of the Following.

- a) Compute convolution integral of x(t) = u(t+1)-u(t-1) and h(t) = u(t-1).
- b) For the continuous time periodic signal.

$$x(t) = 2 + \cos\left(\frac{4\pi}{3}t\right) + 4\sin\left(\frac{9\pi}{3}t\right)$$

Determine the fundamental frequency Ω_o and the Fourier series coefficient of Exponential Fourier series a_k . Sketch the magnitude

- Obtain the Fourier transform of following signals
 - 1) $x(t) = e^{-3|t|}$

c)

 $2) \quad x(t) = \delta(t+2)$

Sketch the magnitude.

12

Max. Marks: 56

16

SLR-FM-669

Section – II

Q.4 Solve any FOUR of the Following.

- a) Explain impulse train sampling with neat diagram.
- b) Consider an LTI system with the system function.

$$H(s) = \frac{s-1}{(s+1)(s-2)}$$

Obtain the impulse response h(t) of the system and state the region of convergence of the system if the system is.

- 1) causal
- 2) anti causal & stable
- c) What is cross correlation? State its properties.
- d) Define probability density function & state its properties.
- e) Find the Nyquist rate for the signal.

$$x(t) = \frac{1}{2\pi} \cos(4000\pi t) \cos(100\pi t)$$

Q.5 Solve any TWO of the Following.

- a) Define & sketch following distribution function.
 - 1) Uniform distribution
 - 2) Gaussian distribution

Obtain the expression for mean of Uniform distribution

b) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

1)
$$H_1(z) = \frac{z}{z - 1/3}$$
 ROC: $|z| > 1/3$

2)
$$H_2(z) = \frac{z}{z-2}$$
 ROC: $|z| < 2$

Obtain the overall transfer function. Also determine whether the overall system is stable and or causal. Justify your answer.

c) A continuous time random variable has probability density function (PDF) expressed as

$$fx(x) = 2e^{-2x}$$
 for $x \ge 0$

- 1) Determine the probability that it will take a value between 1 & 3.
- 2) Also determine cumulative distribution function for the random variable.

16

12

SLR-FM-669

Set

Seat	
No.	

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) X(n)={1, 2, 3, 4, 5, 6} has ROC
 - Entire z plane Expect z = 0 and $z = \infty$ a)
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 - Entire z plane Expect $z = \infty$ c)
 - z = 0 only d)
- When is the system said to be causal as well as stable in accordance to 2) pole/zero of ROC specified by system transfer function?
 - Only if all the poles of system transfer function lie in left-half of S-plane a)
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 - Only if all the poles of system transfer function lie at the centre of S-plane c)
 - d) None of the above
- 3) If x(t) signal is multiplied with train of impulses, the process is _____. b) Z transform
 - a) Convolution
 - d) Laplace transform Sampling c)
- The analog signal $m(t) = 4 \cos 50 \pi t + 3 \sin 300 \pi t \cos 150 \pi t$. Then the 4) value of nyquist are Fs is _____.
 - 300 Hz b) 150 Hz a) C)
 - 200 Hz d) 100 Hz
- 5) Which among the below mentioned standard PDFs is/are applicable to discrete random variables?
 - Gaussian distribution a) Poisson distribution
- b) Rayleigh distribution d) All of the above
- 6) Given a unit step function u(t), its time derivative is ____
 - A unit impulse a)
 - A unit ramp function c)
- b) Another step function
- d) A sine function
- If the signal $x(t) = (1/2)^n u(n-2)$, then signal x(n+3) is guaranteed to be 7) zero for values of n _____.
 - a) $-\infty \le n \le -1$

c)

- c) $-\infty \le n \le 2$
- b) $-\infty \le n \le -2$
- d) $2 \le n \le \infty$



Max. Marks: 70

- The impulse response of discrete time is $h[n] = (1/3)^n u[n 3]$, the system 8) is ____.
 - a) Casual

c)

- c) unstable and casual
- b) Stable and non causal
- d) Stable and casual
- 9) u(n+1) - u(n) =_____. b) u(2n-1)a) u(n + 1) $u(n^2 - 1)$ d) $\delta(n+1)$ c)
- 10) If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h1(t)*h2(t)will be b) $\delta(t)$
 - a) u(t)
 - $\delta(-t)$ d) None of these C)
- The Fourier transform of impulse response of differentiator is _____. 11)
 - a) Jω b) $2\pi\delta(\omega)$
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- If $X(\omega)$ is the Fourier transform of the signal x(n), then what is the Fourier 12) transform of the signal x(n-k)?
 - a) $e^{j\omega k}$. X($-\omega$) b) $e^{j\omega k}$. X(ω) $e^{-j\omega k}$. X($-\omega$) c) d) $e^{-j\omega k} X(\omega)$
- 13) What would be the probability of an event 'G' if G1 denotes its complement, according to the axioms of probability?
 - a) P(G) = 1 / P(G1)b) P(G) = 1 - P(G1)
 - c) P(G) = 1 + P(G1)
- d) P(G) = 1 * P(G1)
- 14) Which function has a provision of determining the similarity between the signal and its delayed version?
 - Auto-correlation Function a)
- b) Cross-correlation Function

c) Both a & b d) None of the above

Set

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

SIGNALS AND SYSTEMS

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Seat No.

Instructions: 1) All questions are compulsory.

- 2) Assume Suitable data if required & state the assumptions.
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Section – I

Q.2 Solve any FOUR of the Following.

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

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- 3) $x[n+1]\delta[n-1]$
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 - 2) $h(t) = e^{-3t}u(t-3)$

Determine whether each of the above system is causal and or stable. Justify your answer.

- d) Determine and sketch the even and odd parts of a signal x(t) = u(t+1)-u(t-3)
- e) What is an invertible system? Determine whether the following system is invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$\mathbf{y}(\mathbf{t}) = 2\mathbf{x}(\mathbf{t} - 3/2)$$

Ρ

f) Determine and sketch the inverse Fourier transform of following.

$$\mathbf{x}(\mathbf{j}\omega) = \begin{cases} 1 & |\omega| < 0 \\ 0 & |\omega| > P \end{cases}$$

Q.3 Solve any TWO of the Following.

- a) Compute convolution integral of x(t) = u(t+1)-u(t-1) and h(t) = u(t-1).
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$$x(t) = 2 + \cos\left(\frac{4\pi}{3}t\right) + 4\sin\left(\frac{9\pi}{3}t\right)$$

Determine the fundamental frequency Ω_o and the Fourier series coefficient of Exponential Fourier series a_k . Sketch the magnitude

- Obtain the Fourier transform of following signals
 - 1) $x(t) = e^{-3|t|}$

c)

 $2) \quad x(t) = \delta(t+2)$

Sketch the magnitude.

Max. Marks: 56

16

SLR-FM-669

Section – II

Q.4 Solve any FOUR of the Following.

- a) Explain impulse train sampling with neat diagram.
- b) Consider an LTI system with the system function.

$$H(s) = \frac{s-1}{(s+1)(s-2)}$$

Obtain the impulse response h(t) of the system and state the region of convergence of the system if the system is.

- 1) Causal
- 2) anti causal & stable
- c) What is cross correlation? State its properties.
- d) Define probability density function & state its properties.
- e) Find the Nyquist rate for the signal.

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- a) Define & sketch following distribution function.
 - 1) Uniform distribution
 - 2) Gaussian distribution

Obtain the expression for mean of Uniform distribution

b) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

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$$H_1(z) = \frac{z}{z - 1/3}$$
 ROC: $|z| > 1/3$

2)
$$H_2(z) = \frac{z}{z-2}$$
 ROC: $|z| < 2$

Obtain the overall transfer function. Also determine whether the overall system is stable and or causal. Justify your answer.

c) A continuous time random variable has probability density function (PDF) expressed as

$$fx(x) = 2e^{-2x}$$
 for $x \ge 0$

- 1) Determine the probability that it will take a value between 1 & 3.
- 2) Also determine cumulative distribution function for the random variable.

16

12

SLR-FM-669

Set

Set T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

CONTROL SYSTEMS

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

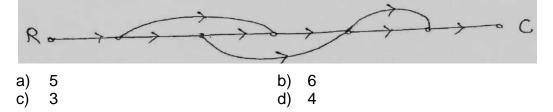
- The transient response of feedback system with damping factor zero 1)
 - Rises slowly a)
 - Decays quickly c)
- 2) A node having only incoming branches is called as ____
 - Source node b) Sink node a)
 - Output node d) Both b and c c)
- 3) The steady state error due to ramp input for a type zero system is equal to
 - Zero a)

c)

- Non zero number c)
- 4) The steady state analysis of system depends on _
 - Order of system a) Both a & b
- b) Type of system d) None of these
- 5) One of the basic requirements of a servomotor is that it must produce high torque at all _____.
 - a) Loads

c) Speeds

- b) Frequencies d) Voltages
- The order of the system will be obtained from _____. 6)
 - Closed loop transfer function of system a)
 - Characteristic equation of system b)
 - Open loop transfer function of system c)
 - a&b d)
- 7) The number of forward paths are present in given SFG.



Max. Marks: 70

Marks: 14



- d) Constant

b) Rises quickly

d) None of these

- b) Infinite



Seat

No.

		Set
8	 Routh Hurwitz criterion gives a) Number of roots in the right h b) Value of the roots c) Number of roots in the left ha d) Number of roots in the top ha 	of the s-plane f the s-plane
9)	The polar plot of a transfer functio Gain margin is. a) Zero c) 1dB	asses through the critical point (-1,0). b) -1dB d) Infinity
10	 The compensator required to impless system is. a) lag c) lag-lead 	e the steady- state response of a b) lead d) none of these
11	 Consider the loop transfer function diagram the centroid will be locate a) -4 c) -2 	
12	 2) The frequency at which the phase as 'Phase crossover frequency'. a) 90° c) 180° 	the system acquires is known b)90° d)180°
13	 Which condition is used to verify t root locus? a) Amplitude c) Magnitude 	existence of a particular point on the b) Frequency

- c) Magnitude d) Angle
- 14) Due to an addition of pole at origin, the polar plot gets shifted by _____at ω = 0?
 - a) -45° b) -60° c) -90° d) -180°

Ρ

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four.

- a) Derive transfer function of armature controlled DC servomotor.
- b) Differentiate between open loop & closed loop control systems.
- c) Define following terms with reference to SFG
 - 1) Source node
 - 2) Forward path
 - 3) Self loop
 - 4) Non-touching loops
- d) Determine the acceleration and velocity constant for the system having.

$$G(S) = \frac{1}{s(s+4)} \qquad H(S) = \frac{s}{(\delta+s)}$$

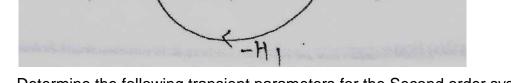
GI

e) Explain DC servo motor with neat diagram.

Q.3 Solve any two.

