SLR-EP – 90

Seat No.	

Set P

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Attempt **any three** questions from **each** Section.*
*2) Figures to **right** indicate **full** marks.*
*3) **Use** of calculator is **allowed**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer :

1) The P.I. of $(D + 1)^3 = e^{-x}$ is

a) $x\,e^{-x}$ b) $\frac{x^3}{3}e^{-x}$ c) $\frac{x^2}{2}e^{-x}$ d) ∞

2) $\frac{1}{D^2}x^3$ is equal to

a) $e^x x^2$ b) $e^x\left(x^2+\frac{x^3}{3}\right)$ c) $\frac{x^5}{20}$ d) $e^{-x}x^3$

3) If f(t) is a periodic function of period T, then L{f(t)} =

a) $\frac{1}{1-e^{-ST}}\int_0^T e^{-st}f(t)dt$ b) $\frac{1}{1-e^{ST}}\int_0^T e^{-st}f(t)dt$

c) $\frac{1}{1-e^{-ST}}\int_0^\infty e^{-st}f(t)dt$ d) None of these

4) The Laplace transform of $\int_0^t \text{Sin}2u\,du$ is

a) $\frac{2}{S^2+4}$ b) $\frac{2}{S^2}$ c) $\frac{2}{S\left(S^2+4\right)}$ d) $\frac{2}{\left(S^2+4\right)^2}$

P.T.O.

5) $L^{-1}\left\{\frac{S}{4S^2+9}\right\}$ is =

a) $\frac{1}{4}\text{Cos}\left(\frac{3t}{2}\right)$ b) $\frac{1}{4}\text{Cos}\left(\frac{2t}{3}\right)$ c) $\text{Cos}\left(\frac{9t}{4}\right)$ d) $\frac{1}{4}\text{Cos}\left(\frac{9t}{4}\right)$

6) $L^{-1}\left\{\frac{1}{(S-2)^2}\right\}=$

a) $e^{-2t}t$ b) $\frac{e^{-2t}}{t}$ c) e^{2t} d) $t\,e^{2t}$

7) The solution of $xp + yq = z$ is

a) $\phi(x, y) = 0$ b) $\phi\left(\frac{x}{y}, \frac{y}{z}\right) = 0$ c) $\phi(xy, yz) = 0$ d) $\phi\left(x^2, y^2\right) = 0$

8) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \le x \le 0 \\ x, & 0 \le x \le 2 \end{cases}$ in the interval (–2, 2) has

a) No cosine terms
b) No sine terms
c) Both cosine and sine terms
d) None of these

9) If $\bar{r} = xi + yj + zk$ and $\bar{a} = \frac{\bar{r}}{3}$ then $\text{div}(\bar{a})$ =

a) 0 b) 1 c) –1 d) 2

10) Which of the following is not true ?

a) $\nabla\phi$ is a vector quantity
b) $\nabla.\bar{v}$ is a scalar quantity
c) $\nabla \times \bar{v}$ is a scalar quantity
d) $\nabla.\nabla\phi = \nabla^2\phi$

11) If $\bar{r} = xi + yj + zk$, then $\nabla \times \bar{r}$ =

a) 3 b) $\frac{1}{3}$ c) 0 d) –3

12) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\}$ =

a) $F\left(\frac{a}{z}\right)$ b) $\frac{1}{a}F\left(\frac{z}{a}\right)$ c) $\frac{1}{a}F\left(\frac{a}{z}\right)$ d) $F\left(\frac{z}{a}\right)$

13) The region of convergence of z-transform of the sequence $f(k) = \begin{cases} 1, & k \ge 0 \\ 0, & k < 0 \end{cases}$ is

a) $|z| > 1$ b) $|z| < 1$ c) $z < 1$ d) $z = 0$

14) The Fourier sine transform $F_s(s)$ is given by

a) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(x).\cos sx\,dx$
b) $\sqrt{\frac{\pi}{2}}\int_0^\infty f(x)\sin sx\,dx$
c) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(x)\sin sx\,dx$
d) $\sqrt{\frac{\pi}{2}}\int_0^\infty f(x)\cos sx\,dx$

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Set P

SLR-EP – 90

Seat No.	

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Attempt **any three** questions from **each** Section.*
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SECTION – I

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

   b) Solve $(D^3 - 2D + 4)y = 3x^2 - 5x + 2$ **3**

   c) In an LCR circuit the charge q on a plate of condenser is given by

   $$L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + \frac{q}{c} = 0.$$

   Solve the equation with initial conditions $q = q_0$ and $\frac{dq}{dt} = 0$ when $t = 0$ and $CR^2 < 4L$. **3**

3. a) Evaluate the integral by using Laplace transform $\int_0^\infty \frac{\cos 6t - \cos 4t}{t} dt$. **3**

   b) Express the following functions interms of Heaviside unit step function and hence find their Laplace transform.

   $$f(t) = \begin{cases} \cos t, & 0 < t \le \pi \\ 1, & \pi < t \le 2\pi \\ \sin t, & t > 2\pi \end{cases}.$$ **3**

   c) Find $L\{f(t)\}$, where $f(t) = e^{-t}$, $0 < t < 1$ and $f(t + 1) = f(t)$. **3**

4. a) Find inverse Laplace transform of $\text{Cot}^{-1}\left(\frac{s+a}{b}\right)$. **3**

   b) Find $L^{-1}\left\{\frac{s^2 + 2s + 3}{(s^2 + 2s + 2)(s^2 + 2s + 5)}\right\}$. **3**

   c) Solve $y'' + 6y' + 9y = 12t^2e^{-3t}$, subject to the conditions, $y(0) = 0$, $y'(0) = 0$ by using Laplace transform method. **4**

   OR

   c) Find $L^{-1}\left\{\frac{s}{(s+2)(s^2+4)}\right\}$ using convolution theorem. **4**

5. a) Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$. **3**

   b) Solve $z^2(p^2+q^2) = x+y$. **3**

   c) Solve $z^2(p^2+q^2+1) = k^2$. **3**

SECTION – II

6. a) Find the tangential and normal components of acceleration of particle moving on the curve $x = t^3+1$, $y = t^2$, $z = t$ at $t = 1$. **4**

   b) Find the directional derivative of $\phi = 2x^3y - 3y^2z$ at P(1, 2, –1) in the direction towards Q(3, –1, 5). In what direction from P is the directional derivative maximum ? Find the magnitude of maximum directional derivative. **3**

   c) Show that $\nabla\left(\bar{a}.\nabla\frac{1}{r}\right) = \frac{-\bar{a}}{r^3} + \frac{3(\bar{a}.\bar{r})\bar{r}}{r^5}$ where $\bar{a}$ is a constant vector and r, $\bar{r}$ have usual meaning. **3**

7. Attempt **any three** : **9**

   a) Find z-transform of $x_k = \left(\frac{1}{2}\right)^{|k|}$, for all k.

   b) Find $z^{-1}\left\{\frac{z}{(z-2)(z-3)}\right\}$, $|z| < 2$.

   c) Find $z^{-1}\left\{\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}\right\}$, $|z| < \frac{1}{5}$.

   d) Find $z\{k2^k + k3^k\}$, $k \geq 0$.

8. a) Find Fourier series of $f(x) = x\sin x$ in $(-\pi, \pi)$. Hence deduce that **5**

   $$\frac{\pi-2}{4} = \frac{1}{1\times3} - \frac{1}{3\times5} + \frac{1}{5\times7} - \ldots$$

   b) Obtain Fourier expansion for $f(x) = 2x - x^2$ in (0, 3). **4**

   OR

   b) Expand $\pi x - x^2$ as a sine series in $(0, \pi)$. **4**

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   c) Find f(x) if its Fourier cosine transform is e^{-s}. **3**

Set P

SLR-EP – 90

Seat No.	

Set Q

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

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Duration : 30 Minutes Marks : 14

1. Choose the correct answer :

1) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \le x \le 0 \\ x, & 0 \le x \le 2 \end{cases}$ in the interval (–2, 2) has
   a) No cosine terms b) No sine terms
   c) Both cosine and sine terms d) None of these

2) If $\bar{r} = xi + yj + zk$ and $\bar{a} = \frac{\bar{r}}{3}$ then $\text{div}(\bar{a}) =$
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P.T.O.

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SLR-EP – 90

Seat No.	

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Attempt **any three** questions from **each** Section.*
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SECTION – I

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Set Q

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Set Q

SLR-EP – 90

Seat No.	

Set R

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

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P.T.O.

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Day and Date : Tuesday, 13-12-2016 Marks : 56

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SECTION – I

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Set R

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6. a) Find the tangential and normal components of acceleration of particle moving on the curve $x = t^3+1$, $y = t^2$, $z = t$ at $t = 1$. **4**

   b) Find the directional derivative of $\phi = 2x^3y - 3y^2z$ at P(1, 2, –1) in the direction towards Q(3, –1, 5). In what direction from P is the directional derivative maximum ? Find the magnitude of maximum directional derivative. **3**

   c) Show that $\nabla\left(\bar{a}.\nabla\frac{1}{r}\right) = \frac{-\bar{a}}{r^3} + \frac{3(\bar{a}.\bar{r})\bar{r}}{r^5}$ where $\bar{a}$ is a constant vector and r, $\bar{r}$ have usual meaning. **3**

7. Attempt **any three** : **9**

   a) Find z-transform of $x_k = \left(\frac{1}{2}\right)^{|k|}$, for all k.

   b) Find $z^{-1}\left\{\frac{z}{(z-2)(z-3)}\right\}$, $|z| < 2$.

   c) Find $z^{-1}\left\{\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}\right\}$, $|z| < \frac{1}{5}$.

   d) Find $z\{k2^k + k3^k\}$, $k \geq 0$.

8. a) Find Fourier series of $f(x) = x\sin x$ in $(-\pi, \pi)$. Hence deduce that **5**

   $$\frac{\pi-2}{4} = \frac{1}{1\times3} - \frac{1}{3\times5} + \frac{1}{5\times7} - \ldots$$

   b) Obtain Fourier expansion for $f(x) = 2x - x^2$ in (0, 3). **4**

   OR

   b) Expand $\pi x - x^2$ as a sine series in $(0, \pi)$. **4**

9. a) Find the Fourier transform of $f(x) = e^{-a|x|}$. **3**

   b) Express the function $f(x) = \begin{cases} \sin x, & 0 \leq x \leq \pi \\ 0, & x > \pi \end{cases}$ as Fourier sine integral and hence evaluate $\int_0^\infty \frac{\sin\omega x \sin\pi\omega}{1-\omega^2} d\omega$. **3**

   c) Find f(x) if its Fourier cosine transform is e^{-s}. **3**

Set R

SLR-EP – 90

Seat No.	

Set S

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Attempt **any three** questions from **each** Section.*
*2) Figures to **right** indicate **full** marks.*
*3) **Use** of calculator is **allowed**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer :

1) Which of the following is not true ?

a) $\nabla\phi$ is a vector quantity b) $\nabla.\bar{v}$ is a scalar quantity

c) $\nabla \times \bar{v}$ is a scalar quantity d) $\nabla.\nabla\phi = \nabla^2\phi$

2) If $\bar{r} = xi + yj + zk$, then $\nabla \times \bar{r} =$

a) 3 b) $\frac{1}{3}$ c) 0 d) –3

3) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$

a) $F\left(\frac{a}{z}\right)$ b) $\frac{1}{a}F\left(\frac{z}{a}\right)$ c) $\frac{1}{a}F\left(\frac{a}{z}\right)$ d) $F\left(\frac{z}{a}\right)$

4) The region of convergence of z-transform of the sequence $f(k) = \begin{cases} 1, & k \geq 0 \\ 0, & k < 0 \end{cases}$ is

a) $|z| > 1$ b) $|z| < 1$ c) $z < 1$ d) $z = 0$

5) The Fourier sine transform $F_s(s)$ is given by

a) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(x).\cos sx\,dx$ b) $\sqrt{\frac{\pi}{2}}\int_0^\infty f(x)\sin sx\,dx$

c) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(x)\sin sx\,dx$ d) $\sqrt{\frac{\pi}{2}}\int_0^\infty f(x)\cos sx\,dx$

6) The P.I. of $(D + 1)^3 = e^{-x}$ is

a) $x\,e^{-x}$ b) $\frac{x^3}{3}e^{-x}$ c) $\frac{x^2}{2}e^{-x}$ d) ∞

P.T.O.

7) $\frac{1}{D^2}x^3$ is equal to

a) $e^x x^2$ b) $e^x\left(x^2+\frac{x^3}{3}\right)$ c) $\frac{x^5}{20}$ d) $e^{-x}x^3$

8) If f(t) is a periodic function of period T, then L{f(t)} =

a) $\frac{1}{1-e^{-ST}}\int_0^T e^{-st}f(t)dt$ b) $\frac{1}{1-e^{ST}}\int_0^T e^{-st}f(t)dt$

c) $\frac{1}{1-e^{-ST}}\int_0^\infty e^{-st}f(t)dt$ d) None of these

9) The Laplace transform of $\int_0^t Sin2udu$ is

a) $\frac{2}{S^2+4}$ b) $\frac{2}{S^2}$ c) $\frac{2}{S\left(S^2+4\right)}$ d) $\frac{2}{\left(S^2+4\right)^2}$

10) $L^{-1}\left\{\frac{S}{4S^2+9}\right\}$ is =

a) $\frac{1}{4}Cos\left(\frac{3t}{2}\right)$ b) $\frac{1}{4}Cos\left(\frac{2t}{3}\right)$ c) $Cos\left(\frac{9t}{4}\right)$ d) $\frac{1}{4}Cos\left(\frac{9t}{4}\right)$

11) $L^{-1}\left\{\frac{1}{(S-2)^2}\right\}=$

a) $e^{-2t}t$ b) $\frac{e^{-2t}}{t}$ c) e^{2t} d) $t\,e^{2t}$

12) The solution of xp + yq = z is

a) $\phi(x, y)=0$ b) $\phi\left(\frac{x}{y},\frac{y}{z}\right)=0$ c) $\phi(xy, yz)=0$ d) $\phi\left(x^2, y^2\right)=0$

13) Fourier expansion of $f(x)=\begin{cases}-x, & -2\le x\le 0\\ x, & 0\le x\le 2\end{cases}$ in the interval (–2, 2) has

a) No cosine terms b) No sine terms
c) Both cosine and sine terms d) None of these

14) If $\bar{r}=xi+yj+zk$ and $\bar{a}=\frac{\bar{r}}{3}$ then $div\left(\bar{a}\right)$ =

a) 0 b) 1 c) –1 d) 2

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Seat No.	

S.E. (Part – I) (Electronics) (CGPA) Examination, 2016
ENGINEERING MATHEMATICS – III

Day and Date : Tuesday, 13-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Attempt **any three** questions from **each** Section.*
*2) Figures to **right** indicate **full** marks.*
*3) **Use** of calculator is **allowed**.*

SECTION – I

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

   b) Solve $(D^3 - 2D + 4)y = 3x^2 - 5x + 2$ **3**

   c) In an LCR circuit the charge q on a plate of condenser is given by

   $$L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + \frac{q}{c} = 0.$$

   Solve the equation with initial conditions $q = q_0$ and $\frac{dq}{dt} = 0$ when $t = 0$ and $CR^2 < 4L$. **3**

3. a) Evaluate the integral by using Laplace transform $\int_0^\infty \frac{\cos 6t - \cos 4t}{t} dt$. **3**

   b) Express the following functions interms of Heaviside unit step function and hence find their Laplace transform.

   $$f(t) = \begin{cases} \cos t, & 0 < t \le \pi \\ 1, & \pi < t \le 2\pi \\ \sin t, & t > 2\pi \end{cases}.$$ **3**

   c) Find $L\{f(t)\}$, where $f(t) = e^{-t}$, $0 < t < 1$ and $f(t + 1) = f(t)$. **3**

4. a) Find inverse Laplace transform of $\text{Cot}^{-1}\left(\frac{s+a}{b}\right)$. **3**

   b) Find $L^{-1}\left\{\frac{s^2 + 2s + 3}{(s^2 + 2s + 2)(s^2 + 2s + 5)}\right\}$. **3**

   c) Solve $y'' + 6y' + 9y = 12t^2e^{-3t}$, subject to the conditions, $y(0) = 0$, $y'(0) = 0$ by using Laplace transform method. **4**

   OR

   c) Find $L^{-1}\left\{\frac{s}{(s+2)(s^2+4)}\right\}$ using convolution theorem. **4**

Set S

5. a) Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$. **3**

   b) Solve $z^2(p^2+q^2) = x+y$. **3**

   c) Solve $z^2(p^2+q^2+1) = k^2$. **3**

SECTION – II

6. a) Find the tangential and normal components of acceleration of particle moving on the curve $x = t^3+1$, $y = t^2$, $z = t$ at $t = 1$. **4**

   b) Find the directional derivative of $\phi = 2x^3y - 3y^2z$ at P(1, 2, –1) in the direction towards Q(3, –1, 5). In what direction from P is the directional derivative maximum ? Find the magnitude of maximum directional derivative. **3**

   c) Show that $\nabla\left(\bar{a}.\nabla\frac{1}{r}\right) = \frac{-\bar{a}}{r^3} + \frac{3(\bar{a}.\bar{r})\bar{r}}{r^5}$ where $\bar{a}$ is a constant vector and r, $\bar{r}$ have usual meaning. **3**

7. Attempt **any three** : **9**

   a) Find z-transform of $x_k = \left(\frac{1}{2}\right)^{|k|}$, for all k.

   b) Find $z^{-1}\left\{\frac{z}{(z-2)(z-3)}\right\}$, $|z| < 2$.

   c) Find $z^{-1}\left\{\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}\right\}$, $|z| < \frac{1}{5}$.

   d) Find $z\{k2^k + k3^k\}$, $k \geq 0$.

8. a) Find Fourier series of $f(x) = x\sin x$ in $(-\pi, \pi)$. Hence deduce that **5**

   $$\frac{\pi-2}{4} = \frac{1}{1\times3} - \frac{1}{3\times5} + \frac{1}{5\times7} - \ldots$$

   b) Obtain Fourier expansion for $f(x) = 2x - x^2$ in (0, 3). **4**

   OR

   b) Expand $\pi x - x^2$ as a sine series in $(0, \pi)$. **4**

9. a) Find the Fourier transform of $f(x) = e^{-a|x|}$. **3**

   b) Express the function $f(x) = \begin{cases} \sin x, & 0 \leq x \leq \pi \\ 0, & x > \pi \end{cases}$ as Fourier sine integral and hence evaluate $\int_0^\infty \frac{\sin\omega x \sin\pi\omega}{1-\omega^2} d\omega$. **3**

   c) Find f(x) if its Fourier cosine transform is e^{-s}. **3**

Set S

SLR-EP – 91

Seat No.	

Set P

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) **Assume** suitable data if required.*
*3) Use of data sheet is **allowed**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) If one of the diode in bridge rectifier opens, then output is
   a) 0 V b) $Vm/2\pi$
   c) $2 Vm/\pi$ d) Half wave rectified voltage

2) For certain 12 V zener diode, 10 mA change in zener current produces 0.1V change in zener voltage. The zener impedance is
   a) 1Ω b) 0.1Ω c) 10Ω d) 100Ω

3) If input to voltage trippler has an rms value of 10 V, the dc output voltage is
   a) 42.42 b) 30
   c) $30\sqrt{2}$ d) Both (a) and (c)

4) The main use of common collector amplifier is as
   a) Power Amplifier b) Voltage Amplifier
   c) Impedance Matching d) Low input impedance circuit

5) The _____ is best suitable for light load current.
   a) L-Filter b) C-Filter
   c) LC Filter d) Pie Filter

6) The ripple factor of _____ is independent of load resistor.
   a) L-filter b) C-Filter
   c) LC Filter d) Pie Filter

P.T.O.

7) The reverse saturation current gets double at every _____ rise in temperature.
   a) 20°C b) 10°C c) 30°C d) 150°C

8) In single stage CE amplifier if bypass capacitor is removed then voltage gain of amplifier
   a) Remains constant b) Decreases
   c) Increases d) Becomes zero

9) For voltage amplification JFET is operated in _____ region.
   a) Ohmic b) Pinch off c) Cut-off d) Both (a) and (c)

10) In monostable mutivibrator if R = 25 KΩ and C = 1nF then quasi-stable duration is
   a) 173.25 μs b) 17.325 μs c) 1.7325 μs d) 17.325 ns

11) Which of the following statements is not true in case of FET ?
   a) It has high input impedance b) It is less noisy than BJT
   c) Current controlled device d) Both (a) and (b)

12) The frequency of oscillation in a stable multivibrator depends mainly on
   a) Value of collector load resistance
   b) RC value of circuit
   c) Value of transistor hfe
   d) Width of input pulse

13) The values of C_{be}, C_{bc} and C_{ce} affect _____ response.
   a) Low frequency b) Mid frequency
   c) High frequency d) Both (b) and (c)

14) The input impedance h_{11} of network with output shorted is given by ratio
   a) $\frac{V1}{I1}$ b) $\frac{V1}{V2}$ c) $\frac{I2}{I1}$ d) $\frac{I2}{V2}$

SLR-EP – 91

Seat No.	

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if required.
3) Use of data sheet is ***allowed****.*

SECTION – I

2. Answer **any 4** : **(4×4=16)**
   1) Discuss "Junction diode switching time" to justify diode reverses recovery time, storage time and transition time in brief.
   2) Draw circuit diagram of Double ended clipper with I/O waveforms and transfer curve.
   3) Explain significance of bleeder resistor.
   4) What are different ratings of Zener diode ?
   5) Explain breakdown mechanism of Zener diode.

3. Answer **any 2** : **(2×6=12)**
   1) Explain working of full wave rectifier. Derive expression for
      a) Avg. Voltage, Avg. Current.
      b) RMS Voltage RMS Current.
      c) P_{dc}, P_{ac}, Rectification efficiency.
      d) PIV.
   2) Explain the operation of biased series positive clipper and biased series negative clipper.
   3) Derive expression for Inductor filter
      a) RMS value of ripple voltage.
      b) Ripple Factor

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) What is early effect ? How it affects the BJT characteristics in CE configuration ?

   b) Design an Astable multivibrator for output amplitude of 12 V and square wave of 1KHz. Use Si transistor hfe (min) = 100, Ic(max) = 6 mA, $V_{CE(sat)}$ = 0.3V.

   c) Why bias compensation is required ? Explain bias compensation techniques using diode.

   d) A CE amplifier uses R_L of 2.7 KΩ , h parameters are hie = 4.5 K, hoe = 30 μ $\mho$, hfe = 330, hre = 2×10^{-4}. Calculate A_i, R_i, A_v, R_o.

   e) "CE configuration provides 180° phase shift between input and output". Justify statement.