- Write any six block diagram reduction rules to obtain overall transfer function of system.
- **b)** Determine the overall transfer function for the following system shown with the help of SFG using Mason's Gain formula.

40



42

- c) Determine the following transient parameters for the Second order system having characteristic equation $S^2 + 6S + 25 = 0$
 - 1) Maximum peak overshoot
 - 2) damped frequency
 - 3) Settling time at 5% tolerance band
 - 4) damping factor

Max. Marks: 56

12

16

Set P

Seat No.

SLR-FM-670

Q.4 Attempt any four.

a) Sketch the polar plot for the following system.

$$G(s)H(s) = \frac{(s+10)}{(s+1)}$$

b) Determine the stability of the system for following characteristic equation by Hurwitzs method.

 $F(s) = s^3 + s^2 + s + 4 = 0$

- c) What is necessity of compensator? Explain lead compensator.
- d) Define absolute stability and conditionally stability of the system.
- e) Find the forced sinusoidal response for following system G(s)=(s+1)/(s+2) for the input signal $r(t) = 10 \cos(2t + 45^\circ)$

Q.5 Attempt any two.

a) Sketch the root locus for the system.

$$G(s) = \frac{K(s+1)}{s(s+2)}$$

- b) Explain the nature of Bode plots for.
 - 1) System gain 'K'
 - 2) Poles at origin
 - 3) Zeros at origin
- **c)** A system has $G(s)H(s) = \frac{K}{s(s+2)(s+4)(s+8)}$, where K is positive. Determine the range of K for stability using Routh's criterion.

16



Set T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions:1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

CONTROL SYSTEMS

- 2) Assume suitable data if required
- 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Routh Hurwitz criterion gives ____
 - a) Number of roots in the right half of the s-plane
 - b) Value of the roots
 - c) Number of roots in the left half of the s-plane
 - d) Number of roots in the top half of the s-plane
- 2) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is.
 - a) Zero b) -1dB
 - c) 1dB d) Infinity
- 3) The compensator required to improve the steady- state response of a system is.
 - a) lag b) Lead
 - c) lag-lead d) none of these
- 4) Consider the loop transfer function K(s+6)/(s+3)(s+5) In the root locus diagram the centroid will be located at.
 - a) -4 b) -1 c) -2 d) -3
- 5) The frequency at which the phase of the system acquires _____ is known as 'Phase crossover frequency'.

a)	90°	b)	-90°
c)	180°	d)	-180°

- 6) Which condition is used to verify the existence of a particular point on the root locus?
 - a) Amplitude b) Frequency
 - c) Magnitude d) Angle
- 7) Due to an addition of pole at origin, the polar plot gets shifted by _____at ω = 0?

a)	-45°	b)	-60°
C)	-90°	d)	-180°

SLR-FM-670

Max. Marks: 70

Marks: 14

8) The transient response of feedback system with damping factor zero

Rises slowly a)

- **Rises quickly** b)
- Decays quickly c)
- d) None of these

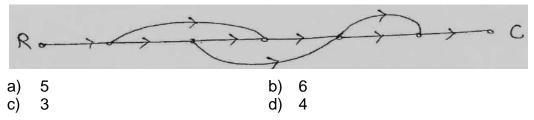
SLR-FM-670

Set

- 9) A node having only incoming branches is called as _____.
 - Source node b) Sink node a) C)
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- 10) The steady state error due to ramp input for a type zero system is equal to
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- 11) The steady state analysis of system depends on _____
 - a) Order of system b) Type of system
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- One of the basic requirements of a servomotor is that it must produce high 12) torque at all .
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- The order of the system will be obtained from _____. 13)
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 - Characteristic equation of system b)
 - Open loop transfer function of system c)
 - a&b d)
- 14) The _____ number of forward paths are present in given SFG.



T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering CONTROL SYSTEMS**

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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Section – I

Solve any four. Q.2

- a) Derive transfer function of armature controlled DC servomotor.
- Differentiate between open loop & closed loop control systems. b)
- Define following terms with reference to SFG c)
 - Source node 1)
 - 2) Forward path
 - 3) Self loop
 - Non-touching loops 4)
- Determine the acceleration and velocity constant for the system having. d)

$$G(S) = \frac{1}{s(s+4)} \qquad H(S) = \frac{s}{(\delta+s)}$$

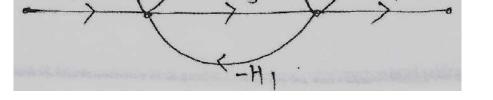
61

e) Explain DC servo motor with neat diagram.

Q.3 Solve any two.

- a) Write any six block diagram reduction rules to obtain overall transfer function of system.
- Determine the overall transfer function for the following system shown with b) the help of SFG using Mason's Gain formula.

40



42

- Determine the following transient parameters for the Second order system c) having characteristic equation $S^2 + 6S + 25 = 0$
 - Maximum peak overshoot 1)
 - 2) damped frequency
 - 3) Settling time at 5% tolerance band
 - damping factor 4)



Set

SLR-FM-670

Max. Marks: 56

16

12

Seat No.

Q.4 Attempt any four.

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$$G(s)H(s) = \frac{(s+10)}{(s+1)}$$

b) Determine the stability of the system for following characteristic equation by Hurwitzs method.

 $F(s) = s^3 + s^2 + s + 4 = 0$

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Q.5 Attempt any two.

a) Sketch the root locus for the system.

$$G(s) = \frac{K(s+1)}{s(s+2)}$$

- **b)** Explain the nature of Bode plots for.
 - 1) System gain 'K'
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 - 3) Zeros at origin
- **c)** A system has $G(s)H(s) = \frac{K}{s(s+2)(s+4)(s+8)}$, where K is positive. Determine the range of K for stability using Routh's criterion.

16



T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

CONTROL SYSTEMS Day & Date: Friday, 06-12-2019

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MCQ/Objective Type Questions

Duration: 30 Minutes

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- One of the basic requirements of a servomotor is that it must produce high 1) torque at all .
 - Loads a)

Frequencies

c) Speeds

- Voltages
- 2) The order of the system will be obtained from _____.
 - Closed loop transfer function of system a)
 - Characteristic equation of system b)
 - Open loop transfer function of system c)
 - d) a&b

R.

5

3

a)

c)

a) b)

C)

a)

lag

4)

_____ number of forward paths are present in given SFG. 3) The

Number of roots in the right half of the s-plane

Number of roots in the left half of the s-plane

Number of roots in the top half of the s-plane d) 5) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is.

b) 6

d) 4

- a) Zero b) -1dB
- 1dB Infinity C) d)
- 6) The compensator required to improve the steady- state response of a system is.
 - lead b)
 - none of these c) lag-lead d)

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Max. Marks: 70

Marks: 14

- b)
- d)



Routh Hurwitz criterion gives

Value of the roots



Set R 7) Consider the loop transfer function K(s+6)/(s+3)(s+5) In the root locus diagram the centroid will be located at. a) -4 b) -1 c) -2 d) -3 8) The frequency at which the phase of the system acquires _____ is known as 'Phase crossover frequency'. b) -90° a) 90° C) 180° d) -180° 9) Which condition is used to verify the existence of a particular point on the root locus? a) Amplitude b) Frequency Magnitude d) Angle C) 10) Due to an addition of pole at origin, the polar plot gets shifted by _____at ω = 0?b) -60° a) -45° -90° c) d) -180° 11) The transient response of feedback system with damping factor zero **Rises slowly** a) b) Rises quickly Decays quickly d) None of these C) A node having only incoming branches is called as 12) . Source node b) Sink node a) C) Output node d) Both b and c 13) The steady state error due to ramp input for a type zero system is equal to Zero b) Infinite a) c) Non zero number d) Constant The steady state analysis of system depends on 14) b) Type of system Order of system a) Both a & b d) None of these C)

Page 10 of 16

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four.

- a) Derive transfer function of armature controlled DC servomotor.
- b) Differentiate between open loop & closed loop control systems.
- c) Define following terms with reference to SFG
 - 1) Source node
 - 2) Forward path
 - 3) Self loop
 - 4) Non-touching loops
- d) Determine the acceleration and velocity constant for the system having.

$$G(S) = \frac{1}{s(s+4)} \qquad H(S) = \frac{s}{(\delta+s)}$$

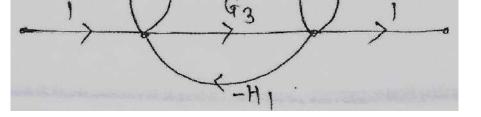
GI

e) Explain DC servo motor with neat diagram.

Q.3 Solve any two.

- Write any six block diagram reduction rules to obtain overall transfer function of system.
- **b)** Determine the overall transfer function for the following system shown with the help of SFG using Mason's Gain formula.

40



- c) Determine the following transient parameters for the Second order system having characteristic equation $S^2 + 6S + 25 = 0$
 - 1) Maximum peak overshoot
 - 2) damped frequency
 - 3) Settling time at 5% tolerance band
 - 4) damping factor



12



Set

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Seat No.

Section – II

Q.4 Attempt any four.

a) Sketch the polar plot for the following system.

$$G(s)H(s) = \frac{(s+10)}{(s+1)}$$

b) Determine the stability of the system for following characteristic equation by Hurwitzs method.

 $F(s) = s^3 + s^2 + s + 4 = 0$

- c) What is necessity of compensator? Explain lead compensator.
- d) Define absolute stability and conditionally stability of the system.
- e) Find the forced sinusoidal response for following system G(s)=(s+1)/(s+2) for the input signal $r(t) = 10 \cos(2t + 45^\circ)$

Q.5 Attempt any two.

a) Sketch the root locus for the system.

$$G(s) = \frac{K(s+1)}{s(s+2)}$$

- **b)** Explain the nature of Bode plots for.
 - 1) System gain 'K'
 - 2) Poles at origin
 - 3) Zeros at origin
- **c)** A system has $G(s)H(s) = \frac{K}{s(s+2)(s+4)(s+8)}$, where K is positive. Determine the range of K for stability using Routh's criterion.

16



T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** CONTROL SYSTEMS Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM **Instructions:**1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Assume suitable data if required 3) Figures to the right indicate full marks. **MCQ/Objective Type Questions Duration: 30 Minutes** Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The compensator required to improve the steady- state response of a 1) system is.
 - a) lag lag-lead d) none of these c)
- 2) Consider the loop transfer function K(s+6)/(s+3)(s+5) In the root locus diagram the centroid will be located at.
 - -4 a) b) -1
 - c) -2 d) -3
- The frequency at which the phase of the system acquires is known 3) as 'Phase crossover frequency'.

a)	90°	b)	-90°
C)	180°	d)	-180°

- 4) Which condition is used to verify the existence of a particular point on the root locus?
 - a) Amplitude b) Frequency
 - C) Magnitude d) Angle
- Due to an addition of pole at origin, the polar plot gets shifted by _____at ω 5) = 0?

a)	-45°	b)	-60°
C)	-90°	d)	-180°

- 6) The transient response of feedback system with damping factor zero
 - Rises slowly b) Rises quickly a)
 - d) None of these Decays quickly C)
- 7) A node having only incoming branches is called as _____
 - Source node b) Sink node a) Output node d) Both b and c c)
- The steady state error due to ramp input for a type zero system is equal to 8)
 - Zero a)

C)

- b) Infinite
- Non zero number d) Constant

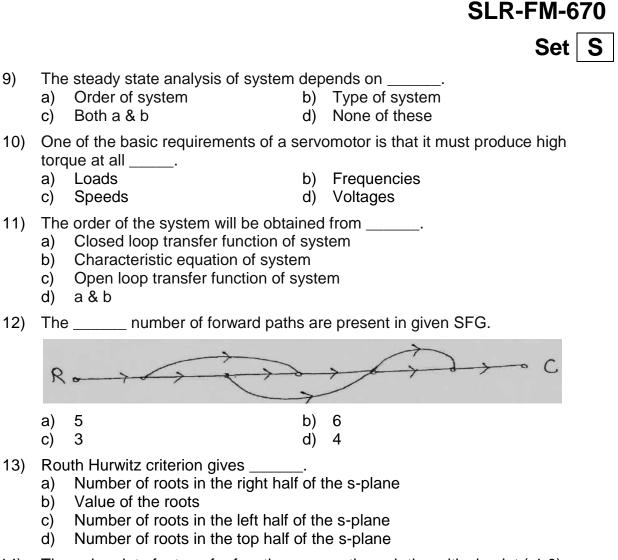
SLR-FM-670

Max. Marks: 70

Seat No.

- b) lead





- 14) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is.
 - a) Zero c) 1dB

- b) -1dB
- d) Infinity

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

CONTROL SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Solve any four.

- a) Derive transfer function of armature controlled DC servomotor.
- b) Differentiate between open loop & closed loop control systems.
- c) Define following terms with reference to SFG
 - 1) Source node
 - 2) Forward path
 - 3) Self loop
 - 4) Non-touching loops
- d) Determine the acceleration and velocity constant for the system having.

$$G(S) = \frac{1}{s(s+4)} \qquad H(S) = \frac{s}{(\delta+s)}$$

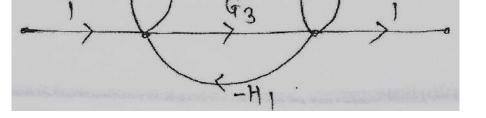
GI

e) Explain DC servo motor with neat diagram.

Q.3 Solve any two.

- Write any six block diagram reduction rules to obtain overall transfer function of system.
- b) Determine the overall transfer function for the following system shown with the help of SFG using Mason's Gain formula.

40



- c) Determine the following transient parameters for the Second order system having characteristic equation $S^2 + 6S + 25 = 0$
 - 1) Maximum peak overshoot
 - 2) damped frequency
 - 3) Settling time at 5% tolerance band
 - 4) damping factor



12



Set

Seat No.

Section – II

Q.4 Attempt any four.

a) Sketch the polar plot for the following system.

$$G(s)H(s) = \frac{(s+10)}{(s+1)}$$

b) Determine the stability of the system for following characteristic equation by Hurwitzs method.

 $F(s) = s^3 + s^2 + s + 4 = 0$

- c) What is necessity of compensator? Explain lead compensator.
- d) Define absolute stability and conditionally stability of the system.
- e) Find the forced sinusoidal response for following system G(s)=(s+1)/(s+2) for the input signal $r(t) = 10 \cos(2t + 45^\circ)$

Q.5 Attempt any two.

a) Sketch the root locus for the system.

$$G(s) = \frac{K(s+1)}{s(s+2)}$$

- **b)** Explain the nature of Bode plots for.
 - 1) System gain 'K'
 - 2) Poles at origin
 - 3) Zeros at origin
- **c)** A system has $G(s)H(s) = \frac{K}{s(s+2)(s+4)(s+8)}$, where K is positive. Determine the range of K for stability using Routh's criterion.

16



T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.
- 4) Use of only on programmable calculator is allowed.
- 5) Draw neat labeled diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The value of the twiddle factor W_8^{13} is 1)
 - 1 a) -j b) c) -0.707 + j 0.707
 - d) i
- 2) In DIT, the data x(n) is stored in _____ order.
 - a) Reversed order b) Bit reversal c) Non-Shuffled None d)
- Each butterfly operation involves 3) _ complex multiplication.
 - a) One Two b)
 - c) Three d) None
- 4) Product of two DFTs is equivalent to _____ of corresponding time domain sequences.
 - Circular convolution a) Cross correlation b)
 - c) Linear convolution d) Auto correlation
- 5) For a decimation-in-frequency FFT algorithm, which of the following is true?
 - a) Both input and output are in order
 - b) Both input and output are shuffled
 - Input is shuffled and output is in order C)
 - Input is in order and output is shuffled d)

How many delay elements are available in direct form I realization of 6) Y(n) = 0.5y (n - 1) - 0.25y (n - 2) + x(n) + 0.4 x(n - 1).

- a) 4 b) 3 1
- 2 d) c)
- The DFT of the signal $x[n] = \{1, 1, 0, 0\}$ is _ 7)
 - a) {2, 1+j, 0, 1-j} {2,0,0,0} b) c) {2, 2-2j, 0,2+2j) d) $\{2,1-j,0,1+j\}$
- 8) With repetitive MAC operations, the accumulator sum grows. The bits used to handle this growth are ____
 - Extra bits Parity bit b) a)
 - Guard bits c) d) **Overflow errors**



Max. Marks: 70

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- 9) In impulse invariant transformation, relation between Ω and ω is
 - $\Omega = \omega T$ a)
 - b) $\Omega = \omega / T$ c) $\Omega = \tan(\Omega T)$ d) $\Omega = (T/2) \tan (\omega T/2)$

Which method of FIR filter design can lead to Linear phase characteristic 10) ?

- Windowing b) Frequency sampling a) c) Both a & b d) None of these
- 11) Non linearity in the relationship between Ω and ω is known as
 - a) Aliasing b) Frequency warping
 - c) Unwarping d) Frequency mixing

b)

b)

d)

Butterworth filters have 12)

14)

- a) Wide transition region
- c) Oscillation in transition region d)
- 13) The addressing mode that is convenient for FFT computation is
 - a) Indirect addressing
 - Bit reversed addressing C)
 - The poles of the Butterworth LPF with cutoff frequency Ωc _

Sharp transition region

Maximally flat passband

Circular mode addressing

Memory mapped addressing

- lie on the unit circle in s plane a)
- lie on a circle of radius Ωc c)
- lie on the RHS of s plane b)
- d) none of these



Seat	
No.	

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if necessary.
- 3) Figures to the right indicate full marks.
- 4) Draw neat labeled diagrams whenever necessary.

Section – I

Q.2 Solve any four of the following questions.

- a) Find 4 point DFT of the sequence x(n) = {1, 1, 0, 0} using direct computation.
- b) List the properties of DFT.
- c) Draw and explain the block diagram of DSP system
- **d)** Obtain the cascade realization of the system characterized by transfer function.

$$H(Z) = \frac{z(z-1)}{z^2 - 0.2 z - 0.15}$$

e) Explain the procedure to find IDFT by DIT FFT algorithm.

Q.3 Solve any two of the following questions.

- a) Compute the convolution of following using overlap add algorithm x(n) = {2, 0, -2, 0, 2, 1, 0, -2, -1} and h(n) = {3, 2, 1}.
- b) Calculate 4 point DFT values of the sequence x[n] using DIT FFT algorithm x[n] = {1,2, 3,4}
- c) Find the IDFT for the given DFT using matrix method. $X(k) = \{ 6, -2+2j, -2, -2-2j \}$

Section-II

Q.4 Solve any four of the following questions.

- a) Explain finite word length effect in FIR filters.
- **b)** Explain in brief the basic building blocks of digital signal processor.
- c) Write the analog transfer function for Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to

- i) Low pass filter with cutoff frequency $\Omega c' = 0.45$
- ii) High pass filter with cutoff frequency $\Omega c' = 1.24$.
- d) Describe the applications of DSP in Image processing.
- e) Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- f) Convert the analog filter to digital filter whose system function is

$$H(S) = \frac{S}{s^2 + 5s + 6}$$

Use Impulse invariant method. Assume T=1s.

Max. Marks: 56

12

16

16



SLR-FM-671

Q.5 Solve any two of the following questions.

- a) Explain the Bilinear transformation for digital filters in detail
- **b)** Explain the Windowing technique for FIR filter design along with different window functions.
- c) The desired frequency response of a low pass filter is

$$Hd(e^{j\omega}) = \begin{cases} 1 & -\frac{\pi}{2} \le \omega \le \pi/2 \\ 0 & \frac{\pi}{2} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric rectangular window with window length 5.

Ρ



Set

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

DIGITAL SIGNAL PROCESSING Day & Date: Monday, 09-12-2019

Time: 02:30 PM To 05:30 PM

Seat No.

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.
- 4) Use of only on programmable calculator is allowed.
- 5) Draw neat labeled diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- With repetitive MAC operations, the accumulator sum grows. The bits 1) used to handle this growth are _
 - Extra bits Parity bit b) a)
 - Guard bits d) **Overflow errors** c)

2) In impulse invariant transformation, relation between Ω and ω is

- $\Omega = \omega T$ b) $\Omega = \omega / T$ a) d) $\Omega = (T/2) \tan (\omega T/2)$ c) $\Omega = \tan(\Omega T)$
- 3) Which method of FIR filter design can lead to Linear phase characteristic ?
 - Windowing b) Frequency sampling a)
 - c) Both a & b d) None of these
- 4) Non linearity in the relationship between Ω and ω is known as
 - Aliasing a)
 - c) Unwarping d)
- 5) Butterworth filters have
 - a) Wide transition region c) Oscillation in transition region

i

- 6) The addressing mode that is convenient for FFT computation is
 - a) Indirect addressing b)
 - c) Bit reversed addressing
- The poles of the Butterworth LPF with cutoff frequency Ωc 7) lie on the RHS of s plane b)
 - lie on the unit circle in s plane a) c)
 - none of these lie on a circle of radius Ωc d)
- The value of the twiddle factor W_8^{13} is 8) 1
 - b) a) -j -0.707 + j 0.707 C) d)

Max. Marks: 70

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- Frequency warping b) Frequency mixing
- b) Sharp transition region
- Maximally flat passband d)
- Circular mode addressing
 - d) Memory mapped addressing

Marks: 14

9) In DIT, the data x(n) is stored in _____ order.