5. Attempt **any two** : **(2×6=12)**

   1) Define stability factor S. Derive expression for stability factor S of voltage divider bias circuit. Explain how it stabilizes the operating point.

   2) Describe construction, working and characteristics of N channel enhancement MOSFET.

   3) Explain operation of Monostable multivibrator. Derive an expression for pulse width generated by Monostable multivibrator.

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SLR-EP – 91

Seat No.	

Set Q

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) **Assume** suitable data if required.*
*3) Use of data sheet is **allowed**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) In single stage CE amplifier if bypass capacitor is removed then voltage gain of amplifier
   a) Remains constant b) Decreases
   c) Increases d) Becomes zero

2) For voltage amplification JFET is operated in _____ region.
   a) Ohmic b) Pinch off c) Cut-off d) Both (a) and (c)

3) In monostable mutivibrator if R = 25 KΩ and C = 1nF then quasi-stable duration is
   a) 173.25 μs b) 17.325 μs c) 1.7325 μs d) 17.325 ns

4) Which of the following statements is not true in case of FET ?
   a) It has high input impedance b) It is less noisy than BJT
   c) Current controlled device d) Both (a) and (b)

5) The frequency of oscillation in a stable multivibrator depends mainly on
   a) Value of collector load resistance
   b) RC value of circuit
   c) Value of transistor hfe
   d) Width of input pulse

P.T.O.

6) The values of C_{be}, C_{bc} and C_{ce} affect _____ response.
   a) Low frequency b) Mid frequency
   c) High frequency d) Both (b) and (c)

7) The input impedance h_{11} of network with output shorted is given by ratio
   a) $\frac{V1}{I1}$ b) $\frac{V1}{V2}$ c) $\frac{I2}{I1}$ d) $\frac{I2}{V2}$

8) If one of the diode in bridge rectifier opens, then output is
   a) 0 V b) $Vm/2\pi$
   c) $2\,Vm/\pi$ d) Half wave rectified voltage

9) For certain 12 V zener diode, 10 mA change in zener current produces 0.1V change in zener voltage. The zener impedance is
   a) $1\,\Omega$ b) $0.1\,\Omega$ c) $10\,\Omega$ d) $100\,\Omega$

10) If input to voltage trippler has an rms value of 10 V, the dc output voltage is
   a) 42.42 b) 30
   c) $30\sqrt{2}$ d) Both (a) and (c)

11) The main use of common collector amplifier is as
   a) Power Amplifier b) Voltage Amplifier
   c) Impedance Matching d) Low input impedance circuit

12) The _____ is best suitable for light load current.
   a) L-Filter b) C-Filter
   c) LC Filter d) Pie Filter

13) The ripple factor of _____ is independent of load resistor.
   a) L-filter b) C-Filter
   c) LC Filter d) Pie Filter

14) The reverse saturation current gets double at every _____ rise in temperature.
   a) 20°C b) 10°C c) 30°C d) 150°C

_____

SLR-EP – 91

Seat No.	

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
2) Assume suitable data if required.
*3) Use of data sheet is **allowed**.*

SECTION – I

2. Answer **any 4** : **(4×4=16)**
   1) Discuss "Junction diode switching time" to justify diode reverses recovery time, storage time and transition time in brief.
   2) Draw circuit diagram of Double ended clipper with I/O waveforms and transfer curve.
   3) Explain significance of bleeder resistor.
   4) What are different ratings of Zener diode ?
   5) Explain breakdown mechanism of Zener diode.

3. Answer **any 2** : **(2×6=12)**
   1) Explain working of full wave rectifier. Derive expression for
      a) Avg. Voltage, Avg. Current.
      b) RMS Voltage RMS Current.
      c) P_{dc}, P_{ac}, Rectification efficiency.
      d) PIV.
   2) Explain the operation of biased series positive clipper and biased series negative clipper.
   3) Derive expression for Inductor filter
      a) RMS value of ripple voltage.
      b) Ripple Factor

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) What is early effect ? How it affects the BJT characteristics in CE configuration ?

   b) Design an Astable multivibrator for output amplitude of 12 V and square wave of 1KHz. Use Si transistor hfe (min) = 100, Ic(max) = 6 mA, $V_{CE(sat)}$ = 0.3V.

   c) Why bias compensation is required ? Explain bias compensation techniques using diode.

   d) A CE amplifier uses R_L of 2.7 KΩ , h parameters are hie = 4.5 K, hoe = 30 μ $\mho$, hfe = 330, hre = 2×10^{-4}. Calculate A_i, R_i, A_v, R_o.

   e) "CE configuration provides 180° phase shift between input and output". Justify statement.

5. Attempt **any two** : **(2×6=12)**

   1) Define stability factor S. Derive expression for stability factor S of voltage divider bias circuit. Explain how it stabilizes the operating point.

   2) Describe construction, working and characteristics of N channel enhancement MOSFET.

   3) Explain operation of Monostable multivibrator. Derive an expression for pulse width generated by Monostable multivibrator.

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SLR-EP – 91

Seat No.	

Set R

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) **Assume** suitable data if required.*
*3) Use of data sheet is **allowed**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The _____ is best suitable for light load current.
a) L-Filter b) C-Filter
c) LC Filter d) Pie Filter

2) The ripple factor of _____ is independent of load resistor.
a) L-filter b) C-Filter
c) LC Filter d) Pie Filter

3) The reverse saturation current gets double at every _____ rise in temperature.
a) 20°C b) 10°C c) 30°C d) 150°C

4) In single stage CE amplifier if bypass capacitor is removed then voltage gain of amplifier
a) Remains constant b) Decreases
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5) For voltage amplification JFET is operated in _____ region.
a) Ohmic b) Pinch off c) Cut-off d) Both (a) and (c)

6) In monostable mutivibrator if R = 25 KΩ and C = 1nF then quasi-stable duration is
a) 173.25 μs b) 17.325 μs c) 1.7325 μs d) 17.325 ns

7) Which of the following statements is not true in case of FET ?
   a) It has high input impedance
   b) It is less noisy than BJT
   c) Current controlled device
   d) Both (a) and (b)

8) The frequency of oscillation in a stable multivibrator depends mainly on
   a) Value of collector load resistance
   b) RC value of circuit
   c) Value of transistor hfe
   d) Width of input pulse

9) The values of C_{be}, C_{bc} and C_{ce} affect _____ response.
   a) Low frequency
   b) Mid frequency
   c) High frequency
   d) Both (b) and (c)

10) The input impedance h_{11} of network with output shorted is given by ratio

   a) $\frac{V1}{I1}$ b) $\frac{V1}{V2}$ c) $\frac{I2}{I1}$ d) $\frac{I2}{V2}$

11) If one of the diode in bridge rectifier opens, then output is
   a) 0 V
   b) $Vm/2\pi$
   c) $2\,Vm/\pi$
   d) Half wave rectified voltage

12) For certain 12 V zener diode, 10 mA change in zener current produces 0.1V change in zener voltage. The zener impedance is

   a) $1\,\Omega$ b) $0.1\,\Omega$ c) $10\,\Omega$ d) $100\,\Omega$

13) If input to voltage trippler has an rms value of 10 V, the dc output voltage is
   a) 42.42
   b) 30
   c) $30\sqrt{2}$
   d) Both (a) and (c)

14) The main use of common collector amplifier is as
   a) Power Amplifier
   b) Voltage Amplifier
   c) Impedance Matching
   d) Low input impedance circuit

_____

SLR-EP – 91

Seat No.	

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if required.
3) Use of data sheet is ***allowed****.*

SECTION – I

2. Answer **any 4** : **(4×4=16)**
   1) Discuss "Junction diode switching time" to justify diode reverses recovery time, storage time and transition time in brief.
   2) Draw circuit diagram of Double ended clipper with I/O waveforms and transfer curve.
   3) Explain significance of bleeder resistor.
   4) What are different ratings of Zener diode ?
   5) Explain breakdown mechanism of Zener diode.

3. Answer **any 2** : **(2×6=12)**
   1) Explain working of full wave rectifier. Derive expression for
      a) Avg. Voltage, Avg. Current.
      b) RMS Voltage RMS Current.
      c) P_{dc}, P_{ac}, Rectification efficiency.
      d) PIV.
   2) Explain the operation of biased series positive clipper and biased series negative clipper.
   3) Derive expression for Inductor filter
      a) RMS value of ripple voltage.
      b) Ripple Factor

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) What is early effect ? How it affects the BJT characteristics in CE configuration ?

   b) Design an Astable multivibrator for output amplitude of 12 V and square wave of 1KHz. Use Si transistor hfe (min) = 100, Ic(max) = 6 mA, $V_{CE(sat)}$ = 0.3V.

   c) Why bias compensation is required ? Explain bias compensation techniques using diode.

   d) A CE amplifier uses R_L of 2.7 KΩ , h parameters are hie = 4.5 K, hoe = 30 μ $\mho$, hfe = 330, hre = 2×10^{-4}. Calculate A_i, R_i, A_v, R_o.

   e) "CE configuration provides 180° phase shift between input and output". Justify statement.

5. Attempt **any two** : **(2×6=12)**

   1) Define stability factor S. Derive expression for stability factor S of voltage divider bias circuit. Explain how it stabilizes the operating point.

   2) Describe construction, working and characteristics of N channel enhancement MOSFET.

   3) Explain operation of Monostable multivibrator. Derive an expression for pulse width generated by Monostable multivibrator.

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SLR-EP – 91

Seat No.	

Set S

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) ***Assume*** *suitable data if required.*
3) Use of data sheet is ***allowed****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) In monostable mutivibrator if R = 25 KΩ and C = 1nF then quasi-stable duration is
   a) 173.25 μs b) 17.325 μs c) 1.7325 μs d) 17.325 ns
2) Which of the following statements is not true in case of FET ?
   a) It has high input impedance b) It is less noisy than BJT
   c) Current controlled device d) Both (a) and (b)
3) The frequency of oscillation in a stable multivibrator depends mainly on
   a) Value of collector load resistance
   b) RC value of circuit
   c) Value of transistor hfe
   d) Width of input pulse
4) The values of C_{be}, C_{bc} and C_{ce} affect _____ response.
   a) Low frequency b) Mid frequency
   c) High frequency d) Both (b) and (c)
5) The input impedance h_{11} of network with output shorted is given by ratio
   a) $\frac{V1}{I1}$ b) $\frac{V1}{V2}$ c) $\frac{I2}{I1}$ d) $\frac{I2}{V2}$

P.T.O.

6) If one of the diode in bridge rectifier opens, then output is
   a) 0 V
   b) $Vm/2\pi$
   c) $2 Vm/\pi$
   d) Half wave rectified voltage

7) For certain 12 V zener diode, 10 mA change in zener current produces 0.1V change in zener voltage. The zener impedance is
   a) 1Ω b) 0.1Ω c) 10Ω d) 100Ω

8) If input to voltage trippler has an rms value of 10 V, the dc output voltage is
   a) 42.42
   b) 30
   c) $30\sqrt{2}$
   d) Both (a) and (c)

9) The main use of common collector amplifier is as
   a) Power Amplifier
   b) Voltage Amplifier
   c) Impedance Matching
   d) Low input impedance circuit

10) The _____ is best suitable for light load current.
   a) L-Filter
   b) C-Filter
   c) LC Filter
   d) Pie Filter

11) The ripple factor of _____ is independent of load resistor.
   a) L-filter
   b) C-Filter
   c) LC Filter
   d) Pie Filter

12) The reverse saturation current gets double at every _____ rise in temperature.
   a) 20°C b) 10°C c) 30°C d) 150°C

13) In single stage CE amplifier if bypass capacitor is removed then voltage gain of amplifier
   a) Remains constant
   b) Decreases
   c) Increases
   d) Becomes zero

14) For voltage amplification JFET is operated in _____ region.
   a) Ohmic b) Pinch off c) Cut-off d) Both (a) and (c)

_____

SLR-EP – 91

Seat No.	

S.E. (Electronics) (Part – I) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – I

Day and Date : Thursday, 15-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
2) Assume suitable data if required.
*3) Use of data sheet is **allowed**.*

SECTION – I

2. Answer **any 4** : **(4×4=16)**
   1) Discuss "Junction diode switching time" to justify diode reverses recovery time, storage time and transition time in brief.
   2) Draw circuit diagram of Double ended clipper with I/O waveforms and transfer curve.
   3) Explain significance of bleeder resistor.
   4) What are different ratings of Zener diode ?
   5) Explain breakdown mechanism of Zener diode.

3. Answer **any 2** : **(2×6=12)**
   1) Explain working of full wave rectifier. Derive expression for
      a) Avg. Voltage, Avg. Current.
      b) RMS Voltage RMS Current.
      c) P_{dc}, P_{ac}, Rectification efficiency.
      d) PIV.
   2) Explain the operation of biased series positive clipper and biased series negative clipper.
   3) Derive expression for Inductor filter
      a) RMS value of ripple voltage.
      b) Ripple Factor

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) What is early effect ? How it affects the BJT characteristics in CE configuration ?

   b) Design an Astable multivibrator for output amplitude of 12 V and square wave of 1KHz. Use Si transistor hfe (min) = 100, Ic(max) = 6 mA, $V_{CE(sat)}$ = 0.3V.

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   d) A CE amplifier uses R_L of 2.7 KΩ , h parameters are hie = 4.5 K, hoe = 30 μ $\mho$, hfe = 330, hre = 2×10^{-4}. Calculate A_i, R_i, A_v, R_o.

   e) "CE configuration provides 180° phase shift between input and output". Justify statement.

5. Attempt **any two** : **(2×6=12)**

   1) Define stability factor S. Derive expression for stability factor S of voltage divider bias circuit. Explain how it stabilizes the operating point.

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   3) Explain operation of Monostable multivibrator. Derive an expression for pulse width generated by Monostable multivibrator.

———————

SLR-EP – 92

Seat No.	

Set P

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the right indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

(1×14=14)

1. 1) One of the following laws of electrical n/ws is used in node analysis of the n/w.
   a) KVL b) KCL c) Faraday's law d) Ohm's law

   2) Mesh analysis is based on
   a) Kirchhoff's current law b) Kirchhoff's voltage law
   c) Both d) None of the above

   3) In certain series resonant circuit has a bandwidth of 1000 Hz. If the existing coil is replaced by a coil with a lower Q, what happens to the bandwidth ?
   a) It increases b) It decreases
   c) Be zero d) Remains the same

   4) In a parallel resonance circuit, why does the current leads the source voltage at frequencies above resonance ?
   a) Because the circuit is predominantly resistive
   b) Because the circuit is predominantly inductive
   c) Because the circuit is predominantly capacitive
   d) None of the above

   5) If the lower cutoff frequency is 2400 Hz and the upper cutoff frequency is 2800 Hz, what is the bandwidth ?
   a) 400 Hz b) 2800 Hz c) 2400 Hz d) 5200 Hz

6) The h parameters h_{11} and h_{21} are obtained
   a) By shorting output terminals b) By shorting input terminals
   c) By opening output terminals d) By opening input terminals

7) What is the transfer admittance of the network shown in Figure 1 ?
   a) –2 mho b) +2 mho c) –4 mho d) –5 mho

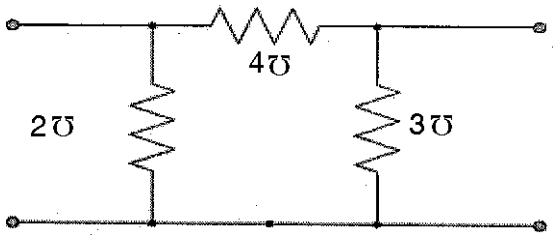

Figure 1

8) A capacitor does not allow sudden changes in
   a) Currents b) Voltages
   c) Both currents and voltages d) Neither of two

9) The time constant of series RC circuit is
   a) 1/RC b) R/C c) RC d) e^{-RC}

10) A band stop filter may be obtained by connecting LPF in parallel with HPF filter in which cut-off frequency of the low pass filter is _____ the cut-off frequency of high pass filter.
   a) above b) below c) same d) none of above

11) An ideal filter should have
   a) Zero attenuation in pass band
   b) Infinite attenuation in pass band
   c) Zero attenuation in attenuation band
   d) All of above

12) In the m-derived high pass filters the resonant frequency is to be chosen so that it is
   a) Above the cut off frequency b) Below the cut off frequency
   c) Equal to the cut-off frequency d) None of above

13) When an inductor of 2H and a capacitor of 1F are connected in parallel, the overall transform impedance is equal to
   a) $(2s^2 + 1)/2S$ b) 3S c) 1/2S d) $2S/(2S^2 + 1)$

14) The network function is said to be stable when real parts of the poles and zeros are
   a) Positive b) Zero c) Negative d) Of any value

SLR-EP – 92

Seat No.	

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Answer **any four** : **(4×4=16)**

a) Determine the Thevenin's equivalent circuits with respect to terminals ab for the circuit shown in Figure 2.

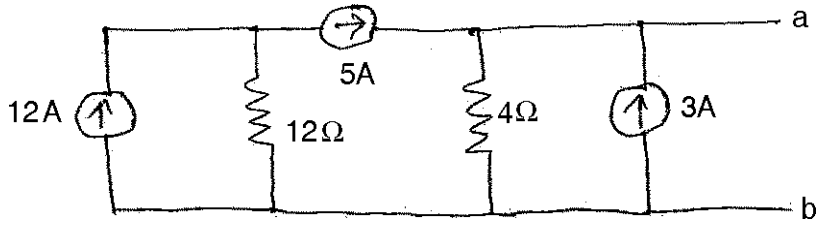

Figure 2

b) Find the voltage across the 2 ohm resistor shown in Figure 3. Use superposition theorem.

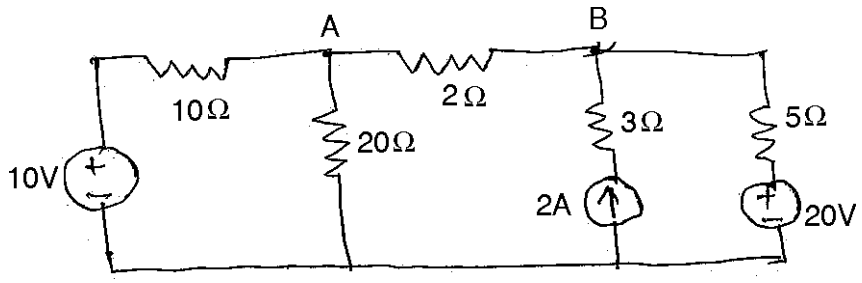

Figure 3

c) Determine the quality factor of a coil for the series resonant circuit consisting of R = 10 Ω , L = 0.1 H and C = 10 μF .

d) Derive the equation for resonant frequency of a tank circuit.

e) Find the inverse transmission parameters for the network shown in Figure 4.

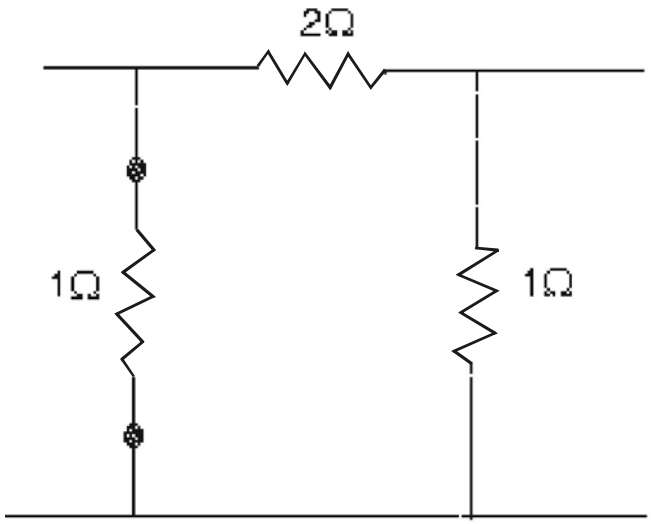

Figure 4

3. Answer **any two** : **(6×2=12)**

a) State maximum power transfer theorem. Determine the load resistance to receive maximum power from the source; also find the maximum power delivered to the load in the circuit shown in Figure 5.

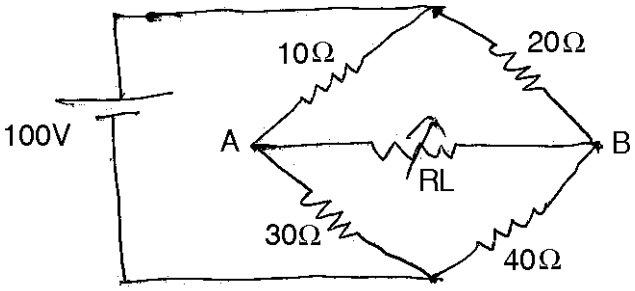

Figure 5

b) The hybrid parameters of a two port network shown in Figure 6 are h_{11} = 1 K, h_{12} = .003, h_{21} = 100, h_{22} = 50 μohm. Find V2 and Z parameters of the network.

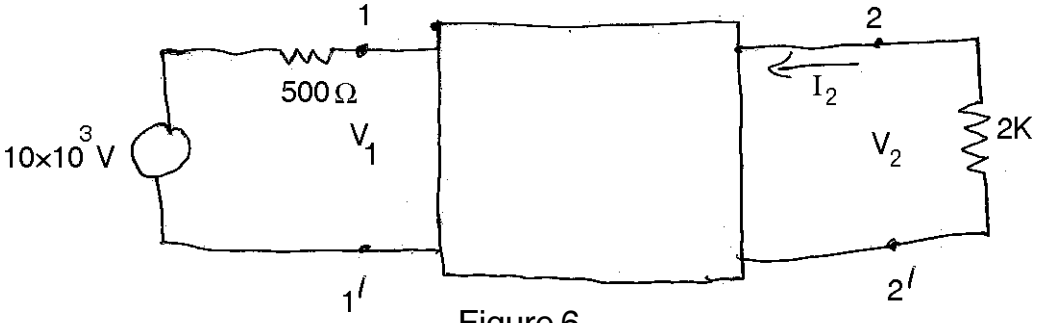

Figure 6

c) A series RLC circuit is supplied at 220 V : 50 Hz; At resonance, the voltage across the capacitor = 550 V, I = 1A. Determine R, L and C.

SECTION – II

4. Answer **any four** : **(4×4=16)**

   a) A series RL circuit with R = 30 Ω and L = 15 H has a constant voltage V = 60 V applied at t = 0. Determine the current i(t), voltage across resistor and the voltage across the inductor.

   b) Derive the equations for R_1 and R_2 for the T-pad attenuator.

   c) Design low pass T-section filter with a cut-off frequency of 1.5 KHz with a terminated design impedance of 600 ohm.

   d) Write necessary condition for transfer functions.

   e) For the given denominator polynomial of a network function, verify the stability of the network by using Routh criteria.