- a) Reversed order b) Bit reversal
 - c) Non-Shuffled d) None
- 10) Each butterfly operation involves _____ complex multiplication.
 - a) One b) Two
 - c) Three d) None
- 11) Product of two DFTs is equivalent to _____ of corresponding time domain sequences.
 - a) Cross correlation b) Circular convolution
 - c) Linear convolution d) Auto correlation
- 12) For a decimation-in-frequency FFT algorithm, which of the following is true?
 - a) Both input and output are in order
 - b) Both input and output are shuffled
 - c) Input is shuffled and output is in order
 - d) Input is in order and output is shuffled
- 13) How many delay elements are available in direct form I realization of Y(n) = 0.5y (n-1) 0.25y (n-2) + x(n) + 0.4 x(n-1).
 - a) 4 b) 3 c) 2 d) 1
- 14) The DFT of the signal x[n] = {1, 1, 0, 0} is _____
 - a) {2, 1+j, 0, 1-j} b) {2,0,0,0}
 - c) $\{2, 2-2j, 0, 2+2j\}$ d) $\{2, 1-j, 0, 1+j\}$

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Set Q

Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if necessary.
- 3) Figures to the right indicate full marks.
- 4) Draw neat labeled diagrams whenever necessary.

Section – I

Q.2 Solve any four of the following questions.

- a) Find 4 point DFT of the sequence x(n) = {1, 1, 0, 0} using direct computation.
- **b)** List the properties of DFT.
- c) Draw and explain the block diagram of DSP system
- **d)** Obtain the cascade realization of the system characterized by transfer function.

$$H(Z) = \frac{z(z-1)}{z^2 - 0.2 z - 0.15}$$

e) Explain the procedure to find IDFT by DIT FFT algorithm.

Q.3 Solve any two of the following questions.

- a) Compute the convolution of following using overlap add algorithm x(n) = {2, 0, -2, 0, 2, 1, 0, -2, -1} and h(n) = {3, 2, 1}.
- b) Calculate 4 point DFT values of the sequence x[n] using DIT FFT algorithm x[n] = {1,2, 3,4}
- c) Find the IDFT for the given DFT using matrix method. $X(k) = \{ 6, -2+2j, -2, -2-2j \}$

Section-II

Q.4 Solve any four of the following questions.

- a) Explain finite word length effect in FIR filters.
- **b)** Explain in brief the basic building blocks of digital signal processor.
- c) Write the analog transfer function for Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to

- i) Low pass filter with cutoff frequency $\Omega c' = 0.45$
- ii) High pass filter with cutoff frequency $\Omega c' = 1.24$.
- **d)** Describe the applications of DSP in Image processing.
- e) Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- f) Convert the analog filter to digital filter whose system function is

$$H(S) = \frac{s}{s^2 + 5s + 6}$$

Use Impulse invariant method. Assume T=1s.

Max. Marks: 56

SLR-FM-671

12

16

Q.5 Solve any two of the following questions.

- a) Explain the Bilinear transformation for digital filters in detail
- **b)** Explain the Windowing technique for FIR filter design along with different window functions.
- c) The desired frequency response of a low pass filter is

$$Hd(e^{j\omega}) = \begin{cases} 1 & -\frac{\pi}{2} \le \omega \le \pi/2 \\ 0 & \frac{\pi}{2} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric rectangular window with window length 5.

Set

12

Q

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

DIGITAL SIGNAL PROCESSING Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

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- 5) Draw neat labeled diagrams whenever necessary.

MCQ/Objective Type Questions

Electronics Engineering

Duration: 30 Minutes

a)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) For a decimation-in-frequency FFT algorithm, which of the following is true?
 - a) Both input and output are in order
 - b) Both input and output are shuffled
 - c) Input is shuffled and output is in order
 - d) Input is in order and output is shuffled
- 2) How many delay elements are available in direct form I realization of Y(n) = 0.5y (n 1) 0.25y (n 2) + x(n) + 0.4 x(n 1).
 - a) 4 b) 3 c) 2 d) 1
- 3) The DFT of the signal x[n] = {1, 1, 0, 0} is _____
 - a) {2, 1+j, 0, 1-j} c) {2, 2-2j, 0,2+2j} b) {2,0,0,0} d) {2,1-j, 0, 1+j}
- 4) With repetitive MAC operations, the accumulator sum grows. The bits used to handle this growth are _____.
 - a) Parity bit b) Extra bits
 - c) Guard bits d) Overflow errors
- 5) In impulse invariant transformation, relation between Ω and ω is
 - a) $\Omega = \omega T$ b) $\Omega = \omega / T$ c) $\Omega = \tan(\Omega T)$ b) $\Omega = \omega / T$ d) $\Omega = (T/2) \tan(\omega T/2)$
- 6) Which method of FIR filter design can lead to Linear phase characteristic ?
 - Windowing b) Frequency sampling
 - c) Both a & b d) None of these
- 7) Non linearity in the relationship between Ω and ω is known as
 - a) Aliasing b) Frequency warping
 - c) Unwarping d) Frequency mixing

Max. Marks: 70

Marks: 14

SLR-FM-671



Set R

		SLR-FM-6	71
		Set	R
8)	a) Wide transition region b) Sharp tran	nsition region flat passband	
9)	a) Indirect addressing b) Circular m		
10)	D) The poles of the Butterworth LPF with cutoff frequence a) lie on the unit circle in s plane b) lie on the lie c) lie on a circle of radius Ωc d) none of the	RHS of s plane	
11)	 The value of the twiddle factor W₈¹³ is a) -j b) 1 c) -0.707 + j 0.707 d) j 		
12)	 In DIT, the data x(n) is stored in order. a) Reversed order b) Bit reversa c) Non-Shuffled d) None 	al	
13)	 B) Each butterfly operation involves complex minimation involves complex minimation a) a) One b) Two c) Three d) None 	ultiplication.	
14)	 4) Product of two DFTs is equivalent to of corresequences. a) Cross correlation b) Circular construction c) Linear convolution d) Auto corresequences 	onvolution	

Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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Section – I

Q.2 Solve any four of the following questions.

- a) Find 4 point DFT of the sequence x(n) = {1, 1, 0, 0} using direct computation.
- **b)** List the properties of DFT.
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- **d)** Obtain the cascade realization of the system characterized by transfer function.

$$H(Z) = \frac{z(z-1)}{z^2 - 0.2 z - 0.15}$$

e) Explain the procedure to find IDFT by DIT FFT algorithm.

Q.3 Solve any two of the following questions.

- a) Compute the convolution of following using overlap add algorithm x(n) = {2, 0, -2, 0, 2, 1, 0, -2, -1} and h(n) = {3, 2, 1}.
- b) Calculate 4 point DFT values of the sequence x[n] using DIT FFT algorithm x[n] = {1,2, 3,4}
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Section-II

Q.4 Solve any four of the following questions.

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- d) Describe the applications of DSP in Image processing.
- e) Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- f) Convert the analog filter to digital filter whose system function is

$$H(S) = \frac{S}{s^2 + 5s + 6}$$

Use Impulse invariant method. Assume T=1s.

Max. Marks: 56

12

16



Q.5 Solve any two of the following questions.

- a) Explain the Bilinear transformation for digital filters in detail
- **b)** Explain the Windowing technique for FIR filter design along with different window functions.
- c) The desired frequency response of a low pass filter is

$$Hd(e^{j\omega}) = \begin{cases} 1 & -\frac{\pi}{2} \le \omega \le \pi/2 \\ 0 & \frac{\pi}{2} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric rectangular window with window length 5.

R



Set

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

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- 4) Use of only on programmable calculator is allowed.

5) Draw neat labeled diagrams whenever necessary.

MCQ/Objective Type Questions

Electronics Engineering DIGITAL SIGNAL PROCESSING

Duration: 30 Minutes

a)

6)

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

Which method of FIR filter design can lead to Linear phase characteristic 1)

b)

b)

d)

j

- ? Windowing Frequency sampling a) b)
- Both a & b None of these c) d)
- 2) Non linearity in the relationship between Ω and ω is known as
 - a) Aliasing Frequency warping b)
 - d) Frequency mixing c) Unwarping
- 3) Butterworth filters have
 - a) Wide transition region
 - c) Oscillation in transition region
- d) Maximally flat passband

Sharp transition region

Memory mapped addressing

4) The addressing mode that is convenient for FFT computation is Circular mode addressing

- a) Indirect addressing Bit reversed addressing c)
- d)
- 5) The poles of the Butterworth LPF with cutoff frequency Ωc _ lie on the RHS of s plane
 - lie on the unit circle in s plane b)
 - none of these c) lie on a circle of radius Ωc d)

The value of the twiddle factor W_8^{13} is 1 b)

- a) -j c) -0.707 + j 0.707
- 7) In DIT, the data x(n) is stored in _____ order.
 - a) Reversed order b) Bit reversal
 - c) Non-Shuffled d) None
- Each butterfly operation involves _ _ complex multiplication. 8)
 - b) a) One Two d) None C)
 - Three



Set

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Max. Marks: 70

Marks: 14

SLR-FM-671

Set

- Product of two DFTs is equivalent to _____ of corresponding time domain 9) sequences.
 - a) Cross correlation

c) Linear convolution

- b) Circular convolution
- d) Auto correlation
- 10) For a decimation-in-frequency FFT algorithm, which of the following is true?
 - a) Both input and output are in order
 - b) Both input and output are shuffled
 - c) Input is shuffled and output is in order
 - d) Input is in order and output is shuffled
- 11) How many delay elements are available in direct form I realization of Y(n) = 0.5y (n - 1) - 0.25y (n - 2) + x(n) + 0.4 x(n - 1).a) 4 b) 3
 - c) 2 d) 1
- The DFT of the signal $x[n] = \{1, 1, 0, 0\}$ is _ 12)
 - a) {2, 1+j, 0, 1-j} {2,0,0,0} b)
 - c) $\{2, 2-2i, 0, 2+2i\}$ $\{2, 1-i, 0, 1+i\}$ d)
- With repetitive MAC operations, the accumulator sum grows. The bits 13) used to handle this growth are
 - a) Parity bit b) Extra bits c) Guard bits
 - **Overflow errors** d)
- 14) In impulse invariant transformation, relation between Ω and ω is
 - a) $\Omega = \omega T$ b)
 - $\Omega = \omega / T$ c) $\Omega = \tan(\Omega T)$ $\Omega = (T/2) \tan (\omega T/2)$ d)

Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering DIGITAL SIGNAL PROCESSING

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Assume suitable data if necessary.
- 3) Figures to the right indicate full marks.
- 4) Draw neat labeled diagrams whenever necessary.

Section – I

Q.2 Solve any four of the following questions.

- a) Find 4 point DFT of the sequence x(n) = {1, 1, 0, 0} using direct computation.
- **b)** List the properties of DFT.
- c) Draw and explain the block diagram of DSP system
- **d)** Obtain the cascade realization of the system characterized by transfer function.

$$H(Z) = \frac{z(z-1)}{z^2 - 0.2 z - 0.15}$$

e) Explain the procedure to find IDFT by DIT FFT algorithm.

Q.3 Solve any two of the following questions.

- a) Compute the convolution of following using overlap add algorithm x(n) = {2, 0, -2, 0, 2, 1, 0, -2, -1} and h(n) = {3, 2, 1}.
- b) Calculate 4 point DFT values of the sequence x[n] using DIT FFT algorithm x[n] = {1,2, 3,4}
- Find the IDFT for the given DFT using matrix method.
 X(k) = { 6, -2+2j , -2 , -2-2j }

Section-II

Q.4 Solve any four of the following questions.

- a) Explain finite word length effect in FIR filters.
- b) Explain in brief the basic building blocks of digital signal processor.
- c) Write the analog transfer function for Butterworth filter of order 2 & cutoff frequency $\Omega c = 1$.

Using frequency transformations convert above filter to

- i) Low pass filter with cutoff frequency $\Omega c' = 0.45$
- ii) High pass filter with cutoff frequency $\Omega c' = 1.24$.
- d) Describe the applications of DSP in Image processing.
- e) Explain in detail the multiply and Accumulate (MAC) unit of digital signal processor.
- f) Convert the analog filter to digital filter whose system function is

$$H(S) = \frac{s}{s^2 + 5s + 6}$$

Use Impulse invariant method. Assume T=1s.

Max. Marks: 56

12

16

16



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Q.5 Solve any two of the following questions.

- a) Explain the Bilinear transformation for digital filters in detail
- **b)** Explain the Windowing technique for FIR filter design along with different window functions.
- c) The desired frequency response of a low pass filter is

$$Hd(e^{j\omega}) = \begin{cases} 1 & -\frac{\pi}{2} \le \omega \le \pi/2 \\ 0 & \frac{\pi}{2} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric rectangular window with window length 5.

S



Set

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) The instruction "LDA 9000" requires
 - 7 a) 13 b) 10 C) d) 18
- Vector location of TRAP interrupt is _____ 2) T- states.
 - a) 0024H b) 002CH
 - C) 0034H d) 003CH

3) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is

- b) 5AH a) A5H
- c) AAH d) 55H23
- 4) The synchronization between microprocessor and memory is done by _____.
 - a) ALE signal b) HOLD signal
 - c) READY signal d) None of these
- 5) When READY pin of 8085 microprocessor is low _____
 - the processor will be ready to execute program a)
 - the processor will enter into wait state for one clock period b)
 - the processor will enter into wait state until the READY pin is made high c)
 - the processor will return back from its READY state d)

6) Addressing in which the instructions contains the address of the data to the operated on is known as

- immediate addressing b) implied addressing a) c)
 - d) direct addressing register addressing
- 7) The stack is a specialized temporary _ access memory during _____ and _____ instructions.
 - random, store, load b) random, push, load
 - sequential, store, pop d) sequential, push, pop c)
- Which bit of control word of 8255 decides either BSR or I/O mode? 8)
 - a) D4 b) D0 d) D7
 - c) D6
- 9) The 8253 mode 0 is

a)

- a) Interrupt on terminal count
 - Rate generator c)
- b) H/W retriggerable one shot
- d) Square wave generator

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Max. Marks: 70

- Marks: 14

SLR-FM-672 Set P

- 10) To increase resolution of DAC _
 - a) Increase number of output bits
 - b) Use registers with better tolerance
 - c) Increase Vref
 - d) Use faster op-amp
- 11) For I/O mapped I/O, address lines used are _____
 - a) 10 bit b) 8 bit
 - c) 16 bit d) 4 bit
- The mode of 8253 that is used to interrupt the processor by setting a suitable terminal count is _____.
 - a) mode 0 b) mode 1
 - c) mode 2 d) mode 3
- In control word format of 8253, if RL1=1, RL0=1 then the operation performed is _____.
 - a) read/load least significant byte only
 - b) read/load most significant byte only
 - c) read/load LSB first and then MSB
 - d) read/load MSB first and then LSB
- 14) In BSR mode, only port C can be used to ____
 - a) set individual ports
- b) reset individual ports
- c) set and reset individual ports d) programmable I/O ports

SLR-FM-672

Seat	
No.	

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any four of the following questions.

- a) Define addressing mode. Explain addressing mode in 8085 with example.
- b) Draw the timing diagram of instruction MVI A, 05h.
- c) Write an assembly program to add ten numbers. Explain the key instruction used in the program.
- **d)** Write a program to count the positive numbers from the given array of 10 elements.
- e) Explain different types of memory.

Q.3 Answer any two of the following questions.

- a) Explain interrupt structure with a neat sketch.
- b) Design a 8085 microprocessor based system with 8 KB EPROM having a word length of 8-bits with the starting address of 0000H and two 2KB RAMs having word lengths of 8-bits each with starting address of 4000H.
- c) Write a program to convert two digit BCD number to its equivalent hex number.

Section – II

Q.4 Answer any four of the following questions.

- a) Draw the block diagram of 8255 and explain it.
- b) Compare I/O mapped I/O and memory mapped I/O interfacing.
- c) Draw and explain R-2R DAC.
- d) Explain in detail modes of PPI 8251.
- e) Explain SIM and RIM instructions.

Q.5 Answer any two of the following questions.

- a) Interface ADC 0808 to 8085 and write a program for analog to digital conversion.
- **b)** Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.
- c) Interface timer 8253 to the 8085 from address 20h. Explain modes of operations of 8253.

Max. Marks: 56

Set

12

16

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which bit of control word of 8255 decides either BSR or I/O mode? 1)
 - a) D4
 - D6 C)
- The 8253 mode 0 is _____ 2)
 - a) Interrupt on terminal count c) Rate generator
 - b) H/W retriggerable one shot d) Square wave generator
- 3) To increase resolution of DAC
 - a) Increase number of output bits
 - b) Use registers with better tolerance
 - c) Increase Vref
 - d) Use faster op-amp
- 4) For I/O mapped I/O, address lines used are _
 - 10 bit b) 8 bit a)
 - 16 bit d) 4 bit C)
- The mode of 8253 that is used to interrupt the processor by setting a 5) suitable terminal count is
 - a) mode 0 b) mode 1
 - mode 2 d) mode 3 C)
- 6) In control word format of 8253, if RL1=1, RL0=1 then the operation performed is
 - read/load least significant byte only a)
 - read/load most significant byte only b)
 - read/load LSB first and then MSB c)
 - d) read/load MSB first and then LSB

In BSR mode, only port C can be used to 7)

a) set individual ports b) reset individual ports set and reset individual ports d) programmable I/O ports C)

8) The instruction "LDA 9000" requires

- 7 a) 13 b)
- 10 c) d) 18

Seat No.

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Marks: 14

b) D0

- d) D7

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Set C

- Vector location of TRAP interrupt is _____ T- states. 9)
 - a) 0024H b) 002CH
 - 0034H d) 003CH C)
- The contents of accumulator before CMA instruction is A5H. Its content 10) after instruction execution is _____
 - A5H b) 5AH a) C)
 - AAH d) 55H23
- 11) The synchronization between microprocessor and memory is done by _____.
 - b) HOLD signal
 - READY signal d) None of these C)
- 12) When READY pin of 8085 microprocessor is low _____
 - the processor will be ready to execute program a)
 - the processor will enter into wait state for one clock period b)
 - the processor will enter into wait state until the READY pin is made high c)
 - d) the processor will return back from its READY state
- Addressing in which the instructions contains the address of the data to 13) the operated on is known as _____
 - immediate addressing b) implied addressing a)
 - register addressing d) direct addressing c)
- The stack is a specialized temporary _____ access memory during 14) ____ and _____ instructions.
 - b) random, push, load
 - random, store, load sequential, store, pop C)

ALE signal

a)

a)

d) sequential, push, pop

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Seat	
No.	

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any four of the following questions.

- a) Define addressing mode. Explain addressing mode in 8085 with example.
- b) Draw the timing diagram of instruction MVI A, 05h.
- c) Write an assembly program to add ten numbers. Explain the key instruction used in the program.
- **d)** Write a program to count the positive numbers from the given array of 10 elements.
- e) Explain different types of memory.

Q.3 Answer any two of the following questions.

- a) Explain interrupt structure with a neat sketch.
- b) Design a 8085 microprocessor based system with 8 KB EPROM having a word length of 8-bits with the starting address of 0000H and two 2KB RAMs having word lengths of 8-bits each with starting address of 4000H.
- c) Write a program to convert two digit BCD number to its equivalent hex number.

Section – II

Q.4 Answer any four of the following questions.

- a) Draw the block diagram of 8255 and explain it.
- b) Compare I/O mapped I/O and memory mapped I/O interfacing.
- c) Draw and explain R-2R DAC.
- d) Explain in detail modes of PPI 8251.
- e) Explain SIM and RIM instructions.

Q.5 Answer any two of the following questions.

- a) Interface ADC 0808 to 8085 and write a program for analog to digital conversion.
- **b)** Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.
- c) Interface timer 8253 to the 8085 from address 20h. Explain modes of operations of 8253.

Max. Marks: 56

12

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

C)

c)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) When READY pin of 8085 microprocessor is low _____
 - the processor will be ready to execute program a)
 - the processor will enter into wait state for one clock period b)
 - the processor will enter into wait state until the READY pin is made high C)
 - the processor will return back from its READY state d)
- 2) Addressing in which the instructions contains the address of the data to the operated on is known as
 - immediate addressing a) register addressing
- b) implied addressing d) direct addressing
- 3) The stack is a specialized temporary _____ ____ access memory during and instructions.
 - random, store, load a)
 - b) random, push, load d) sequential, push, pop

Which bit of control word of 8255 decides either BSR or I/O mode? 4)

- a) D4
- C) D6

sequential, store, pop

- 5) The 8253 mode 0 is
 - a) Interrupt on terminal count
 - c) Rate generator
- To increase resolution of DAC 6)
 - Increase number of output bits a)
 - Use registers with better tolerance b)
 - c) Increase Vref
 - d) Use faster op-amp

For I/O mapped I/O, address lines used are 7)

- 10 bit b) 8 bit a)
- C) 16 bit d) 4 bit
- 8) The mode of 8253 that is used to interrupt the processor by setting a suitable terminal count is a)
 - mode 0 b) mode 1
 - C) mode 2 d) mode 3

- b) H/W retriggerable one shot
- d) Square wave generator





Max. Marks: 70

Marks: 14

b) D0

D7

d)

		Set R
9)	In control word format of 8253, if RL1=1, RL0= performed is a) read/load least significant byte only b) read/load most significant byte only c) read/load LSB first and then MSB d) read/load MSB first and then LSB	1 then the operation
10)	In BSR mode, only port C can be used to a) set individual ports b) reset c) set and reset individual ports d) progr	individual ports
11)	The instruction "LDA 9000" requires a) 13 b) 7 c) 10 d) 18	
12)	Vector location of TRAP interrupt isa) 0024Hb) 002Cc) 0034Hd) 003C	CH Contraction of the second
13)	The contents of accumulator before CMA instruction after instruction execution isa)A5Hb)5AHc)AAHd)55H2	
14)	The synchronization between microprocessor a) ALE signal b) HOL c) READY signal d) None	

Seat	
No.	