   $Q(s) = S^3 + 2S^2 + 8S + 10$

5. Answer **any two** : **(6×2=12)**

   a) Explain sinusoidal response of series RL circuit.

   b) Derive the equations of L_1, L_2, C_1 and C_2 for band stop filter.

   c) For the given network function, draw the pole zero diagram and hence obtain the time domain response i(t).

   $$I(s) = \frac{4(s+2)s}{(s+1)(s+3)}.$$

Set P

SLR-EP – 92

Seat No.	

Set Q

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the right indicate* ***full*** *marks.*
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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

(1×14=14)

1. 1) A capacitor does not allow sudden changes in
   a) Currents b) Voltages
   c) Both currents and voltages d) Neither of two

   2) The time constant of series RC circuit is
   a) 1/RC b) R/C c) RC d) e^{-RC}

   3) A band stop filter may be obtained by connecting LPF in parallel with HPF filter in which cut-off frequency of the low pass filter is _____ the cut-off frequency of high pass filter.
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P.T.O.

6) When an inductor of 2H and a capacitor of 1F are connected in parallel, the overall transform impedance is equal to
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7) The network function is said to be stable when real parts of the poles and zeros are
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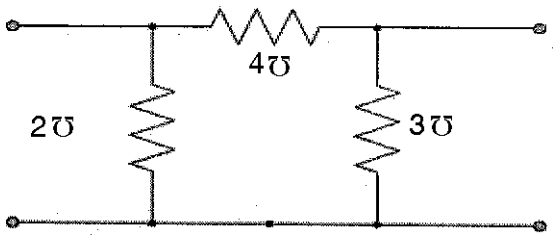

Figure 1

SLR-EP – 92

Seat No.	

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Marks : 56
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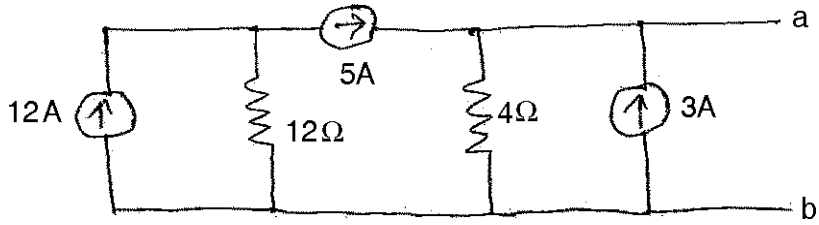

Figure 2

b) Find the voltage across the 2 ohm resistor shown in Figure 3. Use superposition theorem.

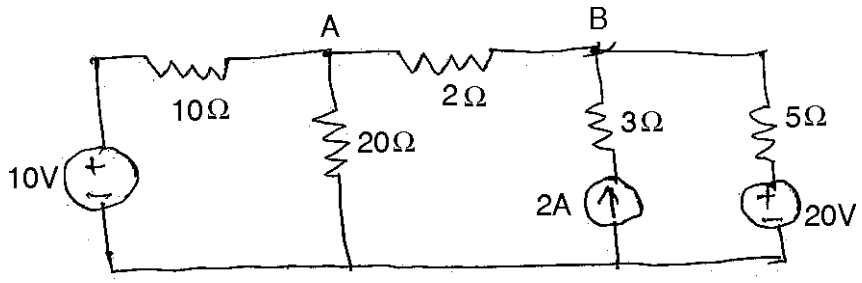

Figure 3

c) Determine the quality factor of a coil for the series resonant circuit consisting of R = 10 Ω , L = 0.1 H and C = 10 μF .

d) Derive the equation for resonant frequency of a tank circuit.

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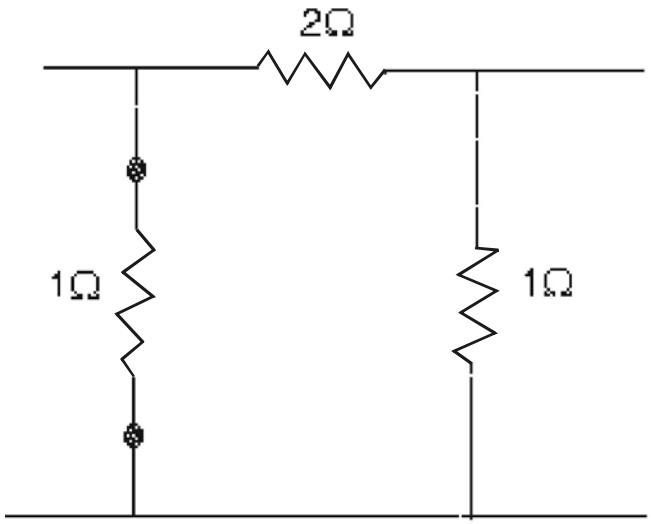

Figure 4

3. Answer **any two** : **(6×2=12)**

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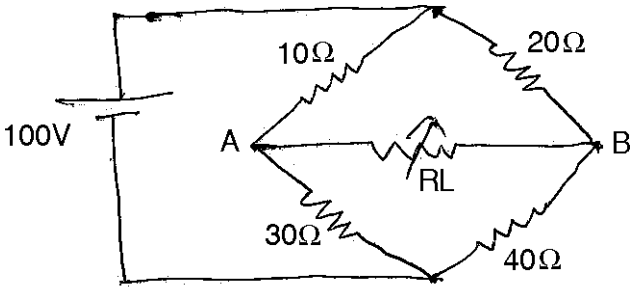

Figure 5

b) The hybrid parameters of a two port network shown in Figure 6 are h_{11} = 1 K, h_{12} = .003, h_{21} = 100, h_{22} = 50 μohm. Find V2 and Z parameters of the network.

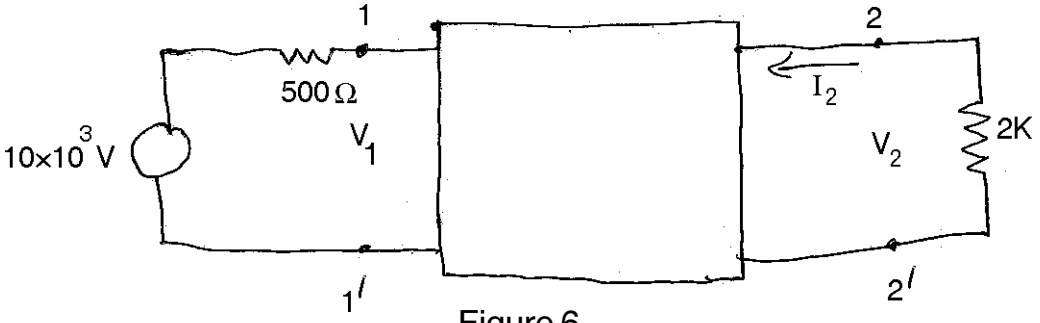

Figure 6

c) A series RLC circuit is supplied at 220 V : 50 Hz; At resonance, the voltage across the capacitor = 550 V, I = 1A. Determine R, L and C.

SECTION – II

4. Answer **any four** : **(4×4=16)**

   a) A series RL circuit with R = 30 Ω and L = 15 H has a constant voltage V = 60 V applied at t = 0. Determine the current i(t), voltage across resistor and the voltage across the inductor.

   b) Derive the equations for R_1 and R_2 for the T-pad attenuator.

   c) Design low pass T-section filter with a cut-off frequency of 1.5 KHz with a terminated design impedance of 600 ohm.

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   b) Derive the equations of L_1, L_2, C_1 and C_2 for band stop filter.

   c) For the given network function, draw the pole zero diagram and hence obtain the time domain response i(t).

   $$I(s) = \frac{4(s+2)s}{(s+1)(s+3)}.$$

Set Q

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Seat No.	

Set R

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the right indicate* ***full*** *marks.*
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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

(1×14=14)

1. 1) If the lower cutoff frequency is 2400 Hz and the upper cutoff frequency is 2800 Hz, what is the bandwidth ?
   a) 400 Hz b) 2800 Hz c) 2400 Hz d) 5200 Hz

   2) The h parameters h_{11} and h_{21} are obtained
   a) By shorting output terminals b) By shorting input terminals
   c) By opening output terminals d) By opening input terminals

   3) What is the transfer admittance of the network shown in Figure 1 ?
   a) –2 mho b) +2 mho c) –4 mho d) –5 mho

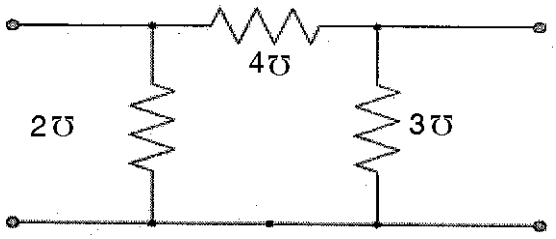

Figure 1

   4) A capacitor does not allow sudden changes in
   a) Currents b) Voltages
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P.T.O.

5) The time constant of series RC circuit is
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   c) Equal to the cut-off frequency d) None of above

9) When an inductor of 2H and a capacitor of 1F are connected in parallel, the overall transform impedance is equal to
   a) $(2s^2 + 1)/2S$ b) 3S c) 1/2S d) $2S/(2S^2 + 1)$

10) The network function is said to be stable when real parts of the poles and zeros are
   a) Positive b) Zero c) Negative d) Of any value

11) One of the following laws of electrical n/ws is used in node analysis of the n/w.
   a) KVL b) KCL c) Faraday's law d) Ohm's law

12) Mesh analysis is based on
   a) Kirchhoff's current law b) Kirchhoff's voltage law
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13) In certain series resonant circuit has a bandwidth of 1000 Hz. If the existing coil is replaced by a coil with a lower Q, what happens to the bandwidth ?
   a) It increases b) It decreases
   c) Be zero d) Remains the same

14) In a parallel resonance circuit, why does the current leads the source voltage at frequencies above resonance ?
   a) Because the circuit is predominantly resistive
   b) Because the circuit is predominantly inductive
   c) Because the circuit is predominantly capacitive
   d) None of the above

_____

SLR-EP – 92

Seat No.	

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
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SECTION – I

2. Answer **any four** : **(4×4=16)**

a) Determine the Thevenin's equivalent circuits with respect to terminals ab for the circuit shown in Figure 2.

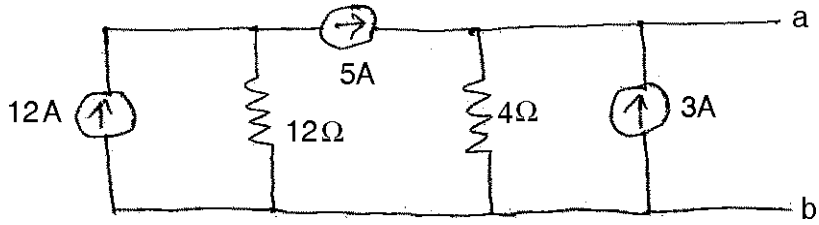

Figure 2

b) Find the voltage across the 2 ohm resistor shown in Figure 3. Use superposition theorem.

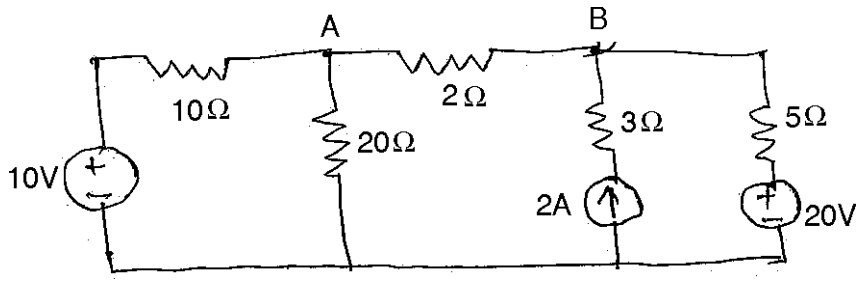

Figure 3

c) Determine the quality factor of a coil for the series resonant circuit consisting of R = 10 Ω , L = 0.1 H and C = 10 μF .

d) Derive the equation for resonant frequency of a tank circuit.

e) Find the inverse transmission parameters for the network shown in Figure 4.

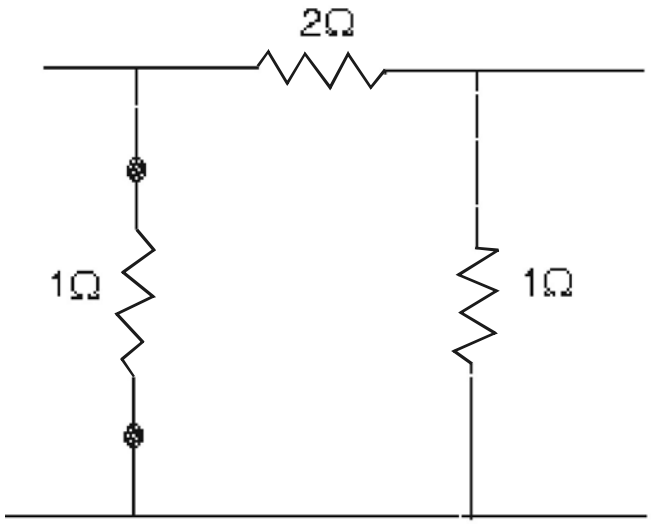

Figure 4

3. Answer **any two** : **(6×2=12)**

a) State maximum power transfer theorem. Determine the load resistance to receive maximum power from the source; also find the maximum power delivered to the load in the circuit shown in Figure 5.

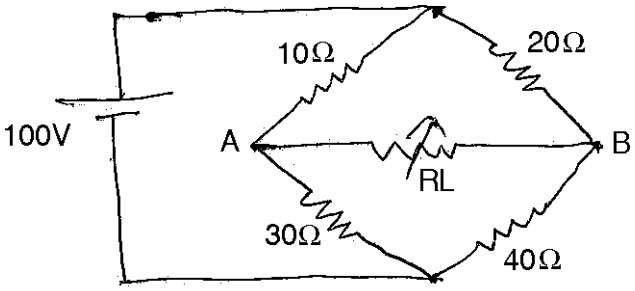

Figure 5

b) The hybrid parameters of a two port network shown in Figure 6 are h_{11} = 1 K, h_{12} = .003, h_{21} = 100, h_{22} = 50 μohm. Find V2 and Z parameters of the network.

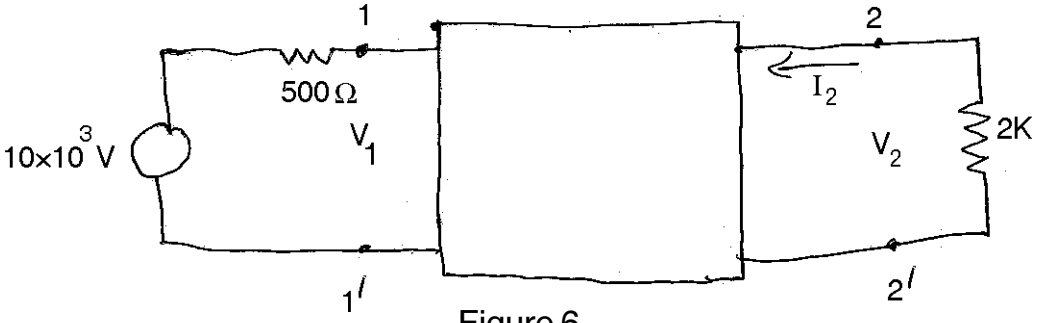

Figure 6

c) A series RLC circuit is supplied at 220 V : 50 Hz; At resonance, the voltage across the capacitor = 550 V, I = 1A. Determine R, L and C.

SECTION – II

4. Answer **any four** : **(4×4=16)**

   a) A series RL circuit with R = 30 Ω and L = 15 H has a constant voltage V = 60 V applied at t = 0. Determine the current i(t), voltage across resistor and the voltage across the inductor.

   b) Derive the equations for R_1 and R_2 for the T-pad attenuator.

   c) Design low pass T-section filter with a cut-off frequency of 1.5 KHz with a terminated design impedance of 600 ohm.

   d) Write necessary condition for transfer functions.

   e) For the given denominator polynomial of a network function, verify the stability of the network by using Routh criteria.

   $Q(s) = S^3 + 2S^2 + 8S + 10$

5. Answer **any two** : **(6×2=12)**

   a) Explain sinusoidal response of series RL circuit.

   b) Derive the equations of L_1, L_2, C_1 and C_2 for band stop filter.

   c) For the given network function, draw the pole zero diagram and hence obtain the time domain response i(t).

   $$I(s) = \frac{4(s+2)s}{(s+1)(s+3)}.$$

———————

Set R

SLR-EP – 92

Seat No.	

Set S

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

Day and Date : Saturday, 17-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

(1×14=14)

1. 1) A band stop filter may be obtained by connecting LPF in parallel with HPF filter in which cut-off frequency of the low pass filter is _____ the cut-off frequency of high pass filter.
   a) above b) below c) same d) none of above

   2) An ideal filter should have
   a) Zero attenuation in pass band
   b) Infinite attenuation in pass band
   c) Zero attenuation in attenuation band
   d) All of above

   3) In the m-derived high pass filters the resonant frequency is to be chosen so that it is
   a) Above the cut off frequency b) Below the cut off frequency
   c) Equal to the cut-off frequency d) None of above

   4) When an inductor of 2H and a capacitor of 1F are connected in parallel, the overall transform impedance is equal to
   a) $(2s^2 + 1)/2S$ b) 3S c) 1/2S d) $2S/(2S^2 + 1)$

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9) In a parallel resonance circuit, why does the current leads the source voltage at frequencies above resonance ?
   a) Because the circuit is predominantly resistive
   b) Because the circuit is predominantly inductive
   c) Because the circuit is predominantly capacitive
   d) None of the above

10) If the lower cutoff frequency is 2400 Hz and the upper cutoff frequency is 2800 Hz, what is the bandwidth ?
   a) 400 Hz b) 2800 Hz c) 2400 Hz d) 5200 Hz

11) The h parameters h_{11} and h_{21} are obtained
   a) By shorting output terminals b) By shorting input terminals
   c) By opening output terminals d) By opening input terminals

12) What is the transfer admittance of the network shown in Figure 1 ?
   a) –2 mho b) +2 mho c) –4 mho d) –5 mho

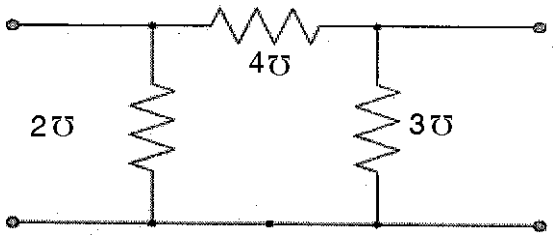

Figure 1

13) A capacitor does not allow sudden changes in
   a) Currents b) Voltages
   c) Both currents and voltages d) Neither of two

14) The time constant of series RC circuit is
   a) 1/RC b) R/C c) RC d) e^{-RC}

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Seat No.	

S.E. (Electronics) Part – I (CGPA) Examination, 2016
NETWORK THEORY AND ANALYSIS

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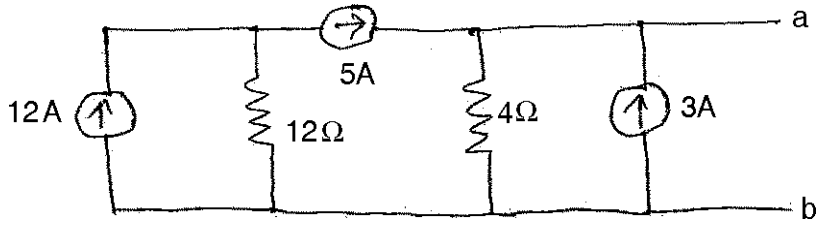

Figure 2

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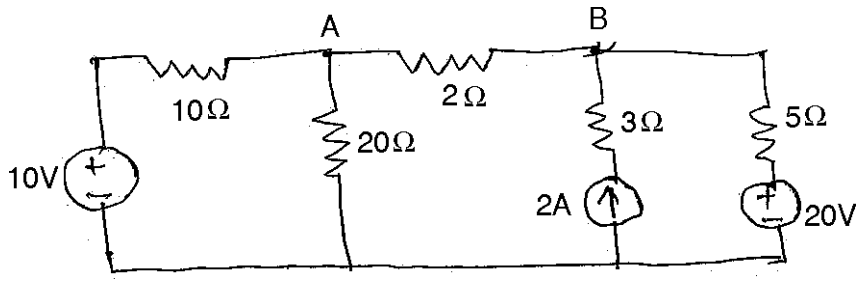

Figure 3

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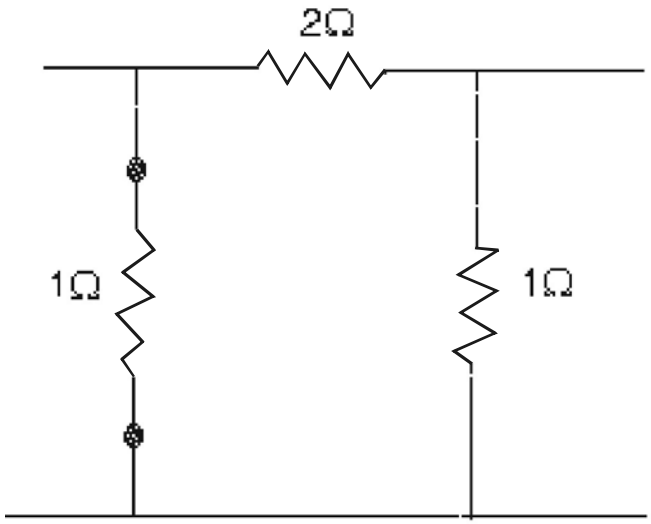

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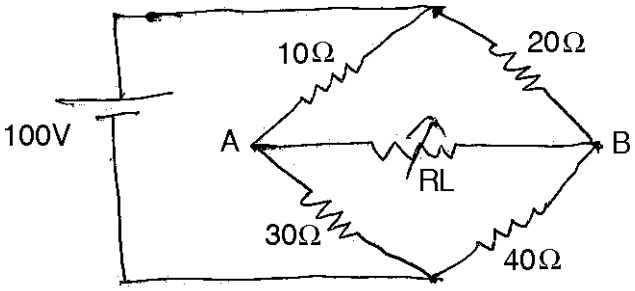

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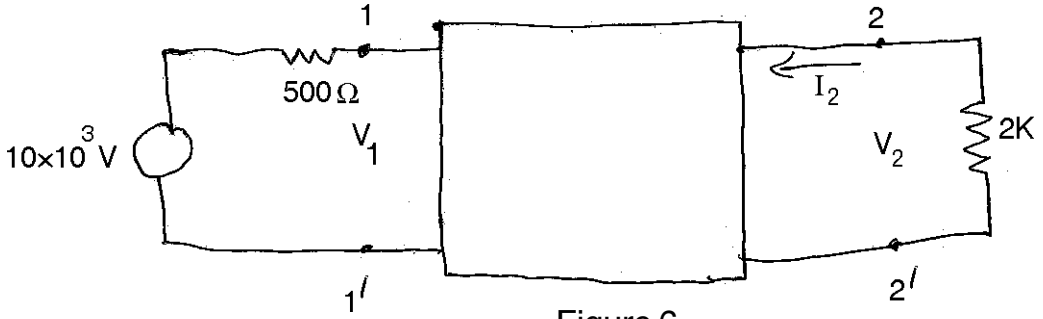

Figure 6

c) A series RLC circuit is supplied at 220 V : 50 Hz; At resonance, the voltage across the capacitor = 550 V, I = 1A. Determine R, L and C.

SECTION – II

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   $Q(s) = S^3 + 2S^2 + 8S + 10$

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   a) Explain sinusoidal response of series RL circuit.

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   $$I(s) = \frac{4(s+2)s}{(s+1)(s+3)}.$$

———————

Set S

SLR-EP – 93

Seat No.	

Set P

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
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5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) The expression f = m1 + m2 + m4 + m7 is equivalent to
   a) f = m1*m2*m4*m7 b) f = M1 + M2 + M4 + M7
   c) f = M0*M3*M5*M6 d) f = M1*M2*M4*M7

2) The _____ devices has a programmable AND array at the input and a programmable OR gate at the output.
   a) PLA's b) PAL's
   c) PROM's d) None of the above

3) A multiplexer is represented by _____ , where 'n' is number of select lines.
   a) $2^n : 1$ b) 1 : 2 c) $n : 2^n$ d) $2^n : n$

4) A Boolean expression containing only maxterm terms is in _____ form.
   a) Sum of products b) Standard POS
   c) Products of sums d) Standard SOP

5) The function $F(x, y) = \Sigma m(1, 2)$ represents _____ gate.
   a) AND b) EXOR c) OR d) NAND

6) The BCD number 357 is represented in 7421 code as
   a) 0011 0101 0110 b) 0011 0110 0111
   c) 0011 0101 1000 d) None of the above

P.T.O.

7) The maximum number of logic inputs that an output of a logic gate can drive reliably is decided by
   a) Fan-in b) Fan-out
   c) Noise margin d) Power dissipation

8) In the Mealy machine, output is a function of
   a) Only current state b) Only input
   c) Current state and input d) None of the above

9) A 4-bit pre-settable up counter has preset input 0100. The preset operation takes place as soon as counter becomes maximum 1111. The modulus of counter is
   a) 12 b) 10 c) 11 d) 15

10) When a JK flip-flop is set, its outputs are
   a) Q=0, Q'=0 b) Q=1, Q'=0
   c) Q=0, Q'=1 d) Q=1, Q'=1

11) A Johnson's counter is made by using a single D FF. The output of resulting circuit is always
   a) 0 b) Toggles c) 1 d) Invalid

12) The output Q of SR flip-flop is '0'. It remains same to '0' when a clock pulse is applied. The inputs S and R are respectively
   a) 0 and X b) 0 and 1 c) 1 and 0 d) X and 0

13) A positive edge-triggered flip-flop changes state on the _____ of the clock pulse.
   a) High to low transition b) Low to high transition
   c) Negative level d) Positive level

14) The characteristic equation of D flip-flop is
   a) $Q^+=DQ$ b) $Q^+=DQ' + D'Q$
   c) $Q^+=D$ d) $Q^+=DQ'$

_____

SLR-EP – 93

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

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SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Write both SOP and POS expressions for a two-input AND gate and a two-input EX-OR gate.

b) Derive a code table for BCD code 5211 which satisfies self complementary property.

c) Explain the following terms with examples :

i) Minterm, Maxterm

ii) Canonical SOP, Canonical POS.

d) Represent signed numbers (+ 19), (– 45) in eight-bit format using 1's, 2's complement and sign magnitude representations.

e) Prove that a full adder can be designed using two half-adders and one OR gate.

3. a) With the use of k-map, find the simplest form in SOP of function F=fg, where f and g are

f = wxy' + y'z + w'yz' + x'yz'

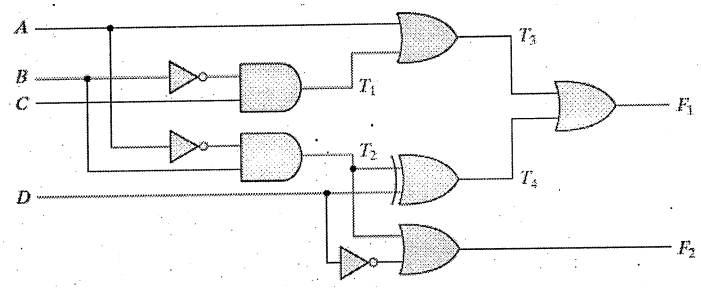
g = (w+x+y'+z') (x'+y'+z) (w'+y+z')

Implement the circuit with NAND gates only. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design and implement four input priority encoder using NOR gates only.

ii) Consider the combinational circuit shown. Analyze the circuit to obtain the simplified Boolean expressions for output F1 and F2 in terms of the input variables.



SECTION – II

4. Attempt **any four** : **(4×4=16)**

a) Design a 2-bit ripple counter. What is the mod of the counter ?

b) Show that SR flip-flop can be used as D-flip flop.

c) What is a shift register ? Explain SIPO shift register in detail.

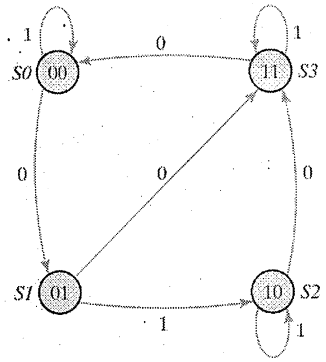
d) Design a 2 bit binary to gray code converter using a PAL.

e) Design a 4-bit ring counter using shift register.

5. a) Design a mod 7 ripple counter using T flip-flop. Draw neat logic diagram and Waveforms. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design a sequential circuit specified by state diagram shown using JK flip-flops :



ii) Design a pulse train generator using a shift register for the following pulse train : .... 101110110....

Set P

SLR-EP – 93

Seat No.	

Set Q

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

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SLR-EP – 93

Seat No.	

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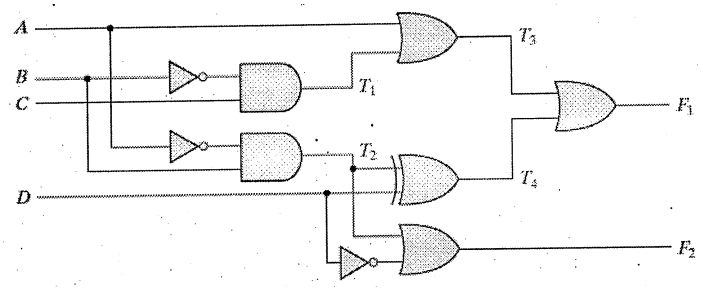

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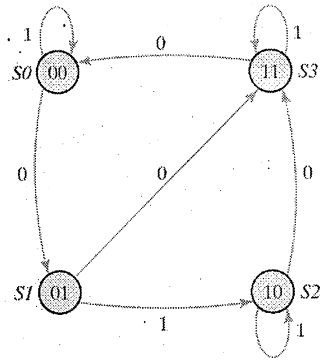


ii) Design a pulse train generator using a shift register for the following pulse train : .... 101110110....

Set Q

SLR-EP – 93

Seat No.	

Set R

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data* ***wherever*** *necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) The function F(x, y) = Σ m(1, 2) represents _____ gate.
a) AND b) EXOR c) OR d) NAND

2) The BCD number 357 is represented in 7421 code as
a) 0011 0101 0110 b) 0011 0110 0111
c) 0011 0101 1000 d) None of the above

3) The maximum number of logic inputs that an output of a logic gate can drive reliably is decided by
a) Fan-in b) Fan-out
c) Noise margin d) Power dissipation

4) In the Mealy machine, output is a function of
a) Only current state b) Only input
c) Current state and input d) None of the above

5) A 4-bit pre-settable up counter has preset input 0100. The preset operation takes place as soon as counter becomes maximum 1111. The modulus of counter is
a) 12 b) 10 c) 11 d) 15

P.T.O.

6) When a JK flip-flop is set, its outputs are
   a) Q=0, Q'=0 b) Q=1, Q'=0
   c) Q=0, Q'=1 d) Q=1, Q'=1

7) A Johnson's counter is made by using a single D FF. The output of resulting circuit is always
   a) 0 b) Toggles c) 1 d) Invalid

8) The output Q of SR flip-flop is '0'. It remains same to '0' when a clock pulse is applied. The inputs S and R are respectively
   a) 0 and X b) 0 and 1 c) 1 and 0 d) X and 0

9) A positive edge-triggered flip-flop changes state on the _____ of the clock pulse.
   a) High to low transition b) Low to high transition
   c) Negative level d) Positive level

10) The characteristic equation of D flip-flop is
   a) Q^+=DQ b) Q^+=DQ' + D'Q
   c) Q^+=D d) Q^+=DQ'

11) The expression f = m1 + m2 + m4 + m7 is equivalent to
   a) f = m1*m2*m4*m7 b) f = M1 + M2 + M4 + M7
   c) f = M0*M3*M5*M6 d) f = M1*M2*M4*M7

12) The _____ devices has a programmable AND array at the input and a programmable OR gate at the output.
   a) PLA's b) PAL's
   c) PROM's d) None of the above

13) A multiplexer is represented by _____ , where 'n' is number of select lines.
   a) 2^n : 1 b) 1 : 2 c) n : 2^n d) 2^n : n

14) A Boolean expression containing only maxterm terms is in _____ form.
   a) Sum of products b) Standard POS
   c) Products of sums d) Standard SOP

_____

SLR-EP – 93

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data* ***wherever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Write both SOP and POS expressions for a two-input AND gate and a two-input EX-OR gate.

b) Derive a code table for BCD code 5211 which satisfies self complementary property.

c) Explain the following terms with examples :

i) Minterm, Maxterm

ii) Canonical SOP, Canonical POS.

d) Represent signed numbers (+ 19), (– 45) in eight-bit format using 1's, 2's complement and sign magnitude representations.

e) Prove that a full adder can be designed using two half-adders and one OR gate.

3. a) With the use of k-map, find the simplest form in SOP of function F=fg, where f and g are

f = wxy' + y'z + w'yz' + x'yz'

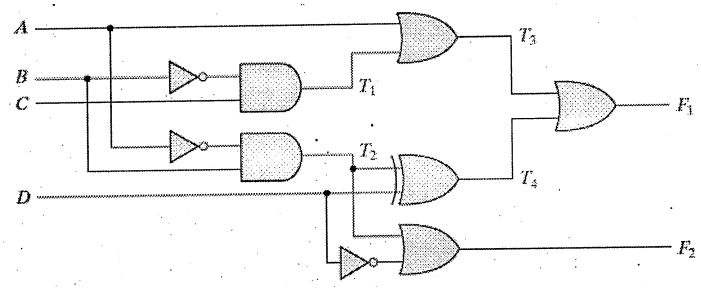
g = (w+x+y'+z') (x'+y'+z) (w'+y+z')

Implement the circuit with NAND gates only. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design and implement four input priority encoder using NOR gates only.

ii) Consider the combinational circuit shown. Analyze the circuit to obtain the simplified Boolean expressions for output F1 and F2 in terms of the input variables.



SECTION – II

4. Attempt **any four** : **(4×4=16)**

a) Design a 2-bit ripple counter. What is the mod of the counter ?

b) Show that SR flip-flop can be used as D-flip flop.

c) What is a shift register ? Explain SIPO shift register in detail.

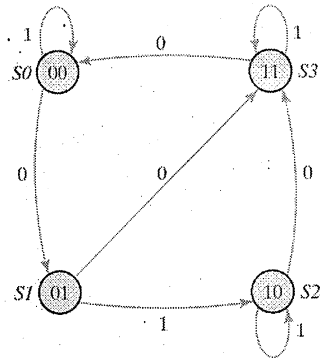
d) Design a 2 bit binary to gray code converter using a PAL.

e) Design a 4-bit ring counter using shift register.

5. a) Design a mod 7 ripple counter using T flip-flop. Draw neat logic diagram and Waveforms. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design a sequential circuit specified by state diagram shown using JK flip-flops :



ii) Design a pulse train generator using a shift register for the following pulse train : .... 101110110....

SLR-EP – 93

Seat No.	

Set S

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
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4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) When a JK flip-flop is set, its outputs are
   a) Q=0, Q'=0 b) Q=1, Q'=0
   c) Q=0, Q'=1 d) Q=1, Q'=1

2) A Johnson's counter is made by using a single D FF. The output of resulting circuit is always
   a) 0 b) Toggles c) 1 d) Invalid

3) The output Q of SR flip-flop is '0'. It remains same to '0' when a clock pulse is applied. The inputs S and R are respectively
   a) 0 and X b) 0 and 1 c) 1 and 0 d) X and 0

4) A positive edge-triggered flip-flop changes state on the _____ of the clock pulse.
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5) The characteristic equation of D flip-flop is
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P.T.O.

6) The expression f = m1 + m2 + m4 + m7 is equivalent to
   a) f = m1*m2*m4*m7 b) f = M1 + M2 + M4 + M7
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13) In the Mealy machine, output is a function of
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14) A 4-bit pre-settable up counter has preset input 0100. The preset operation takes place as soon as counter becomes maximum 1111. The modulus of counter is
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_____

SLR-EP – 93

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DIGITAL LOGIC DESIGN

Day and Date : Tuesday, 20-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

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SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Write both SOP and POS expressions for a two-input AND gate and a two-input EX-OR gate.

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3. a) With the use of k-map, find the simplest form in SOP of function F=fg, where f and g are

f = wxy' + y'z + w'yz' + x'yz'

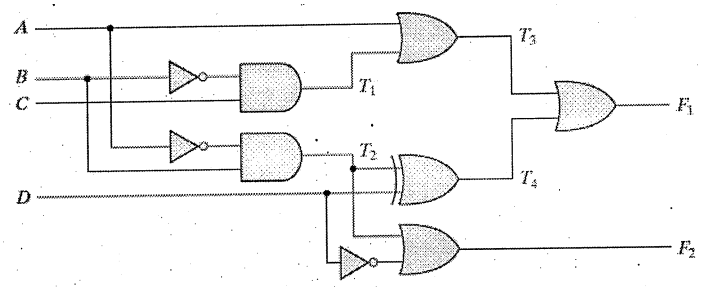
g = (w+x+y'+z') (x'+y'+z) (w'+y+z')

Implement the circuit with NAND gates only. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design and implement four input priority encoder using NOR gates only.

ii) Consider the combinational circuit shown. Analyze the circuit to obtain the simplified Boolean expressions for output F1 and F2 in terms of the input variables.



SECTION – II

4. Attempt **any four** : **(4×4=16)**

a) Design a 2-bit ripple counter. What is the mod of the counter ?

b) Show that SR flip-flop can be used as D-flip flop.

c) What is a shift register ? Explain SIPO shift register in detail.

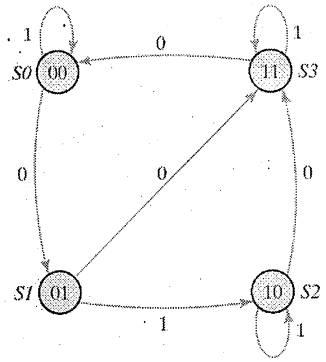
d) Design a 2 bit binary to gray code converter using a PAL.

e) Design a 4-bit ring counter using shift register.

5. a) Design a mod 7 ripple counter using T flip-flop. Draw neat logic diagram and Waveforms. **6**

b) Attempt **any one** : **(6×1=6)**

i) Design a sequential circuit specified by state diagram shown using JK flip-flops :



ii) Design a pulse train generator using a shift register for the following pulse train : .... 101110110....

Set S

SLR-EP – 94

Seat No.	

Set P

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
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3) ***Assume*** *suitable data if* ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) 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 ?
   a) ABCD b) DCBA
   c) DCAB d) None of the above

2) Which of the following statement about stack data structure is not correct ?
   a) Stack data structure can be implemented using linked list
   b) New node can only be added at the top of the stack
   c) Stack is the FIFO data structure
   d) The last node at the bottom of the stack has a NULL link

3) A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is
   a) Queue b) Circular queue
   c) Dequeue d) Priority queue

4) In linked list each node contain minimum of two fields. One field is data field to store the data and the second field is
   a) Pointer to character
   b) Pointer to integer
   c) Pointer to node
   d) Node

P.T.O.

5) What does the following function do for a given linked list with first node as head ?

```
void fun1 (struct node * head)
{
        if (head = = NULL)
          return;
         fun1 (head → next);
        printf("%d", head → data);
}
```

a) Prints all nodes of linked list
b) Prints all nodes of linked list in reverse order
c) Prints alternate nodes of linked list
d) Prints alternate nodes in reverse order

6) If the sequence of operations

push(1); push(2); pop( ), push(1); push(2); pop( ); pop( ); pop( ); push(2); pop( )

Are performed on a stack, the sequence of popped out values are

a) 2 2 1 2 2 b) 2 1 2 2 1 c) 2 1 2 2 2 d) 2 2 1 1 2

7) Consider the following representation

struct node *current = start → next

what current will contain if it is variable of type struct node ?

a) Address of 2nd node b) Address field of 2nd node
c) Data field of 2nd node d) None of these

8) A hash collision resolution technique that uses linked list data structure is _____

a) Open addressing b) Closed addressing
c) Linear probing d) Quadratic probing

9) Complexity of linear search algorithm is _____

a) O(n) b) O(logn) c) O(n2) d) O(n logn)

10) Selection sort first finds the _____ element in the list and put it in the first position.

a) Middle element b) Largest element
c) Last element d) Smallest element

11) Which data structure is used for depth first traversal of a graph ?

a) Queue b) Stack c) Linked list d) None of the above

12) Binary trees with threads are called as _____

a) Threaded binary trees b) Pointer binary trees
c) Special binary trees d) Special pointer binary trees

13) Which of the following indicates pre-order traversal ?

a) Left sub-tree, Right sub-tree and root b) Right sub-tree, Left sub-tree and root
c) Root, Left sub-tree, Right sub-tree d) Right sub-tree, root, Left sub-tree

14) The minimum number of edges required to create a cyclic graph of n vertices is

a) n b) n – 1 c) n + 1 d) 2n

_____

SLR-EP – 94

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   1) What is a stack ? Explain the push and pop operation for a stack.
   2) Define queue. Elaborate the different types of queues.
   3) Explain with algorithm to delete a node from a singly linked list.
   4) Illustrate the addition of two polynomials $5x^2 + 3x + 6$ and $4x^3 + 6x + 7$ using linked list.
   5) What is recursion ? Write a recursive program to find the Fibonacci sequence of first ten numbers.

3. Attempt **any two** : **(2×6=12)**
   1) Write a C program for the dynamic implementation of stack using linked list.
   2) Describe the general algorithm for recursion. Explain with flowchart the dynamic storage allocation for implementing recursion.
   3) Write a C program for the implementation of circular queue using array of size 5.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Write a C program to search an element from an array using linear search.
   2) Explain the algorithm for insertion of a node in a binary search tree with an example.
   3) Define the following terms with suitable diagram :
      a) Directed graph
      b) Loop
      c) Outdegree
      d) Null graph.

4) What is hashing ? Explain any two hashing functions with example.

5) Use bubble sort technique to sort the following :

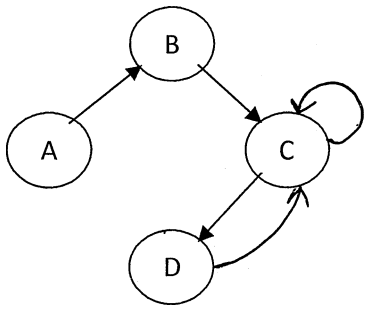
3, 27, 22, 12, 10, 6

Show the steps in each iteration.

5. Attempt **any two** : **(2×6=12)**

1) What is hash collision ? Explain open addressing collision resolution technique to resolve hash clashes.

2) Elaborate the adjacency matrix representation method for a graph. Find the adjacency matrix for the following graph.



3) The following sequence gives the preorder and inorder traversal of a binary tree.
Preorder : A B D E F C G H J L K
Inorder : D B F E A G C L J H K.
Draw the binary tree. Show the intermediate steps.

SLR-EP – 94

Seat No.	

Set Q

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Max. Marks : 70
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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

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1) A hash collision resolution technique that uses linked list data structure is _____
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   c) Dequeue d) Priority queue

11) In linked list each node contain minimum of two fields. One field is data field to store the data and the second field is
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———————

SLR-EP – 94

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

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SECTION – I

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   1) What is a stack ? Explain the push and pop operation for a stack.
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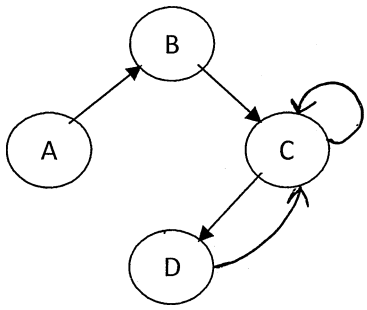

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SLR-EP – 94

Seat No.	

Set R

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

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2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) What does the following function do for a given linked list with first node as head ?

```
void fun1 (struct node * head)
{
        if (head = = NULL)
          return;
          fun1 (head → next);
        printf("%d", head → data);
}
```

a) Prints all nodes of linked list
b) Prints all nodes of linked list in reverse order
c) Prints alternate nodes of linked list
d) Prints alternate nodes in reverse order

2) If the sequence of operations

push(1); push(2); pop( ), push(1); push(2); pop( ); pop( ); pop( ); push(2); pop( )

Are performed on a stack, the sequence of popped out values are

a) 2 2 1 2 2 b) 2 1 2 2 1 c) 2 1 2 2 2 d) 2 2 1 1 2

3) Consider the following representation

struct node *current = start → next

what current will contain if it is variable of type struct node ?

a) Address of 2nd node b) Address field of 2nd node
c) Data field of 2nd node d) None of these

P.T.O.