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any four of the following questions.

- a) Define addressing mode. Explain addressing mode in 8085 with example.
- b) Draw the timing diagram of instruction MVI A, 05h.
- c) Write an assembly program to add ten numbers. Explain the key instruction used in the program.
- **d)** Write a program to count the positive numbers from the given array of 10 elements.
- e) Explain different types of memory.

Q.3 Answer any two of the following questions.

- a) Explain interrupt structure with a neat sketch.
- b) Design a 8085 microprocessor based system with 8 KB EPROM having a word length of 8-bits with the starting address of 0000H and two 2KB RAMs having word lengths of 8-bits each with starting address of 4000H.
- c) Write a program to convert two digit BCD number to its equivalent hex number.

Section – II

Q.4 Answer any four of the following questions.

- a) Draw the block diagram of 8255 and explain it.
- b) Compare I/O mapped I/O and memory mapped I/O interfacing.
- c) Draw and explain R-2R DAC.
- d) Explain in detail modes of PPI 8251.
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Q.5 Answer any two of the following questions.

- a) Interface ADC 0808 to 8085 and write a program for analog to digital conversion.
- **b)** Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.
- c) Interface timer 8253 to the 8085 from address 20h. Explain modes of operations of 8253.

Max. Marks: 56

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2) Figures to the right indicate full marks. 3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** MICROPROCESSOR AND INTERFACING

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) To increase resolution of DAC
 - Increase number of output bits a)
 - Use registers with better tolerance b)
 - c) Increase Vref

Day & Date: Wednesday, 11-12-2019

book.

Time: 02:30 PM To 05:30 PM

Use faster op-amp d)

2)	For I/O mapped I/O, addres	ss lines use	d are
-,	\rightarrow		<u> </u>

- b) 8 bit a) 10 bit 16 bit d) 4 bit c)
- The mode of 8253 that is used to interrupt the processor by setting a 3) suitable terminal count is _
 - mode 0 a) b) mode 1
 - mode 2 d) mode 3 C)
- In control word format of 8253, if RL1=1, RL0=1 then the operation 4) performed is
 - read/load least significant byte only a)
 - read/load most significant byte only b)
 - read/load LSB first and then MSB c)
 - read/load MSB first and then LSB d)
- 5) In BSR mode, only port C can be used to _____
 - b) reset individual ports set individual ports a)
 - set and reset individual ports d) programmable I/O ports C)
- The instruction "LDA 9000" requires 6)
 - 13 7 a) b) 10 d) 18 C)
- Vector location of TRAP interrupt is T- states. 7)
 - a) 0024H b) 002CH
 - c) 0034H d) 003CH
- 8) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is
 - a) A5H b) 5AH c) AAH d) 55H23



Max. Marks: 70

Seat No.

Set S

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- 9) The synchronization between microprocessor and memory is done by _____.
 - a) ALE signal

a)

b) HOLD signal

c) READY signal

- d) HOLD signald) None of these
- d) None
- 10) When READY pin of 8085 microprocessor is low _____
 - the processor will be ready to execute program
 - b) the processor will enter into wait state for one clock period
 - c) the processor will enter into wait state until the READY pin is made high
 - d) the processor will return back from its READY state
- 11) Addressing in which the instructions contains the address of the data to the operated on is known as _____.
 - a) immediate addressing b) implied addressing
 - c) register addressing d) direct addressing
- 12) The stack is a specialized temporary _____ access memory during _____ and _____ instructions.
 - a) random, store, load
- b) random, push, loadd) sequential, push, pop
- c) sequential, store, pop
- 13) Which bit of control word of 8255 decides either BSR or I/O mode?
 - a) D4
 - c) D6

- b) D0 d) D7
- 14) The 8253 mode 0 is _____.
 - a) Interrupt on terminal count
 - c) Rate generator
- b) H/W retriggerable one shot
- d) Square wave generator

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering MICROPROCESSOR AND INTERFACING

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any four of the following questions.

- a) Define addressing mode. Explain addressing mode in 8085 with example.
- b) Draw the timing diagram of instruction MVI A, 05h.
- c) Write an assembly program to add ten numbers. Explain the key instruction used in the program.
- **d)** Write a program to count the positive numbers from the given array of 10 elements.
- e) Explain different types of memory.

Q.3 Answer any two of the following questions.

- a) Explain interrupt structure with a neat sketch.
- b) Design a 8085 microprocessor based system with 8 KB EPROM having a word length of 8-bits with the starting address of 0000H and two 2KB RAMs having word lengths of 8-bits each with starting address of 4000H.
- c) Write a program to convert two digit BCD number to its equivalent hex number.

Section – II

Q.4 Answer any four of the following questions.

- a) Draw the block diagram of 8255 and explain it.
- b) Compare I/O mapped I/O and memory mapped I/O interfacing.
- c) Draw and explain R-2R DAC.
- d) Explain in detail modes of PPI 8251.
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- **b)** Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.
- c) Interface timer 8253 to the 8085 from address 20h. Explain modes of operations of 8253.

Max. Marks: 56

12

16

16

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of the following is/are scalar quantity(s)?
 - a) distance b) density
 - d) all of these c) temperature
- A vector \overline{P} in Cartesian coordinates is represented by _____. 2)
 - a) (P_x, P_{ω}, P_z) b) (P_x, P_y, P_z) d) none of these c) $(P_x, P_{\omega}, P_{\theta})$
- Multiplication of two vectors is _____ 3)
 - vector b) scalar a)
 - c) either vector or scalar d) cannot say
- 4) Cylindrical coordinate 'z' is related to the Cartesian coordinate as _____.
 - $\tan^{-1}(y/x)$ b) z a)
 - C) xy/z
- 5) Curl measures _____

a)

C)

- a) rate of change of vector b) circular rotation
- both (a) and (b) C)
- Unit of electric intensity is _____ 6)
 - a) joules / coulomb b) newton / coulomb
 - c) volt / meter d) both (b) and (c)
- The force between two point charges of 1 nC each with a 1 mm 7) separation in air is . a) 9×10^{-3} N b) 9×10^{-6} N
 - c) 9×10^{-9} N d) 9×10^{-12} N
- _ gradient of magnetic scalar potential gives magnetic field intensity. 8)
 - Positive b) Negative Double Integral d)
- Maxwell's equations in _____ form give unformation at points of 9) discontinuity in electromagnetic fields.
 - a) Differential b) Integral
 - Algebraic d) None of these C)

Max. Marks: 70

Marks: 14



- d) cot z

- d) none of these

10) Phase velocity is given as	10)	Phase velocity is given as
--------------------------------	-----	----------------------------

a) ωβ

- b) βω
- d) None of these c) β/ω
- Standing wave consists of two travelling waves of _____ amplitudes and 11) is direction. a)
 - Unequal, same b) Unequal, opposite Equal, same
 - d) Equal, opposite

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Set

- Transmission coefficient is given as _____. b) None of these 12) $\overline{\eta_1 + \eta_2}$ $\eta_1+\eta_2$ d) $\frac{\eta_1 + \eta_2}{2\eta_1}$ C) $2\eta_2$
- 13) If antenna directivity and antenna gain are equal, then antenna efficiency is ____%.
 - a) 20 b) 50 75 d) 100 C)
- 14) If antenna array elemental spacing is large, then directivity will be _____.
 - Small a)

c)

C)

- b) More
- None of these
- d) Cannot say

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering** ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any four questions.

- Given $A = \hat{a}x + \hat{a}y$ and $B = \hat{a}x + 2\hat{a}y 2\hat{a}z$, Find the angle between them. a)
- Sate and Explain Strokes theorem. b)
- Point charge of Q= 0.5μ C located at origin, Find E at (0,3,4)m. c)
- Explain differential components for cylindrical system. d)
- Derive the lorentz's force equation for moving charges. e)

Q.3 Answer any two questions.

- A pair of 200 mm long concentric conductor of radius of 50mm and 100mm a) is applied with dielectric $10 \in_0$. A voltage is applied between conductors to established dielectric field $E = (10/r)^6 a_r V/m$, between the cylinders calculated energy stored.
- b) Derive the expression for magnetic field intensity due to infinite length current carrying filament.
- State and explain point form of Gauss's Law. c)

Section – II

Answer any four questions. Q.4

- Derive the wave equation for electric field and magnetic field in Lossless a) medium.
- b) Define the term displacement current and conduction current.
- Derive the transmission line equation stating with field theory. c)
- d) Define Directive Gain and Directivity of antenna.
- A signal of 10 V is applied to a 50 Ω coaxial transmission line terminated in e) 200 Ω load. Find reflection coefficient and magnitude of reflected voltage.

Q.5 Answer any two questions.

- Derive the expression for radiation fields of current element. a)
- State and derive poynting theorem and give its significance. b)
- Derive the equation for reflection coefficient and transmission coefficient in c) terms of load impedance and characteristic impendence for terminated transmission line.

Max. Marks: 56

12

16

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- _ gradient of magnetic scalar potential gives magnetic field intensity. 1)
 - Positive a)
 - c) Double d)
- Maxwell's equations in _____ form give unformation at points of 2) discontinuity in electromagnetic fields.
 - Differential a) b)
 - Algebraic d) c)
- Phase velocity is given as _____. 3)
 - b) βω a) ωβ
 - d) None of these c) β/ω
- Standing wave consists of two travelling waves of _____ amplitudes and 4) is direction.
 - Unequal, same b) Unequal, opposite a)
 - Equal, same d) Equal, opposite C)
- Transmission coefficient is given as _ 5)
 - b) None of these η_1 a) $\eta_1 + \eta_2$ $\eta_1 + \eta_2$ d) $\frac{\eta_1 + \eta_2}{2\eta_1}$ c)

If antenna directivity and antenna gain are equal, then antenna efficiency 6) is ____%.

a)	20	b)	50
C)	75	d)	100

- 7) If antenna array elemental spacing is large, then directivity will be _____.
 - Small b) More a)
 - None of these d) Cannot say c)
- Which of the following is/are scalar quantity(s)? 8)
 - distance b) density a)
 - temperature d) all of these c)

Seat No.

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Marks: 14

Max. Marks: 70

- b) Negative

 - Integral
- Integral
- None of these

			SLR-FM-673
			Set Q
9)	A vector \overline{P} in Cartesian coordinates a) (P_x, P_{ϕ}, P_z) c) $(P_x, P_{\phi}, P_{\theta})$	b)	epresented by (P_x, P_y, P_z) none of these
10)	Multiplication of two vectors is a) vector c) either vector or scalar	 b) d)	scalar cannot say
11)	Cylindrical coordinate 'z' is related t a) $\tan^{-1}(y/x)$ c) xy/z	o the b) d)	e Cartesian coordinate as z cot z
12)	Curl measures a) rate of change of vector c) both (a) and (b)		circular rotation none of these
13)	Unit of electric intensity is a) joules / coulomb c) volt / meter	b) d)	newton / coulomb both (b) and (c)

- 14) The force between two point charges of 1 nC each with a 1 mm separation in air is _____. a) 9×10^{-3} N c) 9×10^{-9} N

- b) 9×10^{-6} N d) 9×10^{-12} N

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Seat No.