4) A hash collision resolution technique that uses linked list data structure is _____
   a) Open addressing b) Closed addressing
   c) Linear probing d) Quadratic probing
5) Complexity of linear search algorithm is _____
   a) O(n) b) O(logn) c) O(n2) d) O(n logn)
6) Selection sort first finds the _____ element in the list and put it in the first position.
   a) Middle element b) Largest element
   c) Last element d) Smallest element
7) Which data structure is used for depth first traversal of a graph ?
   a) Queue b) Stack c) Linked list d) None of the above
8) Binary trees with threads are called as _____
   a) Threaded binary trees b) Pointer binary trees
   c) Special binary trees d) Special pointer binary trees
9) Which of the following indicates pre-order traversal ?
   a) Left sub-tree, Right sub-tree and root b) Right sub-tree, Left sub-tree and root
   c) Root, Left sub-tree, Right sub-tree d) Right sub-tree, root, Left sub-tree
10) The minimum number of edges required to create a cyclic graph of n vertices is
   a) n b) n – 1 c) n + 1 d) 2n
11) 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 ?
   a) ABCD b) DCBA
   c) DCAB d) None of the above
12) Which of the following statement about stack data structure is not correct ?
   a) Stack data structure can be implemented using linked list
   b) New node can only be added at the top of the stack
   c) Stack is the FIFO data structure
   d) The last node at the bottom of the stack has a NULL link
13) A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is
   a) Queue b) Circular queue
   c) Dequeue d) Priority queue
14) In linked list each node contain minimum of two fields. One field is data field to store the data and the second field is
   a) Pointer to character
   b) Pointer to integer
   c) Pointer to node
   d) Node

_____

SLR-EP – 94

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   1) What is a stack ? Explain the push and pop operation for a stack.
   2) Define queue. Elaborate the different types of queues.
   3) Explain with algorithm to delete a node from a singly linked list.
   4) Illustrate the addition of two polynomials $5x^2 + 3x + 6$ and $4x^3 + 6x + 7$ using linked list.
   5) What is recursion ? Write a recursive program to find the Fibonacci sequence of first ten numbers.

3. Attempt **any two** : **(2×6=12)**
   1) Write a C program for the dynamic implementation of stack using linked list.
   2) Describe the general algorithm for recursion. Explain with flowchart the dynamic storage allocation for implementing recursion.
   3) Write a C program for the implementation of circular queue using array of size 5.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Write a C program to search an element from an array using linear search.
   2) Explain the algorithm for insertion of a node in a binary search tree with an example.
   3) Define the following terms with suitable diagram :
      a) Directed graph
      b) Loop
      c) Outdegree
      d) Null graph.

4) What is hashing ? Explain any two hashing functions with example.

5) Use bubble sort technique to sort the following :

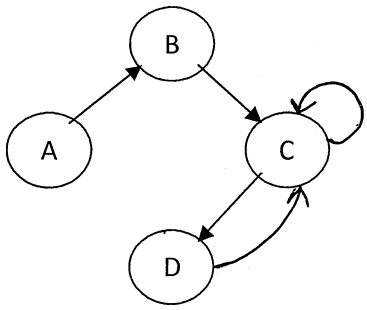
3, 27, 22, 12, 10, 6

Show the steps in each iteration.

5. Attempt **any two** : **(2×6=12)**

1) What is hash collision ? Explain open addressing collision resolution technique to resolve hash clashes.

2) Elaborate the adjacency matrix representation method for a graph. Find the adjacency matrix for the following graph.



3) The following sequence gives the preorder and inorder traversal of a binary tree.
Preorder : A B D E F C G H J L K
Inorder : D B F E A G C L J H K.
Draw the binary tree. Show the intermediate steps.

SLR-EP – 94

Seat No.	

Set S

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *:* 1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) Selection sort first finds the _____ element in the list and put it in the first position.
   a) Middle element b) Largest element
   c) Last element d) Smallest element

2) Which data structure is used for depth first traversal of a graph ?
   a) Queue b) Stack c) Linked list d) None of the above

3) Binary trees with threads are called as _____
   a) Threaded binary trees b) Pointer binary trees
   c) Special binary trees d) Special pointer binary trees

4) Which of the following indicates pre-order traversal ?
   a) Left sub-tree, Right sub-tree and root b) Right sub-tree, Left sub-tree and root
   c) Root, Left sub-tree, Right sub-tree d) Right sub-tree, root, Left sub-tree

5) The minimum number of edges required to create a cyclic graph of n vertices is
   a) n b) n – 1 c) n + 1 d) 2n

6) 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 ?
   a) ABCD b) DCBA c) DCAB d) None of the above

7) Which of the following statement about stack data structure is not correct ?
   a) Stack data structure can be implemented using linked list
   b) New node can only be added at the top of the stack
   c) Stack is the FIFO data structure
   d) The last node at the bottom of the stack has a NULL link

P.T.O.

8) A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is
   a) Queue b) Circular queue
   c) Dequeue d) Priority queue

9) In linked list each node contain minimum of two fields. One field is data field to store the data and the second field is
   a) Pointer to character
   b) Pointer to integer
   c) Pointer to node
   d) Node

10) What does the following function do for a given linked list with first node as head ?

```
void fun1 (struct node * head)
{
        if (head = = NULL)
          return;
          fun1 (head → next);
        printf("%d", head → data);
}
```

   a) Prints all nodes of linked list
   b) Prints all nodes of linked list in reverse order
   c) Prints alternate nodes of linked list
   d) Prints alternate nodes in reverse order

11) If the sequence of operations

push(1); push(2); pop( ), push(1); push(2); pop( ); pop( ); pop( ); push(2); pop( )

Are performed on a stack, the sequence of popped out values are
   a) 2 2 1 2 2 b) 2 1 2 2 1 c) 2 1 2 2 2 d) 2 2 1 1 2

12) Consider the following representation

struct node *current = start → next

what current will contain if it is variable of type struct node ?
   a) Address of 2^{nd} node b) Address field of 2^{nd} node
   c) Data field of 2^{nd} node d) None of these

13) A hash collision resolution technique that uses linked list data structure is _____
   a) Open addressing b) Closed addressing
   c) Linear probing d) Quadratic probing

14) Complexity of linear search algorithm is _____
   a) O(n) b) O(logn) c) O(n2) d) O(n logn)

SLR-EP – 94

Seat No.	

S.E. (Electronics Engineering) (Part – I) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 22-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   1) What is a stack ? Explain the push and pop operation for a stack.
   2) Define queue. Elaborate the different types of queues.
   3) Explain with algorithm to delete a node from a singly linked list.
   4) Illustrate the addition of two polynomials $5x^2 + 3x + 6$ and $4x^3 + 6x + 7$ using linked list.
   5) What is recursion ? Write a recursive program to find the Fibonacci sequence of first ten numbers.

3. Attempt **any two** : **(2×6=12)**
   1) Write a C program for the dynamic implementation of stack using linked list.
   2) Describe the general algorithm for recursion. Explain with flowchart the dynamic storage allocation for implementing recursion.
   3) Write a C program for the implementation of circular queue using array of size 5.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Write a C program to search an element from an array using linear search.
   2) Explain the algorithm for insertion of a node in a binary search tree with an example.
   3) Define the following terms with suitable diagram :
      a) Directed graph
      b) Loop
      c) Outdegree
      d) Null graph.

4) What is hashing ? Explain any two hashing functions with example.

5) Use bubble sort technique to sort the following :

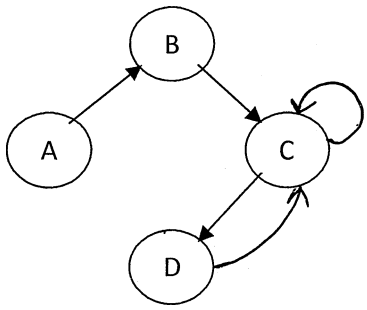
3, 27, 22, 12, 10, 6

Show the steps in each iteration.

5. Attempt **any two** : **(2×6=12)**

1) What is hash collision ? Explain open addressing collision resolution technique to resolve hash clashes.

2) Elaborate the adjacency matrix representation method for a graph. Find the adjacency matrix for the following graph.



3) The following sequence gives the preorder and inorder traversal of a binary tree.
Preorder : A B D E F C G H J L K
Inorder : D B F E A G C L J H K.
Draw the binary tree. Show the intermediate steps.

SLR-EP – 95

Seat No.	

Set P

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct option : **(14×1=14)**

1) In T-T connection main transformer is having _____% tapping on both primary and secondary winding.
a) 86.6 b) 50 c) 100 d) 76.8

2) Power factor =
a) KVAR/KVA b) KVA/KVAR c) KVA/KW d) KW/KVA

3) In case of d.c. motor at starting back emf is zero because
a) I_a is maximum b) Torque is maximum
c) R_a is small d) Speed is zero

4) Running torque of 3 phase induction motor becomes maximum when
a) $R_2 = SX_2$ b) $I_{ST} = I_{FL}$ c) $R_2/X_2 = 1$ d) $R_2 \times X_2 = 1$

5) The main cause of poor lagging power factor is due to use of
a) Filament lamp b) Resistive load
c) Induction motor d) Water heater

6) Following is the method to control speed below normal value of d.c. series motor
a) Field diverter b) Paralleling the field coils
c) Armature diverter d) None of the above

P.T.O.

7) Universal motor is designed to run on
   a) dc b) ac
   c) both dc and ac d) all answers are correct

8) In case of 3 phase induction motor iron loss consists of
   a) Hysteresis loss b) Eddy current loss
   c) Both above losses d) None of the above

9) In practice, regenerative braking is used when
   a) Quick motor reversal is desired
   b) Load has overhauling characteristics
   c) Controlling elevators, rolling mills and printing presses etc.
   d) Other methods cannot be used

10) In case of 3-phase transformer, 3-phase to 2-phase transformation is possible in _____ connection.
   a) Star-star b) V-V c) Delta-delta d) T-T

11) An 11 kV line comes under
   a) Primary transmission level b) Secondary transmission level
   c) Primary distribution level d) Secondary distribution level

12) _____ is the starter used for three phase I.M.
   a) DOL starter b) Transformer starter
   c) Delta-star starter d) Rotor starter

13) The rotor input of 3 ph. I.M. is
   a) $s P_1$ b) $P_1 (1 + s)$ c) P_1/s d) $(1 – s) P_1$

14) Ward Leonard speed control method is
   a) Voltage control method
   b) Flux control method
   c) Armature rheostat control method
   d) Series parallel control method

_____

SLR-EP – 95

Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   a) Explain significance of back emf in d.c. motor.
   b) A 240 Volt series motor takes 40 Amp when giving its rated output at 1500 rpm. Find what resistance must be added in series to obtain same torque at 1000 rpm. Take motor resistance 0.3 Ω. Assume flux remains constant.
   c) Derive the relation for power factor angle in terms of two wattmeter reading.
   d) Describe important features of brushless dc motor.
   e) Two wattmeter connected to a three phase induction motor indicate the total input power to be 12 kW, the power factor is 0.6. Determine the readings of two wattmeter.

(6×2=12)

3. a) Explain with neat diagram, armature rheostat speed control method applied for dc shunt motor. Write disadvantages of this method.
   b) A dc series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 15 Amp when the speed is 600 rpm. Calculate the speed and the current when the motor field is shunted by a diverter of the same resistance as that of field winding. Neglect armature and series winding drop.

OR

   c) What are the advantages of electrical braking ? Elaborate plugging and rheostat braking used for d.c. shunt motor.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Elaborate in detail, advantages and disadvantages of group drive.

   b) A three phase, 50 Hz transformer has delta connected primary and star connected secondary, the line voltages being 33 kV and 400 V respectively. The primary line current is 5 Amp. Determine transformation ratio, primary and secondary phase current.

   c) Derive relation between starting torque and maximum torque.

   d) What are the effects of low power factor on system ?

   e) A three phase, 8 pole, 50 Hz induction motor has full load slip of 4%. Rotor impedance at standstill per phase is $Z = (0.01 + j\ 0.1)\ \Omega$. Find the ratio of maximum torque to full load torque.

5. Attempt **any two** : **(6×2=12)**

   a) The power input to a 500 Volt, 6 pole, 50 Hz, three phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and mechanical losses are 2 kW.

      Find (i) slip (ii) rotor copper (iii) shaft power and (iv) efficiency.

   b) Compare star-delta and delta-star 3-phase transformer connection.

   c) Elaborate relation between slip and torque for three phase induction motor and draw family of torque slip characteristics.

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SLR-EP – 95

Seat No.	

Set Q

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct option : **(14×1=14)**

1) In case of 3 phase induction motor iron loss consists of
   a) Hysteresis loss b) Eddy current loss
   c) Both above losses d) None of the above

2) In practice, regenerative braking is used when
   a) Quick motor reversal is desired
   b) Load has overhauling characteristics
   c) Controlling elevators, rolling mills and printing presses etc.
   d) Other methods cannot be used

3) In case of 3-phase transformer, 3-phase to 2-phase transformation is possible in _____ connection.
   a) Star-star b) V-V c) Delta-delta d) T-T

4) An 11 kV line comes under
   a) Primary transmission level b) Secondary transmission level
   c) Primary distribution level d) Secondary distribution level

5) _____ is the starter used for three phase I.M.
   a) DOL starter b) Transformer starter
   c) Delta-star starter d) Rotor starter

P.T.O.

6) The rotor input of 3 ph. I.M. is
   a) s P_1 b) P_1 (1 + s) c) P_1/s d) (1 – s) P_1

7) Ward Leonard speed control method is
   a) Voltage control method
   b) Flux control method
   c) Armature rheostat control method
   d) Series parallel control method

8) In T-T connection main transformer is having _____% tapping on both primary and secondary winding.
   a) 86.6 b) 50 c) 100 d) 76.8

9) Power factor =
   a) KVAR/KVA b) KVA/KVAR c) KVA/KW d) KW/KVA

10) In case of d.c. motor at starting back emf is zero because
   a) I_a is maximum b) Torque is maximum
   c) R_a is small d) Speed is zero

11) Running torque of 3 phase induction motor becomes maximum when
   a) $R_2 = SX_2$ b) $I_{ST} = I_{FL}$ c) $R_2/X_2 = 1$ d) $R_2 \times X_2 = 1$

12) The main cause of poor lagging power factor is due to use of
   a) Filament lamp b) Resistive load
   c) Induction motor d) Water heater

13) Following is the method to control speed below normal value of d.c. series motor
   a) Field diverter b) Paralleling the field coils
   c) Armature diverter d) None of the above

14) Universal motor is designed to run on
   a) dc b) ac
   c) both dc and ac d) all answers are correct

_____

SLR-EP – 95

Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   a) Explain significance of back emf in d.c. motor.
   b) A 240 Volt series motor takes 40 Amp when giving its rated output at 1500 rpm. Find what resistance must be added in series to obtain same torque at 1000 rpm. Take motor resistance 0.3 Ω. Assume flux remains constant.
   c) Derive the relation for power factor angle in terms of two wattmeter reading.
   d) Describe important features of brushless dc motor.
   e) Two wattmeter connected to a three phase induction motor indicate the total input power to be 12 kW, the power factor is 0.6. Determine the readings of two wattmeter.

(6×2=12)

3. a) Explain with neat diagram, armature rheostat speed control method applied for dc shunt motor. Write disadvantages of this method.
   b) A dc series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 15 Amp when the speed is 600 rpm. Calculate the speed and the current when the motor field is shunted by a diverter of the same resistance as that of field winding. Neglect armature and series winding drop.

OR

   c) What are the advantages of electrical braking ? Elaborate plugging and rheostat braking used for d.c. shunt motor.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Elaborate in detail, advantages and disadvantages of group drive.

   b) A three phase, 50 Hz transformer has delta connected primary and star connected secondary, the line voltages being 33 kV and 400 V respectively. The primary line current is 5 Amp. Determine transformation ratio, primary and secondary phase current.

   c) Derive relation between starting torque and maximum torque.

   d) What are the effects of low power factor on system ?

   e) A three phase, 8 pole, 50 Hz induction motor has full load slip of 4%. Rotor impedance at standstill per phase is $Z = (0.01 + j\ 0.1)\ \Omega$. Find the ratio of maximum torque to full load torque.

5. Attempt **any two** : **(6×2=12)**

   a) The power input to a 500 Volt, 6 pole, 50 Hz, three phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and mechanical losses are 2 kW.

      Find (i) slip (ii) rotor copper (iii) shaft power and (iv) efficiency.

   b) Compare star-delta and delta-star 3-phase transformer connection.

   c) Elaborate relation between slip and torque for three phase induction motor and draw family of torque slip characteristics.

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SLR-EP – 95

Seat No.	

Set R

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct option : **(14×1=14)**

1) The main cause of poor lagging power factor is due to use of
   a) Filament lamp b) Resistive load
   c) Induction motor d) Water heater

2) Following is the method to control speed below normal value of d.c. series motor
   a) Field diverter b) Paralleling the field coils
   c) Armature diverter d) None of the above

3) Universal motor is designed to run on
   a) dc b) ac
   c) both dc and ac d) all answers are correct

4) In case of 3 phase induction motor iron loss consists of
   a) Hysteresis loss b) Eddy current loss
   c) Both above losses d) None of the above

5) In practice, regenerative braking is used when
   a) Quick motor reversal is desired
   b) Load has overhauling characteristics
   c) Controlling elevators, rolling mills and printing presses etc.
   d) Other methods cannot be used

6) In case of 3-phase transformer, 3-phase to 2-phase transformation is possible in _____ connection.
   a) Star-star b) V-V c) Delta-delta d) T-T

7) An 11 kV line comes under
   a) Primary transmission level b) Secondary transmission level
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8) _____ is the starter used for three phase I.M.
   a) DOL starter b) Transformer starter
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9) The rotor input of 3 ph. I.M. is
   a) $s P_1$ b) $P_1 (1 + s)$ c) P_1/s d) $(1 – s) P_1$

10) Ward Leonard speed control method is
   a) Voltage control method
   b) Flux control method
   c) Armature rheostat control method
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   a) 86.6 b) 50 c) 100 d) 76.8

12) Power factor =
   a) KVAR/KVA b) KVA/KVAR c) KVA/KW d) KW/KVA

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   a) $R_2 = SX_2$ b) $I_{ST} = I_{FL}$ c) $R_2/X_2 = 1$ d) $R_2 \times X_2 = 1$

_____

SLR-EP – 95

Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**
   a) Explain significance of back emf in d.c. motor.
   b) A 240 Volt series motor takes 40 Amp when giving its rated output at 1500 rpm. Find what resistance must be added in series to obtain same torque at 1000 rpm. Take motor resistance 0.3 Ω. Assume flux remains constant.
   c) Derive the relation for power factor angle in terms of two wattmeter reading.
   d) Describe important features of brushless dc motor.
   e) Two wattmeter connected to a three phase induction motor indicate the total input power to be 12 kW, the power factor is 0.6. Determine the readings of two wattmeter.

(6×2=12)

3. a) Explain with neat diagram, armature rheostat speed control method applied for dc shunt motor. Write disadvantages of this method.
   b) A dc series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 15 Amp when the speed is 600 rpm. Calculate the speed and the current when the motor field is shunted by a diverter of the same resistance as that of field winding. Neglect armature and series winding drop.

OR

   c) What are the advantages of electrical braking ? Elaborate plugging and rheostat braking used for d.c. shunt motor.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Elaborate in detail, advantages and disadvantages of group drive.

   b) A three phase, 50 Hz transformer has delta connected primary and star connected secondary, the line voltages being 33 kV and 400 V respectively. The primary line current is 5 Amp. Determine transformation ratio, primary and secondary phase current.

   c) Derive relation between starting torque and maximum torque.

   d) What are the effects of low power factor on system ?

   e) A three phase, 8 pole, 50 Hz induction motor has full load slip of 4%. Rotor impedance at standstill per phase is $Z = (0.01 + j\ 0.1)\ \Omega$. Find the ratio of maximum torque to full load torque.

5. Attempt **any two** : **(6×2=12)**

   a) The power input to a 500 Volt, 6 pole, 50 Hz, three phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and mechanical losses are 2 kW.

      Find (i) slip (ii) rotor copper (iii) shaft power and (iv) efficiency.

   b) Compare star-delta and delta-star 3-phase transformer connection.

   c) Elaborate relation between slip and torque for three phase induction motor and draw family of torque slip characteristics.

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Seat No.	

Set S

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct option : **(14×1=14)**

1) In case of 3-phase transformer, 3-phase to 2-phase transformation is possible in _____ connection.
a) Star-star b) V-V c) Delta-delta d) T-T

2) An 11 kV line comes under
a) Primary transmission level b) Secondary transmission level
c) Primary distribution level d) Secondary distribution level

3) _____ is the starter used for three phase I.M.
a) DOL starter b) Transformer starter
c) Delta-star starter d) Rotor starter

4) The rotor input of 3 ph. I.M. is
a) $s P_1$ b) $P_1 (1 + s)$ c) P_1/s d) $(1 – s) P_1$

5) Ward Leonard speed control method is
a) Voltage control method
b) Flux control method
c) Armature rheostat control method
d) Series parallel control method

P.T.O.

6) In T-T connection main transformer is having _____% tapping on both primary and secondary winding.
   a) 86.6 b) 50 c) 100 d) 76.8

7) Power factor =
   a) KVAR/KVA b) KVA/KVAR c) KVA/KW d) KW/KVA

8) In case of d.c. motor at starting back emf is zero because
   a) I_a is maximum b) Torque is maximum
   c) R_a is small d) Speed is zero

9) Running torque of 3 phase induction motor becomes maximum when
   a) $R_2 = SX_2$ b) $I_{ST} = I_{FL}$ c) $R_2/X_2 = 1$ d) $R_2 \times X_2 = 1$

10) The main cause of poor lagging power factor is due to use of
   a) Filament lamp b) Resistive load
   c) Induction motor d) Water heater

11) Following is the method to control speed below normal value of d.c. series motor
   a) Field diverter b) Paralleling the field coils
   c) Armature diverter d) None of the above

12) Universal motor is designed to run on
   a) dc b) ac
   c) both dc and ac d) all answers are correct

13) In case of 3 phase induction motor iron loss consists of
   a) Hysteresis loss b) Eddy current loss
   c) Both above losses d) None of the above

14) In practice, regenerative braking is used when
   a) Quick motor reversal is desired
   b) Load has overhauling characteristics
   c) Controlling elevators, rolling mills and printing presses etc.
   d) Other methods cannot be used

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Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRICAL MACHINES

Day and Date : Monday, 21-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
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SECTION – I

2. Attempt **any four** : **(4×4=16)**
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   b) A 240 Volt series motor takes 40 Amp when giving its rated output at 1500 rpm. Find what resistance must be added in series to obtain same torque at 1000 rpm. Take motor resistance 0.3 Ω. Assume flux remains constant.
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   d) Describe important features of brushless dc motor.
   e) Two wattmeter connected to a three phase induction motor indicate the total input power to be 12 kW, the power factor is 0.6. Determine the readings of two wattmeter.

(6×2=12)

3. a) Explain with neat diagram, armature rheostat speed control method applied for dc shunt motor. Write disadvantages of this method.
   b) A dc series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 15 Amp when the speed is 600 rpm. Calculate the speed and the current when the motor field is shunted by a diverter of the same resistance as that of field winding. Neglect armature and series winding drop.

OR

   c) What are the advantages of electrical braking ? Elaborate plugging and rheostat braking used for d.c. shunt motor.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Elaborate in detail, advantages and disadvantages of group drive.

   b) A three phase, 50 Hz transformer has delta connected primary and star connected secondary, the line voltages being 33 kV and 400 V respectively. The primary line current is 5 Amp. Determine transformation ratio, primary and secondary phase current.

   c) Derive relation between starting torque and maximum torque.

   d) What are the effects of low power factor on system ?

   e) A three phase, 8 pole, 50 Hz induction motor has full load slip of 4%. Rotor impedance at standstill per phase is $Z = (0.01 + j\ 0.1)\ \Omega$. Find the ratio of maximum torque to full load torque.

5. Attempt **any two** : **(6×2=12)**

   a) The power input to a 500 Volt, 6 pole, 50 Hz, three phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and mechanical losses are 2 kW.

      Find (i) slip (ii) rotor copper (iii) shaft power and (iv) efficiency.

   b) Compare star-delta and delta-star 3-phase transformer connection.

   c) Elaborate relation between slip and torque for three phase induction motor and draw family of torque slip characteristics.

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SLR-EP – 96

Seat No.	

Set P

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

***Instructions**: 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct alternative :

1) In Multistage amplifier when number of stages increases then gain _____ bandwidth _____
   a) Increases, increases b) Increases, decreases
   c) Decreases, decreases d) Decreases, increases

2) The product of voltage gain and bandwidth of an amplifier with feedback and without feedback
   a) Greater than one b) Less than one
   c) Remains same d) None of the above

3) Transformer coupling provides high efficiency because
   a) Collector voltage is stepped up
   b) DC resistance in the collector circuit is low
   c) Collector voltage is stepped down
   d) Flux linkages are incomplete

4) In case of push pull class B amplifier, the efficiency at the time of maximum power dissipation is
   a) 25% b) 78.5% c) 50% d) 50% to 78.5%

5) 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° and less than 360°

P.T.O.

6) Complementary symmetry power amplifier
   a) Uses same type of transistors
   b) Uses common base configuration
   c) Matched pairs of complementary transistors
   d) None of the above

7) Voltage shunt feedback is called as
   a) Transresistance amplifier b) Voltage amplifier
   c) Transconductance amplifier d) Power amplifier

8) 74123 is a _____ and 74121 _____ type of monostable multivibrator.
   a) Non-retriggerable, retriggerable
   b) Retriggerable, retriggerable
   c) Non-retriggerable, Non-retriggerable
   d) Retriggerable, Non-retriggerable

9) The output voltage of LM-337 as adjustable regulator is
   a) $V_o = V_{ref} (1 + R_2/R_1) + I_{adj}R_1$ b) $V_o = V_{ref} (1 + R_1/R_2) + I_{adj}R_1$
   c) $V_o = V_{ref} (R_2 + R_1) + I_{adj}R_2$ d) None

10) Regulated output voltage of fixed voltage regulator 7805 is
   a) 1.25 V b) 1 V c) 5 V d) 0.25 V

11) Divide by N network can be designed by _____ Multivibrator.
   a) Astable b) Monostable c) Bistable d) Divider

12) In series voltage regulator error amplifier compares
   a) Input voltage and reference voltage
   b) Input voltage and output voltage
   c) Feedback voltage and reference voltage
   d) All above

13) The conditions for maintenance of oscillations in RC phase shift oscillator is
   a) $hfe < \frac{4RC}{R} + 23 + \frac{29R}{RC}$ b) $hfe > \frac{4RC}{R} + 23 + \frac{29R}{RC}$
   c) $hfe > \frac{4RC}{R} + 29 + \frac{23R}{RC}$ d) $hfe < \frac{4RC}{R} + 29 + \frac{23R}{RC}$

14) In _____ frequency is determined by charging and discharging time constants during exchange of energy.
   a) Relaxation oscillator b) Sinusoidal oscillator
   c) Both a and b d) Harmonic oscillator

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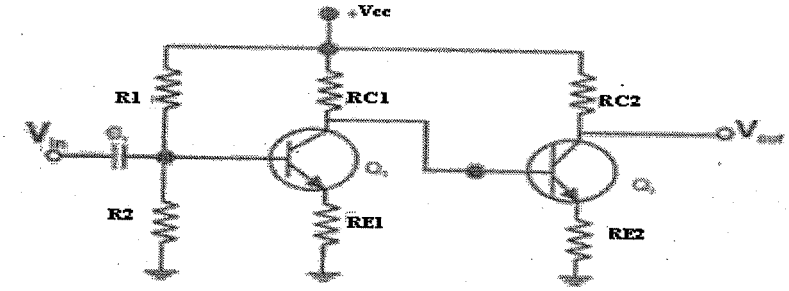
Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates maximum marks.*
2) ***Use*** *of electronic component data sheet is allowed.*
3) ***Assume*** *suitable data if necessary.*

2. Solve **any four** questions : **(4×4=16)**
   1) Prove that in case of class B push pull amplifier, the efficiency is 50% at the time of maximum power dissipation.
   2) Explain current series feedback amplifier and derive an expression for feedback factor and voltage gain.
   3) An amplifier has input of 10 mV and gain of 200 without feedback. The distortion produced at the output of the amplifier is 10%. It is desired to reduce distortion 1% by using negative feedback. Calculate gain and output voltage with feedback.
   4) Classify power amplifiers based on position of q point, load line and application.
   5) For given amplifier circuit calculate individual voltage gain and overall voltage gain. If $R_1 = 100\ K\Omega$, $R_2 = 20\ K\Omega$, $R_{C1} = R_{C2} = 10\ K\Omega$, $R_{E1} = R_{E2} = 2\ K\Omega$, $r'_{e1} = \frac{25mV}{IE}$ $\beta_1 = \beta_2 = 100$, $V_{CC} = 12$ V.



3. Solve **any two** questions : **(6×2=12)**

   1) Explain origin of cross over distortion. Describe the method to minimize this distortion with suitable circuit diagram.

   2) Explain working of two stage R-C coupled amplifier. Derive an expression for voltage gain using AC equivalent circuit.

      A radio receiver uses a two stage RC coupled amplifier. Calculate value of voltage gain of each stage and overall voltage gain. If $V_{CC} = 20V$, $R_1 = 45\,K\Omega$, $R_2 = 5\ K\Omega$, $R_C = 5K\Omega$, $R_E = 1\ K\Omega$, $\beta_1 = \beta_2 = 100$, $R_L = 20$ K, $C_{E1} = C_{E2} = 100\ \mu F$ and $C_{C1} = C_{C2} = C_{C3} = 10\ \mu F$ use same value R_1, R_2, R_C and R_E for second stage.

   3) What is effect of employing negative feedback on Bandwidth, Input and Output resistance of practical voltage amplifier ? Derive relevant expression for it.

4. Answer **any four** : **(4×4=16)**

   1) Discuss how three terminal voltage regulators IC can be employed to realize an adjustable output voltage and constant current source.

   2) Explain working of Schmitt trigger using IC555.

   3) Design an adjustable vtg. regulator using LM-337 to satisfy following $V_o = -9$ to -20 V for output current of -1.2 A.

   4) Explain Barkhausen criteria for oscillation. How an amplifier can be converted into an oscillator ?

   5) Design a monostable multivibrator to turn on LED for 10 sec. after applying trigger pulse using IC-555 (initially LED is in off condition).

5. Answer **any two** : **(2×6=12)**

   1) Design a transistorized series voltage regulator for 22 V at 150 mA. The unregulated power supply provides output of 35 V. Select transistor with following specification. ECN – 100, hfe = 50 BC 147B, hfe = 200.

   2) Design square wave generator using IC 555 for generating symmetrical square wave with 8 KHz frequency, 10 V amplitude.

   3) Draw neat circuit diagram transistorized RC phase shift oscillator. Derive an expression for its frequency of oscillation.

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Seat No.	

Set Q

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct alternative :

1) 74123 is a _____ and 74121 _____ type of monostable multivibrator.
   a) Non-retriggerable, retriggerable
   b) Retriggerable, retriggerable
   c) Non-retriggerable, Non-retriggerable
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2) The output voltage of LM-337 as adjustable regulator is
   a) $V_o = V_{ref} (1 + R_2/R_1) + I_{adj}R_1$ b) $V_o = V_{ref} (1 + R_1/R_2) + I_{adj}R_1$
   c) $V_o = V_{ref} (R_2 + R_1) + I_{adj}R_2$ d) None

3) Regulated output voltage of fixed voltage regulator 7805 is
   a) 1.25 V b) 1 V c) 5 V d) 0.25 V

4) Divide by N network can be designed by _____ Multivibrator.
   a) Astable b) Monostable
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5) In series voltage regulator error amplifier compares
   a) Input voltage and reference voltage
   b) Input voltage and output voltage
   c) Feedback voltage and reference voltage
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P.T.O.

6) The conditions for maintenance of oscillations in RC phase shift oscillator is

a) $hfe < \frac{4RC}{R} + 23 + \frac{29R}{RC}$ b) $hfe > \frac{4RC}{R} + 23 + \frac{29R}{RC}$

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7) In _____ frequency is determined by charging and discharging time constants during exchange of energy.
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8) In Multistage amplifier when number of stages increases then gain _____ bandwidth _____
a) Increases, increases b) Increases, decreases
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9) The product of voltage gain and bandwidth of an amplifier with feedback and without feedback
a) Greater than one b) Less than one
c) Remains same d) None of the above

10) Transformer coupling provides high efficiency because
a) Collector voltage is stepped up
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SLR-EP – 96

Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

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2. Solve **any four** questions : **(4×4=16)**
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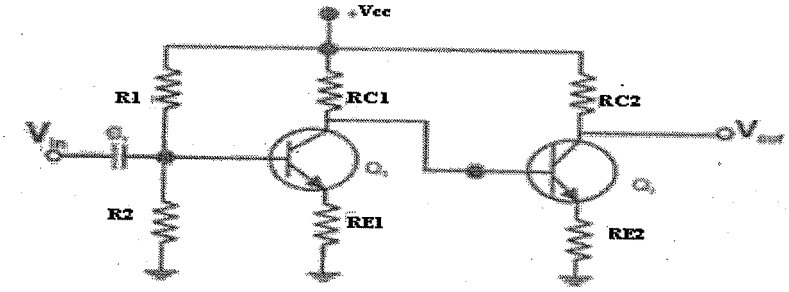

Set Q

3. Solve **any two** questions : **(6×2=12)**
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   1) Discuss how three terminal voltage regulators IC can be employed to realize an adjustable output voltage and constant current source.
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   4) Explain Barkhausen criteria for oscillation. How an amplifier can be converted into an oscillator ?
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5. Answer **any two** : **(2×6=12)**
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   3) Draw neat circuit diagram transistorized RC phase shift oscillator. Derive an expression for its frequency of oscillation.

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SLR-EP – 96

Seat No.	

Set R

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Max. Marks : 70
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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

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1) In CLASS A power amplifier collector current in the output circuit flows for
   a) 180° b) 360°
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2) Complementary symmetry power amplifier
   a) Uses same type of transistors
   b) Uses common base configuration
   c) Matched pairs of complementary transistors
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3) Voltage shunt feedback is called as
   a) Transresistance amplifier b) Voltage amplifier
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4) 74123 is a _____ and 74121 _____ type of monostable multivibrator.
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   a) $V_o = V_{ref} (1 + R_2/R_1) + I_{adj}R_1$ b) $V_o = V_{ref} (1 + R_1/R_2) + I_{adj}R_1$
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P.T.O.

6) Regulated output voltage of fixed voltage regulator 7805 is
   a) 1.25 V b) 1 V c) 5 V d) 0.25 V

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8) In series voltage regulator error amplifier compares
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10) In _____ frequency is determined by charging and discharging time constants during exchange of energy.
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12) The product of voltage gain and bandwidth of an amplifier with feedback and without feedback
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   a) Collector voltage is stepped up
   b) DC resistance in the collector circuit is low
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14) In case of push pull class B amplifier, the efficiency at the time of maximum power dissipation is
   a) 25% b) 78.5% c) 50% d) 50% to 78.5%

_____

SLR-EP – 96

Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates maximum marks.*
2) ***Use*** *of electronic component data sheet is allowed.*
3) ***Assume*** *suitable data if necessary.*

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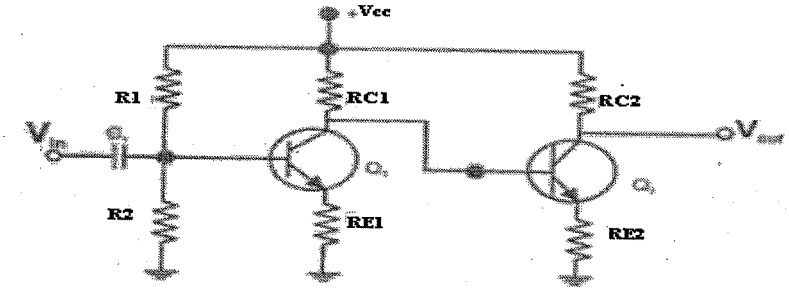
   1) Prove that in case of class B push pull amplifier, the efficiency is 50% at the time of maximum power dissipation.
   2) Explain current series feedback amplifier and derive an expression for feedback factor and voltage gain.
   3) An amplifier has input of 10 mV and gain of 200 without feedback. The distortion produced at the output of the amplifier is 10%. It is desired to reduce distortion 1% by using negative feedback. Calculate gain and output voltage with feedback.
   4) Classify power amplifiers based on position of q point, load line and application.
   5) For given amplifier circuit calculate individual voltage gain and overall voltage gain. If $R_1 = 100\ K\Omega$, $R_2 = 20\ K\Omega$, $R_{C1} = R_{C2} = 10\ K\Omega$, $R_{E1} = R_{E2} = 2\ K\Omega$, $r'_{e1} = \frac{25mV}{IE}$ $\beta_1 = \beta_2 = 100$, $V_{CC} = 12$ V.



3. Solve **any two** questions : **(6×2=12)**
   1) Explain origin of cross over distortion. Describe the method to minimize this distortion with suitable circuit diagram.
   2) Explain working of two stage R-C coupled amplifier. Derive an expression for voltage gain using AC equivalent circuit.

      A radio receiver uses a two stage RC coupled amplifier. Calculate value of voltage gain of each stage and overall voltage gain. If $V_{CC} = 20V$, $R_1 = 45\,K\Omega$, $R_2 = 5\ K\Omega$, $R_C = 5K\Omega$, $R_E = 1\ K\Omega$, $\beta_1 = \beta_2 = 100$, $R_L = 20$ K, $C_{E1} = C_{E2} = 100\ \mu F$ and $C_{C1} = C_{C2} = C_{C3} = 10\ \mu F$ use same value R_1, R_2, R_C and R_E for second stage.
   3) What is effect of employing negative feedback on Bandwidth, Input and Output resistance of practical voltage amplifier ? Derive relevant expression for it.

4. Answer **any four** : **(4×4=16)**
   1) Discuss how three terminal voltage regulators IC can be employed to realize an adjustable output voltage and constant current source.
   2) Explain working of Schmitt trigger using IC555.
   3) Design an adjustable vtg. regulator using LM-337 to satisfy following $V_o = -9$ to -20 V for output current of -1.2 A.
   4) Explain Barkhausen criteria for oscillation. How an amplifier can be converted into an oscillator ?
   5) Design a monostable multivibrator to turn on LED for 10 sec. after applying trigger pulse using IC-555 (initially LED is in off condition).

5. Answer **any two** : **(2×6=12)**
   1) Design a transistorized series voltage regulator for 22 V at 150 mA. The unregulated power supply provides output of 35 V. Select transistor with following specification. ECN – 100, hfe = 50 BC 147B, hfe = 200.
   2) Design square wave generator using IC 555 for generating symmetrical square wave with 8 KHz frequency, 10 V amplitude.
   3) Draw neat circuit diagram transistorized RC phase shift oscillator. Derive an expression for its frequency of oscillation.

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SLR-EP – 96

Seat No.	

Set S

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

***Instructions**: 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct alternative :

1) Regulated output voltage of fixed voltage regulator 7805 is
a) 1.25 V b) 1 V c) 5 V d) 0.25 V

2) Divide by N network can be designed by _____ Multivibrator.
a) Astable b) Monostable c) Bistable d) Divider

3) In series voltage regulator error amplifier compares
a) Input voltage and reference voltage
b) Input voltage and output voltage
c) Feedback voltage and reference voltage
d) All above

4) The conditions for maintenance of oscillations in RC phase shift oscillator is

a) $hfe < \frac{4RC}{R} + 23 + \frac{29R}{RC}$ b) $hfe > \frac{4RC}{R} + 23 + \frac{29R}{RC}$

c) $hfe > \frac{4RC}{R} + 29 + \frac{23R}{RC}$ d) $hfe < \frac{4RC}{R} + 29 + \frac{23R}{RC}$

5) In _____ frequency is determined by charging and discharging time constants during exchange of energy.
a) Relaxation oscillator b) Sinusoidal oscillator
c) Both a and b d) Harmonic oscillator

P.T.O.

6) In Multistage amplifier when number of stages increases then gain _____ bandwidth _____
   a) Increases, increases
   b) Increases, decreases
   c) Decreases, decreases
   d) Decreases, increases

7) The product of voltage gain and bandwidth of an amplifier with feedback and without feedback
   a) Greater than one
   b) Less than one
   c) Remains same
   d) None of the above

8) Transformer coupling provides high efficiency because
   a) Collector voltage is stepped up
   b) DC resistance in the collector circuit is low
   c) Collector voltage is stepped down
   d) Flux linkages are incomplete

9) In case of push pull class B amplifier, the efficiency at the time of maximum power dissipation is
   a) 25% b) 78.5% c) 50% d) 50% to 78.5%

10) 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° and less than 360°

11) Complementary symmetry power amplifier
   a) Uses same type of transistors
   b) Uses common base configuration
   c) Matched pairs of complementary transistors
   d) None of the above

12) Voltage shunt feedback is called as
   a) Transresistance amplifier
   b) Voltage amplifier
   c) Transconductance amplifier
   d) Power amplifier

13) 74123 is a _____ and 74121 _____ type of monostable multivibrator.
   a) Non-retriggerable, retriggerable
   b) Retriggerable, retriggerable
   c) Non-retriggerable, Non-retriggerable
   d) Retriggerable, Non-retriggerable

14) The output voltage of LM-337 as adjustable regulator is
   a) $V_o = V_{ref} (1 + R_2/R_1) + I_{adj}R_1$
   b) $V_o = V_{ref} (1 + R_1/R_2) + I_{adj}R_1$
   c) $V_o = V_{ref} (R_2 + R_1) + I_{adj}R_2$
   d) None

_____

SLR-EP – 96

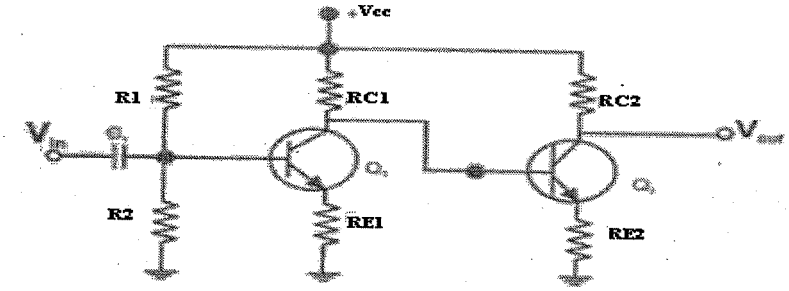
Seat No.	

S.E. (Electronics) (Part – II) (CGPA) Examination, 2016
ELECTRONICS CIRCUIT ANALYSIS AND DESIGN – II

Day and Date : Tuesday, 22-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates maximum marks.*
2) ***Use*** *of electronic component data sheet is allowed.*
3) ***Assume*** *suitable data if necessary.*

2. Solve **any four** questions : **(4×4=16)**
   1) Prove that in case of class B push pull amplifier, the efficiency is 50% at the time of maximum power dissipation.
   2) Explain current series feedback amplifier and derive an expression for feedback factor and voltage gain.
   3) An amplifier has input of 10 mV and gain of 200 without feedback. The distortion produced at the output of the amplifier is 10%. It is desired to reduce distortion 1% by using negative feedback. Calculate gain and output voltage with feedback.
   4) Classify power amplifiers based on position of q point, load line and application.
   5) For given amplifier circuit calculate individual voltage gain and overall voltage gain. If $R_1 = 100\ K\Omega$, $R_2 = 20\ K\Omega$, $R_{C1} = R_{C2} = 10\ K\Omega$, $R_{E1} = R_{E2} = 2\ K\Omega$, $r'_{e1} = \frac{25mV}{IE}$ $\beta_1 = \beta_2 = 100$, $V_{CC} = 12$ V.



3. Solve **any two** questions : **(6×2=12)**
   1) Explain origin of cross over distortion. Describe the method to minimize this distortion with suitable circuit diagram.
   2) Explain working of two stage R-C coupled amplifier. Derive an expression for voltage gain using AC equivalent circuit.

      A radio receiver uses a two stage RC coupled amplifier. Calculate value of voltage gain of each stage and overall voltage gain. If $V_{CC} = 20V$, $R_1 = 45\,K\Omega$, $R_2 = 5\ K\Omega$, $R_C = 5K\Omega$, $R_E = 1\ K\Omega$, $\beta_1 = \beta_2 = 100$, $R_L = 20$ K, $C_{E1} = C_{E2} = 100\ \mu F$ and $C_{C1} = C_{C2} = C_{C3} = 10\ \mu F$ use same value R_1, R_2, R_C and R_E for second stage.
   3) What is effect of employing negative feedback on Bandwidth, Input and Output resistance of practical voltage amplifier ? Derive relevant expression for it.

4. Answer **any four** : **(4×4=16)**
   1) Discuss how three terminal voltage regulators IC can be employed to realize an adjustable output voltage and constant current source.
   2) Explain working of Schmitt trigger using IC555.
   3) Design an adjustable vtg. regulator using LM-337 to satisfy following $V_o = -9$ to -20 V for output current of -1.2 A.
   4) Explain Barkhausen criteria for oscillation. How an amplifier can be converted into an oscillator ?
   5) Design a monostable multivibrator to turn on LED for 10 sec. after applying trigger pulse using IC-555 (initially LED is in off condition).