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any four questions.

- a) Given $A = \hat{a}x + \hat{a}y$ and $B = \hat{a}x + 2\hat{a}y 2\hat{a}z$, Find the angle between them.
- b) Sate and Explain Strokes theorem.
- c) Point charge of Q=0.5 μ C located at origin, Find E at (0,3,4)m.
- d) Explain differential components for cylindrical system.
- e) Derive the lorentz's force equation for moving charges.

Q.3 Answer any two questions.

- a) A pair of 200 mm long concentric conductor of radius of 50mm and 100mm is applied with dielectric 10€₀. A voltage is applied between conductors to established dielectric field E= (10/r)⁶ a_r V/m, between the cylinders calculated energy stored.
- **b)** Derive the expression for magnetic field intensity due to infinite length current carrying filament.
- c) State and explain point form of Gauss's Law.

Section – II

Q.4 Answer any four questions.

- a) Derive the wave equation for electric field and magnetic field in Lossless medium.
- **b)** Define the term displacement current and conduction current.
- c) Derive the transmission line equation stating with field theory.
- d) Define Directive Gain and Directivity of antenna.
- e) A signal of 10 V is applied to a 50Ω coaxial transmission line terminated in 200 Ω load. Find reflection coefficient and magnitude of reflected voltage.

Q.5 Answer any two questions.

- a) Derive the expression for radiation fields of current element.
- **b**) State and derive poynting theorem and give its significance.
- c) Derive the equation for reflection coefficient and transmission coefficient in terms of load impedance and characteristic impendence for terminated transmission line.

Max. Marks: 56

12

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering**

ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

2)

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Curl measures _ 1)
 - a) rate of change of vector
 - both (a) and (b) C)
 - Unit of electric intensity is _____.
 - a) joules / coulomb b) newton / coulomb
 - c) volt / meter d) both (b) and (c)
- 3) The force between two point charges of 1 nC each with a 1 mm separation in air is
 - a) 9×10^{-3} N b) 9×10^{-6} N
 - c) 9×10^{-9} N d) 9×10^{-12} N
- _ gradient of magnetic scalar potential gives magnetic field intensity. 4)
 - Positive b) Negative a)
 - Double Integral c) d)
- Maxwell's equations in _____ form give unformation at points of 5) discontinuity in electromagnetic fields.
 - Differential Integral a) b)
 - Algebraic d) c)
- Phase velocity is given as _____. 6)
 - ωβ b) a)
 - d) None of these c) β/ω
- Standing wave consists of two travelling waves of _____ amplitudes and 7) is direction. b) Unequal, opposite
 - Unequal, same a)
 - d) Equal, opposite Equal, same c)
- Transmission coefficient is given as _ 8) η_1 b) None of these a)
 - $\eta_1 + \eta_2$ $\eta_1 + \eta_2$ d) C)



d) none of these

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Max. Marks: 70

Marks: 14

- None of these
- βω

			Set R
9)	If antenna directivity and antenna gains%.	ain a	are equal, then antenna efficiency
	a) 20 c) 75	b) d)	50 100
10)	If antenna array elemental spacing a) Small c) None of these		rge, then directivity will be More Cannot say
11)	Which of the following is/are scalar a) distance c) temperature	b)	ntity(s)? density all of these
12)	A vector \overline{P} in Cartesian coordinates a) (P_x, P_{ϕ}, P_z) c) $(P_x, P_{\phi}, P_{\theta})$	b)	epresented by (P_{x},P_{y},P_{z}) none of these
13)	Multiplication of two vectors is a) vector c) either vector or scalar	b)	scalar cannot say
14)	Cylindrical coordinate 'z' is related t a) tan ⁻¹ (y/x) c) xy/z	o the b) d)	e Cartesian coordinate as z cot z

Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any four questions.

- a) Given $A = \hat{a}x + \hat{a}y$ and $B = \hat{a}x + 2\hat{a}y 2\hat{a}z$, Find the angle between them.
- b) Sate and Explain Strokes theorem.
- c) Point charge of Q= 0.5μ C located at origin, Find E at (0,3,4)m.
- d) Explain differential components for cylindrical system.
- e) Derive the lorentz's force equation for moving charges.

Q.3 Answer any two questions.

- a) A pair of 200 mm long concentric conductor of radius of 50mm and 100mm is applied with dielectric 10€₀. A voltage is applied between conductors to established dielectric field E= (10/r)⁶ a_r V/m, between the cylinders calculated energy stored.
- **b)** Derive the expression for magnetic field intensity due to infinite length current carrying filament.
- c) State and explain point form of Gauss's Law.

Section – II

Q.4 Answer any four questions.

- a) Derive the wave equation for electric field and magnetic field in Lossless medium.
- **b)** Define the term displacement current and conduction current.
- c) Derive the transmission line equation stating with field theory.
- d) Define Directive Gain and Directivity of antenna.
- e) A signal of 10 V is applied to a 50Ω coaxial transmission line terminated in 200 Ω load. Find reflection coefficient and magnitude of reflected voltage.

Q.5 Answer any two questions.

- a) Derive the expression for radiation fields of current element.
- **b**) State and derive poynting theorem and give its significance.
- c) Derive the equation for reflection coefficient and transmission coefficient in terms of load impedance and characteristic impendence for terminated transmission line.

Max. Marks: 56

12

12

16



Day & Date: Friday, 13-12-2019 Max. Marks: 70 book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1) Phase velocity is given as _____. ωβ b) βω a) c) β/ω d) None of these Standing wave consists of two travelling waves of _____ amplitudes and 2) is direction. Unequal, same b) Unequal, opposite a) d) Equal, opposite c) Equal, same 3) Transmission coefficient is given as _ η_1 b) None of these a) $\eta_1 + \eta_2$

Electronics Engineering ELECTROMAGNETIC ENGINEERING

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

c)	$\eta_1 + \eta_2$	d)	$\eta_1 + \eta_2$
	$2\eta_2$		$2\eta_1$

4) If antenna directivity and antenna gain are equal, then antenna efficiency is _ %.

- a) 20 50 b) d) 100 c) 75

If antenna array elemental spacing is large, then directivity will be 5) Small b) More a)

c) None of these d) Cannot say

Which of the following is/are scalar quantity(s)? 6) a) distance b) density

- c) temperature d) all of these
- A vector \overline{P} in Cartesian coordinates is represented by _____. 7)
 - a) (P_x, P_{ω}, P_z) b) (P_x, P_y, P_z)
 - d) none of these c) $(P_x, P_{\omega}, P_{\theta})$
- 8) Multiplication of two vectors is
 - b) scalar a) vector d) cannot say C) either vector or scalar



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Marks: 14



Set S

- 9) Cylindrical coordinate 'z' is related to the Cartesian coordinate as _____.
 - a) $\tan^{-1}(y/x)$

b) z

c) xy/z

- d) cotz
- 10) Curl measures _____.
 - a) rate of change of vector
 - c) both (a) and (b)

a) joules / coulomb

c) volt / meter

- 11) Unit of electric intensity is _____.
- b) newton / coulomb

b) circular rotation

d) none of these

- d) both (b) and (c)
- 12) The force between two point charges of 1 nC each with a 1 mm separation in air is _____.
 - a) 9×10^{-3} N b) 9×10^{-6} N
 - c) 9×10^{-9} N d) 9×10^{-12} N
- 13) _____ gradient of magnetic scalar potential gives magnetic field intensity.
 - a) Positive b) Negative
 - c) Double d) Integral
- 14) Maxwell's equations in _____ form give unformation at points of discontinuity in electromagnetic fields.
 - a) Differential b) Integral
 - c) Algebraic d) None of these

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering ELECTROMAGNETIC ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any four questions.

- a) Given $A = \hat{a}x + \hat{a}y$ and $B = \hat{a}x + 2\hat{a}y 2\hat{a}z$, Find the angle between them.
- **b)** Sate and Explain Strokes theorem.
- c) Point charge of Q= 0.5μ C located at origin, Find E at (0,3,4)m.
- d) Explain differential components for cylindrical system.
- e) Derive the lorentz's force equation for moving charges.

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- a) A pair of 200 mm long concentric conductor of radius of 50mm and 100mm is applied with dielectric 10€₀. A voltage is applied between conductors to established dielectric field E= (10/r)⁶ a_r V/m, between the cylinders calculated energy stored.
- **b)** Derive the expression for magnetic field intensity due to infinite length current carrying filament.
- c) State and explain point form of Gauss's Law.

Section – II

Q.4 Answer any four questions.

- a) Derive the wave equation for electric field and magnetic field in Lossless medium.
- **b)** Define the term displacement current and conduction current.
- c) Derive the transmission line equation stating with field theory.
- d) Define Directive Gain and Directivity of antenna.
- e) A signal of 10 V is applied to a 50Ω coaxial transmission line terminated in 200 Ω load. Find reflection coefficient and magnitude of reflected voltage.

Q.5 Answer any two questions.

- a) Derive the expression for radiation fields of current element.
- **b)** State and derive poynting theorem and give its significance.
- c) Derive the equation for reflection coefficient and transmission coefficient in terms of load impedance and characteristic impendence for terminated transmission line.

Max. Marks: 56

12

12

16



SLR-FM-673

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT** Day & Date: Monday, 16-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM **Instructions:** 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book. 2) Figures to the right indicate full marks. Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 Choose the correct alternatives from the options. are software systems designed to support machine to machine 1) interaction over a network.

- a) Information technology b) Cloud computing c) Web services
- 2) The ten knowledge areas, each of which contains some or all of the project management processes, is called
 - SDLC a) C) PMBOK
- 3) Take odd man out- MS Project, MS Access, DB2, Oracle
 - MS Word a) c) DB2
- 4) An IT project can produce ____
 - system a) c)
- Take odd man out tuple, relation, attribute, guery 5)
 - tuple b) relation a)
 - c) attribute d) query
- 6) Α__ is a product or outcome that is given to the client.
 - a) milestone b) SDLC d) none of these C) waterfall
- What for IS & IT are used in Digital Enterprises? 7)
- c) customer support
- Select appropriate sequence. 8)

Research

a)

- database, data, knowledge, information a)
- data, database, knowledge, information b)
- data, database, information, knowledge c)
- information, database, knowledge, data d)
- Organizations sell products to other organizations electronically is called 9) marketplace.
 - buy side a) virtual c)

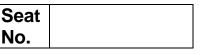
- b) sell side
- electronic exchange d)

b) Boost employee productivity

Marks: 14

14

SLR-FM-674



- d) Apps
- b) management document
 - d) None of these
- b) MS Access
 - d) Oracle
- b) software recommendations
 - d) all of these

d) All of these

Set P

- Which of below is an example of TPS? 10)
 - business intelligence a)
 - ERP
- b) Payroll
 - d) expert system
- Which of below is a major disadvantage of a centralized database? 11) a) expensive
 - b) requires scheduling
 - c) causes delays
- d) all of these
- 12) The major cost incurred in implementing ERP is due to _____.
 - b) software
 - training c)
- d) reengineering
- 13) Which of below is not a function of DBMS?
 - quality a) C) enrichment

a) hardware

c)

- b) synch
- d) forecasting
- A person having a insight of specific functional area of project is called _____. 14)
 - project manager a)
- b) technical expert
- software engineer C)
- d) subject matter expert

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any Two.