5. Answer **any two** : **(2×6=12)**
   1) Design a transistorized series voltage regulator for 22 V at 150 mA. The unregulated power supply provides output of 35 V. Select transistor with following specification. ECN – 100, hfe = 50 BC 147B, hfe = 200.
   2) Design square wave generator using IC 555 for generating symmetrical square wave with 8 KHz frequency, 10 V amplitude.
   3) Draw neat circuit diagram transistorized RC phase shift oscillator. Derive an expression for its frequency of oscillation.

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SLR-EP – 97

Seat No.	

Set P

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier – AM.
   a) More channel space is available
   b) Transmitter circuits must be more stable, giving better reception
   c) The signal is more noise resistant
   d) Much less power is required for the same signal strength

2) The output of an SSB transmitter with a 3.85 MHz carrier and a 1.5 kHz sine wave modulating tone is
   a) A 3.8485 MHz sine wave
   b) A 3.85 MHz sine wave
   c) 3.85, 3.8485 and 3.8515 MHz sine waves
   d) 3848.5 and 3851.5 MHz sine waves

3) Most of the power in an AM signal is in the
   a) Carrier b) Upper sideband
   c) Lower sideband d) Modulating signal

4) Which of the following is not true about AM ?
   a) The carrier amplitude varies
   b) The carrier frequency remains constant
   c) The carrier frequency changes
   d) The information signal amplitude changes the carrier amplitude

P.T.O.

5) A carrier of 880 kHz is modulated by a 3.5 kHz sine wave. The LSB and USB are respectively.
   a) 873 and 887 kHz b) 876.5 and 883.5 kHz
   c) 883.5 and 876.5 kHz d) 887 and 873 kHz

6) The process of translating a signal, with or without modulation, to a higher or lower frequency for processing is called
   a) Frequency multiplication b) Frequency division
   c) Frequency shift d) Frequency conversion

7) 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

8) 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

9) Which is the first radio receiver ?
   a) TRF receiver b) Superheterodyne receiver
   c) Crystal radio receiver d) Heterodyne receiver

10) 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

11) In a FM system, if modulation index is doubled by having the modulating frequency, what will be the effect on the maximum deviation ?
   a) No effect b) Maximum deviation doubles
   c) Decreases by 0.5 d) Increases by 0.25

12) The electromagnetic waves are reflected by the ionosphere due to their interaction with
   a) Electrons b) UV rays c) Protons d) IR rays

13) D-layer reflects
   a) VLF & LF b) HF c) VHF & UHF d) Microwaves

14) Which transmission mode is used for data communication along telephone lines ?
   a) parallel b) serial c) synchronous d) asynchronous

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SLR-EP – 97

Seat No.	

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**

1) Describe signal in time and frequency domain.

2) Define modulation index. A 90 kHz bandwidth is to accommodate six AM broadcasts simultaneously. What maximum modulating frequency must each station be limited to ?

3) Compare low level modulation and high level modulation.

4) Draw block diagram of TRF and explain its working principle.

3. Attempt **any two** : **(2×8=16)**

1) Derive an equation of AM wave. Determine its bandwidth. An AM voltage is represented by the expression: $V = 5[1 + 0.6 \cos(6280\ t)] \sin(2\pi 10^4\ t)$ volts.

Calculate modulation depth and modulating frequency.

2) With suitable circuit diagram, explain working principle of collector modulated class-C power amplifier for generation of AM signal.

3) With circuit diagram, explain diode detector. Also discuss the distortions occurring in it.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

   1) Define antenna gain and explain polarization of an antenna.

   2) With suitable circuit schematic, explain working of reactance modulator for FM generation.

   3) Define signal to noise ratio and state how it can be improved in case of communication.

   4) Give significance of pre-emphasis and de-emphasis used in frequency modulation.

5. Attempt **any two** : **(2×8=16)**

   1) State types of noise. Explain each one with example.

   2) How crossbar switching is efficient then strowger switching ? Explain crossbar switching in detail.

   3) Explain working of ratio detector with suitable diagram.

SLR-EP – 97

Seat No.	

Set Q

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) 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

2) Which is the first radio receiver ?
   a) TRF receiver b) Superheterodyne receiver
   c) Crystal radio receiver d) Heterodyne receiver

3) 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

4) In a FM system, if modulation index is doubled by having the modulating frequency, what will be the effect on the maximum deviation ?
   a) No effect b) Maximum deviation doubles
   c) Decreases by 0.5 d) Increases by 0.25

5) The electromagnetic waves are reflected by the ionosphere due to their interaction with
   a) Electrons b) UV rays c) Protons d) IR rays

6) D-layer reflects
   a) VLF & LF b) HF c) VHF & UHF d) Microwaves

P.T.O.

7) Which transmission mode is used for data communication along telephone lines ?
   a) parallel b) serial c) synchronous d) asynchronous

8) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier – AM.
   a) More channel space is available
   b) Transmitter circuits must be more stable, giving better reception
   c) The signal is more noise resistant
   d) Much less power is required for the same signal strength

9) The output of an SSB transmitter with a 3.85 MHz carrier and a 1.5 kHz sine wave modulating tone is
   a) A 3.8485 MHz sine wave
   b) A 3.85 MHz sine wave
   c) 3.85, 3.8485 and 3.8515 MHz sine waves
   d) 3848.5 and 3851.5 MHz sine waves

10) Most of the power in an AM signal is in the
   a) Carrier b) Upper sideband
   c) Lower sideband d) Modulating signal

11) Which of the following is not true about AM ?
   a) The carrier amplitude varies
   b) The carrier frequency remains constant
   c) The carrier frequency changes
   d) The information signal amplitude changes the carrier amplitude

12) A carrier of 880 kHz is modulated by a 3.5 kHz sine wave. The LSB and USB are respectively.
   a) 873 and 887 kHz b) 876.5 and 883.5 kHz
   c) 883.5 and 876.5 kHz d) 887 and 873 kHz

13) The process of translating a signal, with or without modulation, to a higher or lower frequency for processing is called
   a) Frequency multiplication b) Frequency division
   c) Frequency shift d) Frequency conversion

14) 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

———————

SLR-EP – 97

Seat No.	

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**

1) Describe signal in time and frequency domain.

2) Define modulation index. A 90 kHz bandwidth is to accommodate six AM broadcasts simultaneously. What maximum modulating frequency must each station be limited to ?

3) Compare low level modulation and high level modulation.

4) Draw block diagram of TRF and explain its working principle.

3. Attempt **any two** : **(2×8=16)**

1) Derive an equation of AM wave. Determine its bandwidth. An AM voltage is represented by the expression: $V = 5[1 + 0.6 \cos(6280\ t)] \sin(2\pi 10^4 t)$ volts.

Calculate modulation depth and modulating frequency.

2) With suitable circuit diagram, explain working principle of collector modulated class-C power amplifier for generation of AM signal.

3) With circuit diagram, explain diode detector. Also discuss the distortions occurring in it.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

   1) Define antenna gain and explain polarization of an antenna.

   2) With suitable circuit schematic, explain working of reactance modulator for FM generation.

   3) Define signal to noise ratio and state how it can be improved in case of communication.

   4) Give significance of pre-emphasis and de-emphasis used in frequency modulation.

5. Attempt **any two** : **(2×8=16)**

   1) State types of noise. Explain each one with example.

   2) How crossbar switching is efficient then strowger switching ? Explain crossbar switching in detail.

   3) Explain working of ratio detector with suitable diagram.

SLR-EP – 97

Seat No.	

Set R

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) A carrier of 880 kHz is modulated by a 3.5 kHz sine wave. The LSB and USB are respectively.
   a) 873 and 887 kHz b) 876.5 and 883.5 kHz
   c) 883.5 and 876.5 kHz d) 887 and 873 kHz

2) The process of translating a signal, with or without modulation, to a higher or lower frequency for processing is called
   a) Frequency multiplication b) Frequency division
   c) Frequency shift d) Frequency conversion

3) 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

4) 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

5) Which is the first radio receiver ?
   a) TRF receiver b) Superheterodyne receiver
   c) Crystal radio receiver d) Heterodyne receiver

P.T.O.

6) 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

7) In a FM system, if modulation index is doubled by having the modulating frequency, what will be the effect on the maximum deviation ?
   a) No effect b) Maximum deviation doubles
   c) Decreases by 0.5 d) Increases by 0.25

8) The electromagnetic waves are reflected by the ionosphere due to their interaction with
   a) Electrons b) UV rays c) Protons d) IR rays

9) D-layer reflects
   a) VLF & LF b) HF c) VHF & UHF d) Microwaves

10) Which transmission mode is used for data communication along telephone lines ?
   a) parallel b) serial c) synchronous d) asynchronous

11) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier – AM.
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   c) 3.85, 3.8485 and 3.8515 MHz sine waves
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13) Most of the power in an AM signal is in the
   a) Carrier b) Upper sideband
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14) Which of the following is not true about AM ?
   a) The carrier amplitude varies
   b) The carrier frequency remains constant
   c) The carrier frequency changes
   d) The information signal amplitude changes the carrier amplitude

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SLR-EP – 97

Seat No.	

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**

1) Describe signal in time and frequency domain.

2) Define modulation index. A 90 kHz bandwidth is to accommodate six AM broadcasts simultaneously. What maximum modulating frequency must each station be limited to ?

3) Compare low level modulation and high level modulation.

4) Draw block diagram of TRF and explain its working principle.

3. Attempt **any two** : **(2×8=16)**

1) Derive an equation of AM wave. Determine its bandwidth. An AM voltage is represented by the expression: $V = 5[1 + 0.6 \cos(6280\ t)] \sin(2\pi 10^4\ t)$ volts.

Calculate modulation depth and modulating frequency.

2) With suitable circuit diagram, explain working principle of collector modulated class-C power amplifier for generation of AM signal.

3) With circuit diagram, explain diode detector. Also discuss the distortions occurring in it.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

   1) Define antenna gain and explain polarization of an antenna.

   2) With suitable circuit schematic, explain working of reactance modulator for FM generation.

   3) Define signal to noise ratio and state how it can be improved in case of communication.

   4) Give significance of pre-emphasis and de-emphasis used in frequency modulation.

5. Attempt **any two** : **(2×8=16)**

   1) State types of noise. Explain each one with example.

   2) How crossbar switching is efficient then strowger switching ? Explain crossbar switching in detail.

   3) Explain working of ratio detector with suitable diagram.

SLR-EP – 97

Seat No.	

Set S

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) 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

2) In a FM system, if modulation index is doubled by having the modulating frequency, what will be the effect on the maximum deviation ?
   a) No effect b) Maximum deviation doubles
   c) Decreases by 0.5 d) Increases by 0.25

3) The electromagnetic waves are reflected by the ionosphere due to their interaction with
   a) Electrons b) UV rays c) Protons d) IR rays

4) D-layer reflects
   a) VLF & LF b) HF c) VHF & UHF d) Microwaves

5) Which transmission mode is used for data communication along telephone lines ?
   a) parallel b) serial c) synchronous d) asynchronous

6) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier – AM.
   a) More channel space is available
   b) Transmitter circuits must be more stable, giving better reception
   c) The signal is more noise resistant
   d) Much less power is required for the same signal strength

P.T.O.

7) The output of an SSB transmitter with a 3.85 MHz carrier and a 1.5 kHz sine wave modulating tone is
   a) A 3.8485 MHz sine wave
   b) A 3.85 MHz sine wave
   c) 3.85, 3.8485 and 3.8515 MHz sine waves
   d) 3848.5 and 3851.5 MHz sine waves

8) Most of the power in an AM signal is in the
   a) Carrier b) Upper sideband
   c) Lower sideband d) Modulating signal

9) Which of the following is not true about AM ?
   a) The carrier amplitude varies
   b) The carrier frequency remains constant
   c) The carrier frequency changes
   d) The information signal amplitude changes the carrier amplitude

10) A carrier of 880 kHz is modulated by a 3.5 kHz sine wave. The LSB and USB are respectively.
   a) 873 and 887 kHz b) 876.5 and 883.5 kHz
   c) 883.5 and 876.5 kHz d) 887 and 873 kHz

11) The process of translating a signal, with or without modulation, to a higher or lower frequency for processing is called
   a) Frequency multiplication b) Frequency division
   c) Frequency shift d) Frequency conversion

12) 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

13) 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

14) Which is the first radio receiver ?
   a) TRF receiver b) Superheterodyne receiver
   c) Crystal radio receiver d) Heterodyne receiver

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SLR-EP – 97

Seat No.	

S.E. (Electronics Engineering) (Part – II) (CGPA) Examination, 2016
ANALOG COMMUNICATION

Day and Date : Wednesday, 23-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**

1) Describe signal in time and frequency domain.

2) Define modulation index. A 90 kHz bandwidth is to accommodate six AM broadcasts simultaneously. What maximum modulating frequency must each station be limited to ?

3) Compare low level modulation and high level modulation.

4) Draw block diagram of TRF and explain its working principle.

3. Attempt **any two** : **(2×8=16)**

1) Derive an equation of AM wave. Determine its bandwidth. An AM voltage is represented by the expression: $V = 5[1 + 0.6 \cos(6280\, t)] \sin(2\pi 10^4 t)$ volts.

Calculate modulation depth and modulating frequency.

2) With suitable circuit diagram, explain working principle of collector modulated class-C power amplifier for generation of AM signal.

3) With circuit diagram, explain diode detector. Also discuss the distortions occurring in it.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

   1) Define antenna gain and explain polarization of an antenna.

   2) With suitable circuit schematic, explain working of reactance modulator for FM generation.

   3) Define signal to noise ratio and state how it can be improved in case of communication.

   4) Give significance of pre-emphasis and de-emphasis used in frequency modulation.

5. Attempt **any two** : **(2×8=16)**

   1) State types of noise. Explain each one with example.

   2) How crossbar switching is efficient then strowger switching ? Explain crossbar switching in detail.

   3) Explain working of ratio detector with suitable diagram.

SLR-EP – 98

Seat No.	

Set **P**

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

Day and Date : Thursday, 24-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Select suitable option : **(1×14=14)**

1) A scaling amplifier can be designed using _____ configuration.
   a) Inverting amplifier b) Non inverting amplifier
   c) Differential amplifier d) All of the above

2) For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and C = 0.01 μF, value of R is _____ Ω .
   a) 1.59 K b) 1 K
   c) 11.9 K d) None of these

3) Output offset voltage changes with
   a) Temperature b) Time
   c) Supply voltage d) All of these

4) In a sample and hold circuit, op amp is used as
   a) Sample circuit b) Hold circuit
   c) Voltage follower d) Peak detector

5) Voltage follower is a special case of
   a) Inverting amplifier b) Non inverting amplifier
   c) Differential amplifier d) Clipping circuit

6) The third stage in a typical op amp internal block diagram is
   a) Buffer b) Level shifter
   c) Emitter follower d) All of these

P.T.O.

7) Pin number 8 of a 741 is
   a) + Vcc
   b) Output
   c) NC
   d) Null offset

8) Voltage series feed back amplifier is also called as _____ amplifier.
   a) Non inverting
   b) Inverting
   c) Positive feedback
   d) Differential

9) Differential amplifier is a
   a) Non inverting amplifier
   b) Inverting amplifier
   c) Subtractor
   d) Adder

10) In a typical op amp _____ changes with supply voltage but _____ is relatively constant.
   a) Input bias current, input offset current
   b) Input offset current, input bias current
   c) Input offset voltage, output offset voltage
   d) Output offset voltage, input offset voltage

11) We can not compensate for
   a) Input bias current
   b) Input offset current
   c) Input offset voltage
   d) All of these

12) Bode plot is used for
   a) Gain calculation
   b) Bandwidth calculation
   c) Stability analysis
   d) Output capacitance calculation

13) Take odd man out-flash, R-2R, tracking, successive approximation
   a) Flash
   b) R-2R
   c) Tracking
   d) Successive approximation

14) Which of below is not a mode of PPL ?
   a) Capture
   b) Stable
   c) Lock
   d) Free running

_____

SLR-EP – 98

Seat No.	

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

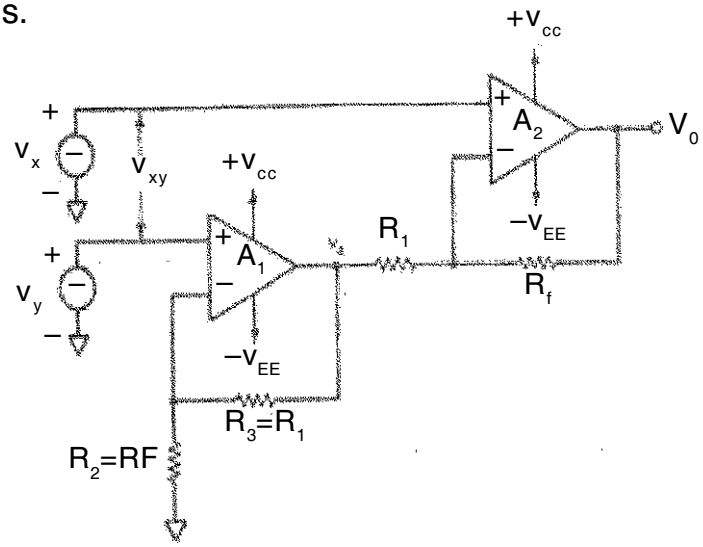
Day and Date : Thursday, 24-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*

SECTION – I

2. Solve **any two** : **(6×2=12)**

a) For circuit shown below derive equation for voltage gain. Also discuss its applications.



b) Derive an expression for compensating network for input offset voltage.

c) Derive an expression for closed loop gain as a function of frequency. Comment on magnitude plot and phase plot of gain.

3. Solve **any four** : **(4×4=16)**

a) Compare basic integrator and practical integrator.

b) Evaluate comparator characteristics. Comment how op amp satisfy/non satisfy them.

c) With suitable example explain how slew rate limits open loop applications of op amp.

d) Derive for effect of negative feedback on input resistance.

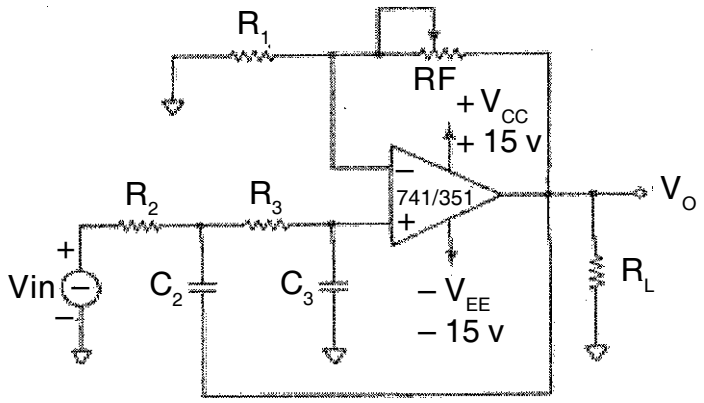
e) Compare ideal and practical op amp.

Set P

SECTION – II

4. Solve **any two** : **(6×2=12)**

a) What is below circuit for ? Find out values of various components shown for a cut off frequency of 1 KHz. Sketch (general) and discuss frequency response.



b) Design a square wave generator for 1 kHz.

c) With suitable example show how a successive approximation ADC converts analog voltage into proportional digital count.

5. Solve **any four** : **(4×4=16)**

a) Show how IC 1408 can be used in unipolar range.

b) Show application of PLL as a frequency multiplier.

c) What are oscillator types ? Discuss with the context of components used, frequency, applications and types of waveforms.

d) Demonstrate use of op amp as a log amplifier.

e) Discuss advantages and disadvantages of active filters over passive filters.

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SLR-EP – 98

Seat No.	

Set **Q**

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

Day and Date : Thursday, 24-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Select suitable option : **(1×14=14)**

1) Voltage series feed back amplifier is also called as _____ amplifier.
   a) Non inverting b) Inverting
   c) Positive feedback d) Differential

2) Differential amplifier is a
   a) Non inverting amplifier b) Inverting amplifier
   c) Subtractor d) Adder

3) In a typical op amp _____ changes with supply voltage but _____ is relatively constant.
   a) Input bias current, input offset current
   b) Input offset current, input bias current
   c) Input offset voltage, output offset voltage
   d) Output offset voltage, input offset voltage

4) We can not compensate for
   a) Input bias current b) Input offset current
   c) Input offset voltage d) All of these

5) Bode plot is used for
   a) Gain calculation
   b) Bandwidth calculation
   c) Stability analysis
   d) Output capacitance calculation

6) Take odd man out-flash, R-2R, tracking, successive approximation
   a) Flash
   b) R-2R
   c) Tracking
   d) Successive approximation

7) Which of below is not a mode of PPL ?
   a) Capture
   b) Stable
   c) Lock
   d) Free running

8) A scaling amplifier can be designed using _____ configuration.
   a) Inverting amplifier
   b) Non inverting amplifier
   c) Differential amplifier
   d) All of the above

9) For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and C = 0.01 μF, value of R is _____ Ω .
   a) 1.59 K
   b) 1 K
   c) 11.9 K
   d) None of these

10) Output offset voltage changes with
   a) Temperature
   b) Time
   c) Supply voltage
   d) All of these

11) In a sample and hold circuit, op amp is used as
   a) Sample circuit
   b) Hold circuit
   c) Voltage follower
   d) Peak detector

12) Voltage follower is a special case of
   a) Inverting amplifier
   b) Non inverting amplifier
   c) Differential amplifier
   d) Clipping circuit

13) The third stage in a typical op amp internal block diagram is
   a) Buffer
   b) Level shifter
   c) Emitter follower
   d) All of these

14) Pin number 8 of a 741 is
   a) + Vcc
   b) Output
   c) NC
   d) Null offset

_____

SLR-EP – 98

Seat No.	