- a) Explain partitioned database with diagram, advantages and disadvantages.
- **b)** With one suitable application discuss electronic content management in detail.
- c) Discuss any one type of cloud computing in detail.

Q.3 Solve Any Four.

- a) Differentiate data mart Vs data warehouse.
- **b)** Discuss benefits of E Commerce to organizations.
- c) Justify with example IT flattens organization structure.
- d) With suitable example explain B2C and C2B transactions.
- e) To whom IT supports in a typical organization?

Section – II

Q.4 Solve any Two.

- a) With suitable example explain need of software project management.
- b) What is Project Management Body of Knowledge?
- c) With suitable example explain deliverables and milestones.

Q.5 Solve any Four.

- a) Evaluate Green IT.
- b) Discuss ethical issues related to information systems.
- c) Explain economical impact of IS on organization.
- d) What are the causes of software project overrun?
- e) Discuss waterfall SDLC model.



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Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT**

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Duration: 30 Minutes

a)

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

MCQ/Objective Type Questions

Q.1 Choose the correct alternatives from the options.

- Select appropriate sequence. 1)
 - database, data, knowledge, information a)
 - b) data, database, knowledge, information
 - data, database, information, knowledge c)
 - information, database, knowledge, data d)
- Organizations sell products to other organizations electronically is called 2) marketplace.
 - buy side a)

hardware

- C) virtual d)
- 3) Which of below is an example of TPS?
 - business intelligence b) Payroll a)
 - ERP d) expert system c)
- 4) Which of below is a major disadvantage of a centralized database?
 - b) requires scheduling expensive a)
 - C) causes delays d) all of these
- The major cost incurred in implementing ERP is due to _____. 5)
 - b) software
 - training d) reengineering C)
- Which of below is not a function of DBMS? 6)
 - quality b) synch a)
 - C) enrichment d) forecasting
- 7) A person having a insight of specific functional area of project is called _____.
 - project manager a) c)
 - b) technical expert software engineer d) subject matter expert
- 8) are software systems designed to support machine to machine interaction over a network.
 - Information technology a) C) Web services
- b) Cloud computing d) Apps
- The ten knowledge areas, each of which contains some or all of the project 9) management processes, is called
 - SDLC a)
 - **PMBOK** c)

- b) management document
- d) None of these

Max. Marks: 70

Marks: 14

14



- b) sell side
 - electronic exchange

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Set

- 10) Take odd man out- MS Project, MS Access, DB2, Oracle
 - MS Word a)
 - DB2 c)
- An IT project can produce _____. 11)
 - system a)
 - c) recommendations
- 12) Take odd man out - tuple, relation, attribute, query
 - a) tuple b) relation attribute c)
 - d) query
- A _____ is a product or outcome that is given to the client. 13) b) SDLC
 - a) milestone c)
 - waterfall d) none of these
- What for IS & IT are used in Digital Enterprises? 14)
 - b) Boost employee productivity
 - C) customer support

Research

a)

d) All of these

- **SLR-FM-674** Set Q
- b) MS Access
- d) Oracle
- b) software d) all of these

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT**

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any Two.

- Explain partitioned database with diagram, advantages and disadvantages. a)
- With one suitable application discuss electronic content management in b) detail.
- c) Discuss any one type of cloud computing in detail.

Q.3 Solve Any Four.

- a) Differentiate data mart Vs data warehouse.
- b) Discuss benefits of E Commerce to organizations.
- Justify with example IT flattens organization structure. C)
- d) With suitable example explain B2C and C2B transactions.
- e) To whom IT supports in a typical organization?

Section – II

Q.4 Solve any Two.

- With suitable example explain need of software project management. a)
- What is Project Management Body of Knowledge? b)
- c) With suitable example explain deliverables and milestones.

Solve any Four. Q.5

- a) Evaluate Green IT.
- b) Discuss ethical issues related to information systems.
- Explain economical impact of IS on organization. C)
- d) What are the causes of software project overrun?
- Discuss waterfall SDLC model. e)



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Seat No.

12

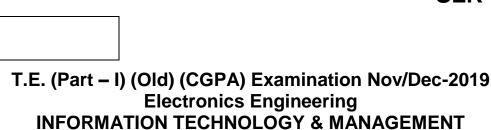
Book. 2) Figures to the right indicate full marks. Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Choose the correct alternatives from the options. Take odd man out - tuple, relation, attribute, guery 1) tuple b) relation a) attribute c) d) query is a product or outcome that is given to the client. 2) Α milestone b) SDLC a) waterfall d) none of these c) 3) What for IS & IT are used in Digital Enterprises? Research b) Boost employee productivity a) d) All of these C) customer support 4) Select appropriate sequence. database, data, knowledge, information a) b) data, database, knowledge, information data, database, information, knowledge c) information, database, knowledge, data d) 5) marketplace. a) buy side b) sell side virtual electronic exchange C) d) Which of below is an example of TPS? 6) business intelligence Payroll a) b) c) ERP d) expert system 7) Which of below is a major disadvantage of a centralized database? requires scheduling a) expensive b) d) all of these causes delays c) The major cost incurred in implementing ERP is due to _____. 8) hardware b) software a) c) training d) reengineering 9) Which of below is not a function of DBMS? b) synch

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer

Q.1

Organizations sell products to other organizations electronically is called

- quality a) c)
 - enrichment d) forecasting



Day & Date: Monday, 16-12-2019

Time: 02:30 PM To 05:30 PM

Seat No.

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Max. Marks: 70

Marks: 14

Set | R

- A person having a insight of specific functional area of project is called _____. 10)
 - a) project manager
- b) technical expert
- c) software engineer
 - d) subject matter expert
- 11) ____ are software systems designed to support machine to machine interaction over a network.
 - a) Information technology
- b) Cloud computing
- c) Web services
- d) Apps
- 12) The ten knowledge areas, each of which contains some or all of the project management processes, is called
 - SDLC a)

a) c)

- b) management document
- PMBOK C)
- d) None of these
- 13) Take odd man out- MS Project, MS Access, DB2, Oracle MS Word
 - b) MS Access d) Oracle
 - DB2
- An IT project can produce _____. 14)
 - system a)
 - recommendations C)
- b) software
- d) all of these

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any Two.

Seat No.

- a) Explain partitioned database with diagram, advantages and disadvantages.
- **b)** With one suitable application discuss electronic content management in detail.
- c) Discuss any one type of cloud computing in detail.

Q.3 Solve Any Four.

- a) Differentiate data mart Vs data warehouse.
- **b)** Discuss benefits of E Commerce to organizations.
- c) Justify with example IT flattens organization structure.
- d) With suitable example explain B2C and C2B transactions.
- e) To whom IT supports in a typical organization?

Section – II

Q.4 Solve any Two.

- a) With suitable example explain need of software project management.
- b) What is Project Management Body of Knowledge?
- c) With suitable example explain deliverables and milestones.

Q.5 Solve any Four.

- a) Evaluate Green IT.
- b) Discuss ethical issues related to information systems.
- c) Explain economical impact of IS on organization.
- d) What are the causes of software project overrun?
- e) Discuss waterfall SDLC model.

SLR-FM-674

Max. Marks: 56

16

12

12

Book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 Choose the correct alternatives from the options. Which of below is an example of TPS? 1) business intelligence Payroll a) b) ERP expert system C) d) Which of below is a major disadvantage of a centralized database? 2) expensive b) requires scheduling a) causes delays all of these c) d) The major cost incurred in implementing ERP is due to _____. 3) hardware b) software a) C) training d) reengineering Which of below is not a function of DBMS? 4) quality b) synch a) C) enrichment d) forecasting 5) a) project manager b) technical expert software engineer d) subject matter expert c) _ are software systems designed to support machine to machine 6) interaction over a network. Information technology b) Cloud computing a) Web services d) Apps c) The ten knowledge areas, each of which contains some or all of the project 7) management processes, is called a) SDLC b) management document c) PMBOK d) None of these Take odd man out- MS Project, MS Access, DB2, Oracle 8) MS Access a) MS Word b) DB2 Oracle C) d) An IT project can produce _____. 9) b) software system a) recommendations d) all of these C)

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 **Electronics Engineering INFORMATION TECHNOLOGY & MANAGEMENT**

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer



Max. Marks: 70

Set

Marks: 14

A person having a insight of specific functional area of project is called _____.

Seat No.

Set S

- 10) Take odd man out tuple, relation, attribute, query
 - a) tuple

c)

a)

c)

attribute

- b) relation
- d) query
- 11) A _____ is a product or outcome that is given to the client.
 - a) milestone b) SDLC
 - c) waterfall d) none of these
- 12) What for IS & IT are used in Digital Enterprises?
 - Research b)
 - b) Boost employee productivityd) All of these
- 13) Select appropriate sequence.

customer support

- a) database, data, knowledge, information
- b) data, database, knowledge, information
- c) data, database, information, knowledge
- d) information, database, knowledge, data
- 14) Organizations sell products to other organizations electronically is called _____ marketplace.
 - a) buy side
 - c) virtual

- b) sell side
- d) electronic exchange

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Electronics Engineering

INFORMATION TECHNOLOGY & MANAGEMENT

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

Section – I

Q.2 Solve any Two.

Seat No.

- a) Explain partitioned database with diagram, advantages and disadvantages.
- **b)** With one suitable application discuss electronic content management in detail.
- c) Discuss any one type of cloud computing in detail.

Q.3 Solve Any Four.

- a) Differentiate data mart Vs data warehouse.
- **b)** Discuss benefits of E Commerce to organizations.
- c) Justify with example IT flattens organization structure.
- d) With suitable example explain B2C and C2B transactions.
- e) To whom IT supports in a typical organization?

Section – II

Q.4 Solve any Two.

- a) With suitable example explain need of software project management.
- b) What is Project Management Body of Knowledge?
- c) With suitable example explain deliverables and milestones.

Q.5 Solve any Four.

- a) Evaluate Green IT.
- **b)** Discuss ethical issues related to information systems.
- c) Explain economical impact of IS on organization.
- d) What are the causes of software project overrun?
- e) Discuss waterfall SDLC model.



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