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

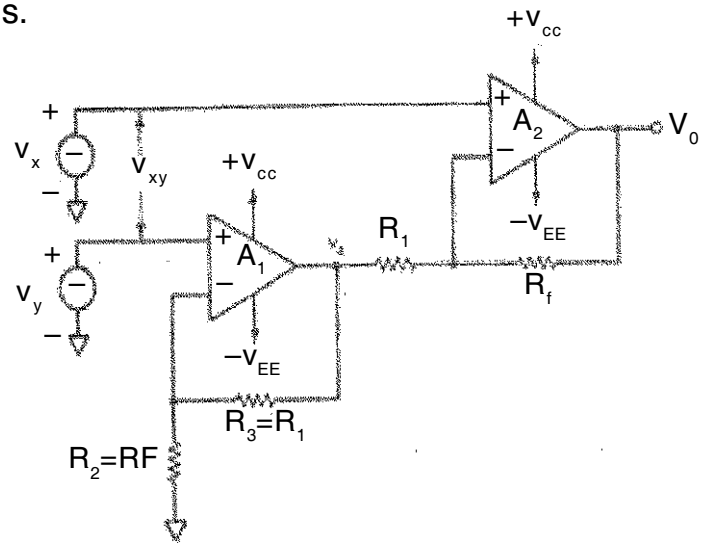
Day and Date : Thursday, 24-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*

SECTION – I

2. Solve **any two** : **(6×2=12)**

a) For circuit shown below derive equation for voltage gain. Also discuss its applications.



b) Derive an expression for compensating network for input offset voltage.

c) Derive an expression for closed loop gain as a function of frequency. Comment on magnitude plot and phase plot of gain.

3. Solve **any four** : **(4×4=16)**

a) Compare basic integrator and practical integrator.

b) Evaluate comparator characteristics. Comment how op amp satisfy/non satisfy them.

c) With suitable example explain how slew rate limits open loop applications of op amp.

d) Derive for effect of negative feedback on input resistance.

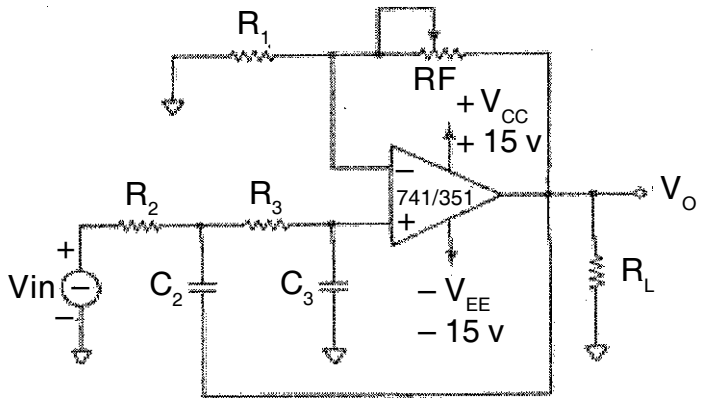
e) Compare ideal and practical op amp.

Set Q

SECTION – II

4. Solve **any two** : **(6×2=12)**

a) What is below circuit for ? Find out values of various components shown for a cut off frequency of 1 KHz. Sketch (general) and discuss frequency response.



b) Design a square wave generator for 1 kHz.

c) With suitable example show how a successive approximation ADC converts analog voltage into proportional digital count.

5. Solve **any four** : **(4×4=16)**

a) Show how IC 1408 can be used in unipolar range.

b) Show application of PLL as a frequency multiplier.

c) What are oscillator types ? Discuss with the context of components used, frequency, applications and types of waveforms.

d) Demonstrate use of op amp as a log amplifier.

e) Discuss advantages and disadvantages of active filters over passive filters.

———————

SLR-EP – 98

Seat No.	

Set R

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

Day and Date : Thursday, 24-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Select suitable option : **(1×14=14)**

1) Voltage follower is a special case of
   a) Inverting amplifier b) Non inverting amplifier
   c) Differential amplifier d) Clipping circuit

2) The third stage in a typical op amp internal block diagram is
   a) Buffer b) Level shifter
   c) Emitter follower d) All of these

3) Pin number 8 of a 741 is
   a) + Vcc b) Output
   c) NC d) Null offset

4) Voltage series feed back amplifier is also called as _____ amplifier.
   a) Non inverting b) Inverting
   c) Positive feedback d) Differential

5) Differential amplifier is a
   a) Non inverting amplifier b) Inverting amplifier
   c) Subtractor d) Adder

P.T.O.

6) In a typical op amp _____ changes with supply voltage but _____ is relatively constant.
   a) Input bias current, input offset current
   b) Input offset current, input bias current
   c) Input offset voltage, output offset voltage
   d) Output offset voltage, input offset voltage

7) We can not compensate for
   a) Input bias current
   b) Input offset current
   c) Input offset voltage
   d) All of these

8) Bode plot is used for
   a) Gain calculation
   b) Bandwidth calculation
   c) Stability analysis
   d) Output capacitance calculation

9) Take odd man out-flash, R-2R, tracking, successive approximation
   a) Flash
   b) R-2R
   c) Tracking
   d) Successive approximation

10) Which of below is not a mode of PPL ?
   a) Capture
   b) Stable
   c) Lock
   d) Free running

11) A scaling amplifier can be designed using _____ configuration.
   a) Inverting amplifier
   b) Non inverting amplifier
   c) Differential amplifier
   d) All of the above

12) For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and C = 0.01 μF, value of R is _____ Ω .
   a) 1.59 K
   b) 1 K
   c) 11.9 K
   d) None of these

13) Output offset voltage changes with
   a) Temperature
   b) Time
   c) Supply voltage
   d) All of these

14) In a sample and hold circuit, op amp is used as
   a) Sample circuit
   b) Hold circuit
   c) Voltage follower
   d) Peak detector

_____

SLR-EP – 98

Seat No.	

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

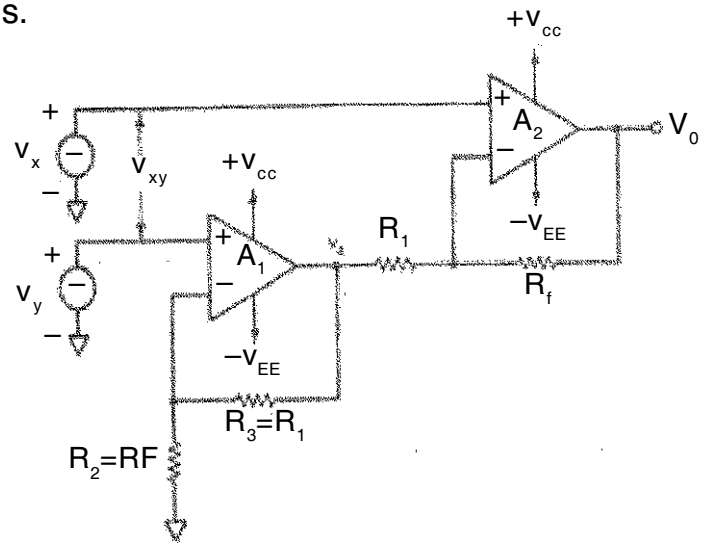
Day and Date : Thursday, 24-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*

SECTION – I

2. Solve **any two** : **(6×2=12)**

a) For circuit shown below derive equation for voltage gain. Also discuss its applications.



b) Derive an expression for compensating network for input offset voltage.

c) Derive an expression for closed loop gain as a function of frequency. Comment on magnitude plot and phase plot of gain.

3. Solve **any four** : **(4×4=16)**

a) Compare basic integrator and practical integrator.

b) Evaluate comparator characteristics. Comment how op amp satisfy/non satisfy them.

c) With suitable example explain how slew rate limits open loop applications of op amp.

d) Derive for effect of negative feedback on input resistance.

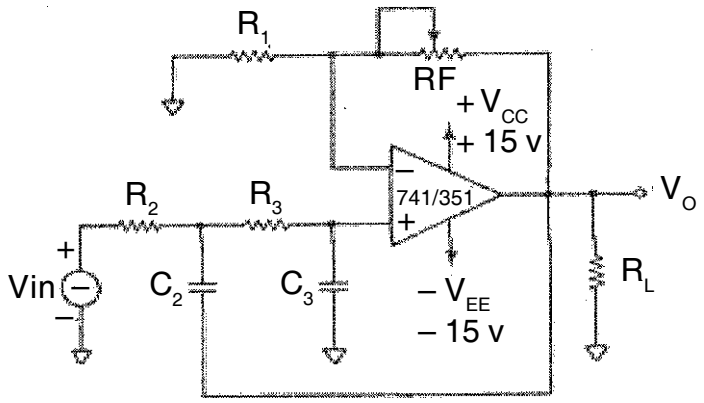
e) Compare ideal and practical op amp.

Set R

SECTION – II

4. Solve **any two** : **(6×2=12)**

a) What is below circuit for ? Find out values of various components shown for a cut off frequency of 1 KHz. Sketch (general) and discuss frequency response.



b) Design a square wave generator for 1 kHz.

c) With suitable example show how a successive approximation ADC converts analog voltage into proportional digital count.

5. Solve **any four** : **(4×4=16)**

a) Show how IC 1408 can be used in unipolar range.

b) Show application of PLL as a frequency multiplier.

c) What are oscillator types ? Discuss with the context of components used, frequency, applications and types of waveforms.

d) Demonstrate use of op amp as a log amplifier.

e) Discuss advantages and disadvantages of active filters over passive filters.

———————

SLR-EP – 98

Seat No.	

Set **S**

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

Day and Date : Thursday, 24-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Select suitable option : **(1×14=14)**

1) In a typical op amp _____ changes with supply voltage but _____ is relatively constant.
   a) Input bias current, input offset current
   b) Input offset current, input bias current
   c) Input offset voltage, output offset voltage
   d) Output offset voltage, input offset voltage

2) We can not compensate for
   a) Input bias current
   b) Input offset current
   c) Input offset voltage
   d) All of these

3) Bode plot is used for
   a) Gain calculation
   b) Bandwidth calculation
   c) Stability analysis
   d) Output capacitance calculation

4) Take odd man out-flash, R-2R, tracking, successive approximation
   a) Flash
   b) R-2R
   c) Tracking
   d) Successive approximation

P.T.O.

5) Which of below is not a mode of PPL ?
   a) Capture b) Stable
   c) Lock d) Free running

6) A scaling amplifier can be designed using _____ configuration.
   a) Inverting amplifier b) Non inverting amplifier
   c) Differential amplifier d) All of the above

7) For a first order low pass filter if f_H is 1 KHz, passband gain is 2 and C = 0.01 μF, value of R is _____ Ω .
   a) 1.59 K b) 1 K
   c) 11.9 K d) None of these

8) Output offset voltage changes with
   a) Temperature b) Time
   c) Supply voltage d) All of these

9) In a sample and hold circuit, op amp is used as
   a) Sample circuit b) Hold circuit
   c) Voltage follower d) Peak detector

10) Voltage follower is a special case of
   a) Inverting amplifier b) Non inverting amplifier
   c) Differential amplifier d) Clipping circuit

11) The third stage in a typical op amp internal block diagram is
   a) Buffer b) Level shifter
   c) Emitter follower d) All of these

12) Pin number 8 of a 741 is
   a) + Vcc b) Output
   c) NC d) Null offset

13) Voltage series feed back amplifier is also called as _____ amplifier.
   a) Non inverting b) Inverting
   c) Positive feedback d) Differential

14) Differential amplifier is a
   a) Non inverting amplifier b) Inverting amplifier
   c) Subtractor d) Adder

_____

SLR-EP – 98

Seat No.	

S.E. (Electronics Engineering) Part – II (CGPA) Examination, 2016
LINEAR INTEGRATED CIRCUITS

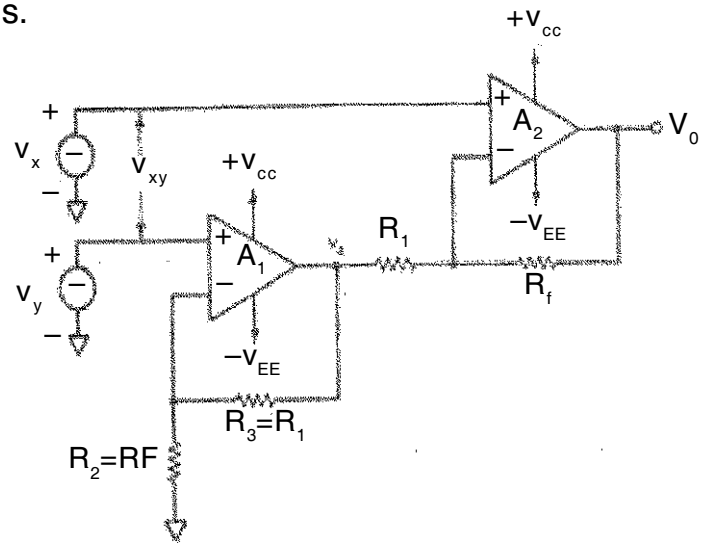
Day and Date : Thursday, 24-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*

SECTION – I

2. Solve **any two** : **(6×2=12)**

a) For circuit shown below derive equation for voltage gain. Also discuss its applications.



b) Derive an expression for compensating network for input offset voltage.

c) Derive an expression for closed loop gain as a function of frequency. Comment on magnitude plot and phase plot of gain.

3. Solve **any four** : **(4×4=16)**

a) Compare basic integrator and practical integrator.

b) Evaluate comparator characteristics. Comment how op amp satisfy/non satisfy them.

c) With suitable example explain how slew rate limits open loop applications of op amp.

d) Derive for effect of negative feedback on input resistance.

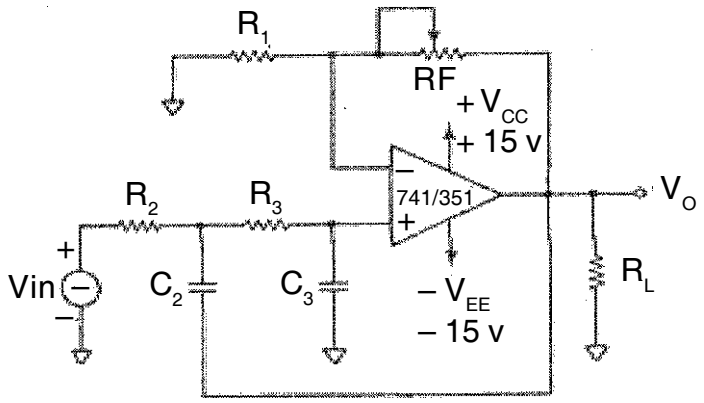
e) Compare ideal and practical op amp.

Set S

SECTION – II

4. Solve **any two** : **(6×2=12)**

a) What is below circuit for ? Find out values of various components shown for a cut off frequency of 1 KHz. Sketch (general) and discuss frequency response.



b) Design a square wave generator for 1 kHz.

c) With suitable example show how a successive approximation ADC converts analog voltage into proportional digital count.

5. Solve **any four** : **(4×4=16)**

a) Show how IC 1408 can be used in unipolar range.

b) Show application of PLL as a frequency multiplier.

c) What are oscillator types ? Discuss with the context of components used, frequency, applications and types of waveforms.

d) Demonstrate use of op amp as a log amplifier.

e) Discuss advantages and disadvantages of active filters over passive filters.

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SLR-EP – 99

Seat No.	

Set P

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) ***Assume*** *suitable data* ***if required*** *and* ***state*** *the assumptions.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The sync function can be defined as SINC(x) = _____

a) $\frac{\sin x}{x}$ b) $\frac{\sin \pi x}{x}$ c) $\frac{\sin \pi x}{\pi x}$ d) $\text{SINC}\left(\frac{\sin x}{x}\right)$

2) The impulse response of discrete time is $h[n] = (3)^n u[n-3]$, the system is

a) Casual b) Stable
c) Unstable and casual d) Stable and non casual

3) The Fourier transform of impulse response of differentiator is

a) $j\omega$ b) $2\pi\delta(\omega)$ c) ω d) None of these

4) The range of n for which the signal u(n+2) – u(n – 4) exists is

a) – 2 to 4 b) – 4 to 2 c) – 2 to 3 d) –3 to 2

5) The Fourier transform of $x(t) = \delta(t+2)$ is

a) $e^{j2\omega}$ b) $e^{-j2\omega}$ c) 1 d) None of these

6) If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h2(t)*h1(t) will be

a) u(t) b) $\delta(t)$ c) $\delta(-t)$ d) None of these

P.T.O.

7) A system is having impulse response h(t) will be BIBO stable if

a) $\int_{-\infty}^{\infty} |h(t)| > \infty$ b) $\int_{-\infty}^{\infty} |h(t)| < \infty$

c) $\int_{-\infty}^{\infty} |h(t)| = 0$ d) $\int_{-\infty}^{\infty} |h(t)| = 1$

8) For the statically independent random variable the correlation coefficient ρ is

a) 1 b) –1

c) Zero d) Infinite

9) Which of the following is true for probability of any event A ?

a) $0 \leq P(A) \leq 1$ b) $P(A) \geq 1$

c) $P(A) \geq 0$ d) $-1 \leq P(A) \leq 1$

10) The probability of an event B under the condition the event A has already occurred is known as

a) Probability b) Conditional probability

c) Joint probability d) Both b) and c)

11) The ROC of $x(t) = e^{-3t} u(t) + e^{-2t} u(t)$ is _____

a) S <– 2 b) S > – 2

c) S < – 3 d) S > – 3

12) The autocorrelation function is _____

a) Even b) Odd

c) Both d) None of these

13) X(n) = {1, 2, $\underset{\uparrow}{3}$, 4, 5, 6} has ROC

a) Entire z plane Expect z = 0 and z = ∞

b) Entire z plane Expect z = 0

c) Entire z plane Expect z = ∞

d) z = 0 only

14) Sampling frequency for $m(t) = 2 \cos 2000 \pi t + 3 \sin 6000 \pi t + 8 \cos 12000 \pi t$.

a) 2000 Hz b) 6000 Hz

c) 12000 Hz d) None

_____

SLR-EP – 99

Seat No.	

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) **Assume** suitable data **if required** and **state** the assumptions.*

SECTION – I

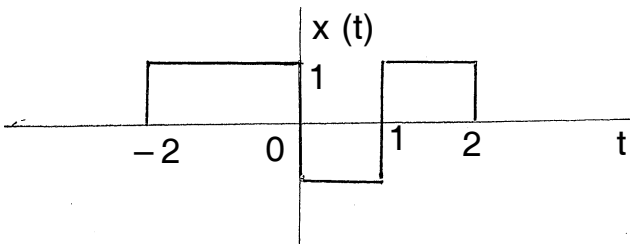
2. Solve **any four** of the following : **(4×4=16)**

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

$x[n] = \{2, 4, 2, 1, 3, -2\}$
$\uparrow$

a) x[–n+1] b) x[n/2] c) x[n+1]u[n] d) {x[n]+x[–n]}u[n–1]

b) Represent following continuous time signal in terms of unit step sequence u(t).



Sketch all intermediate signals.

c) 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.

$y(t) = 2x(t - 3)$

d) Draw the block diagram representation for causal LTI systems described by following difference equations

$y[n] = 1/3y[n - 1] + 1/2x[n]$

e) Give expression for Trignometric Fourier series and derive the expression for computing the coefficients a_0 and a_n of Trignometric Fourier series.

f) State following properties of Fourier transform
   i) Time shifting
   ii) Differentiation and integration
   iii) Time and frequency scaling
   iv) Convolution.

3. Solve **any two** of the following : **(2×6=12)**

a) Compute convolution integral of $x(t) = u(t + 1) - u(t - 1)$ and

$$h(t) = \begin{cases} t & 0 \le t \le 1 \\ 0 & \text{otherwise} \end{cases}$$

Sketch the output.

b) For the continuous time periodic signal

$$x(t) = 2 + \cos\left(\frac{2\pi}{3}t\right) + 4\sin\left(\frac{5\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of exponential Fourier series ak. Sketch the magnitude.

c) Given the Fourier transform of x(t) as $X(j\omega)$, express the Fourier transform of following signal in terms of $X(j\omega)$ using the suitable properties of Fourier transform. State the properties used.

$x_1(t) = x(1 - t) + x(t - 1)$.

SECTION – II

4. Solve **any four** of the following : **(4×4=16)**

a) Explain in brief how to reconstruct a signal from its samples using interpolation.

b) State the conditions for ROC of system function H(z) of an LTI system for stable system. Obtain impulse response of system if following system is stable.

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

c) What is autocorrelation ? Explain its properties.

d) Define cumulative distribution function and state its properties.

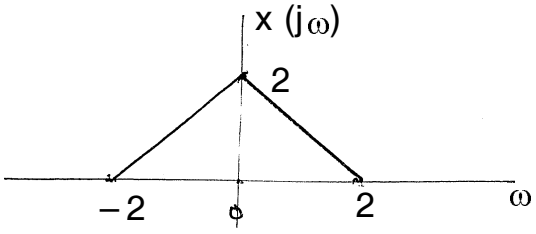
e) Consider the uniform distribution function as defined below

$$fx(x) = \begin{cases} A & 0 \le x \le 4 \\ 0 & \text{otherwise} \end{cases}$$

Obtain A. Also find the mean and variance of the random variable.

5. Solve **any two** of the following : **(2×6=12)**

a) Given $X(j\omega)$ as below draw $Xp(j\omega)$ for the following cases if $xp(t) = x(t)p(t)$, where p(t) is a periodic train of impulses with period T.



i) $T = \pi/3$ sec ii) $T = \pi/2$ sec iii) T = 1 sec

In which of the above cases x(t) can be reconstructed back without any error.

b) Define and sketch following distribution function

i) Uniform distribution

ii) Gaussian distribution.

Obtain the expression for mean and variance of uniform distribution.

c) A random variable has a probability distribution function given by

$Fx(x) = (1 - e^{-3x})\, u(x)$

Find :

i) The probability that $X > 0.4$

ii) The probability that $X \le 0.3$

iii) The probability that $0.1 < x \le 0.4$.

Set P

SLR-EP – 99

Seat No.	

Set Q

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) ***Assume*** *suitable data* ***if required*** *and* ***state*** *the assumptions.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) For the statically independent random variable the correlation coefficient ρ is
   a) 1 b) –1
   c) Zero d) Infinite

2) Which of the following is true for probability of any event A ?
   a) $0 \leq P(A) \leq 1$ b) $P(A) \geq 1$
   c) $P(A) \geq 0$ d) $-1 \leq P(A) \leq 1$

3) The probability of an event B under the condition the event A has already occurred is known as
   a) Probability b) Conditional probability
   c) Joint probability d) Both b) and c)

4) The ROC of $x(t) = e^{-3t}\, u(t) + e^{-2t}\, u(t)$ is _____
   a) S <– 2 b) S > – 2
   c) S < – 3 d) S > – 3

5) The autocorrelation function is _____
   a) Even b) Odd
   c) Both d) None of these

P.T.O.

6) X(n) = {1, 2, $\underset{\uparrow}{3}$, 4, 5, 6} has ROC

a) Entire z plane Expect z = 0 and z = ∞
b) Entire z plane Expect z = 0
c) Entire z plane Expect z = ∞
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7) Sampling frequency for m(t) = 2 cos 2000 π t + 3 sin 6000 π t + 8 cos 12000 π t.

a) 2000 Hz b) 6000 Hz
c) 12000 Hz d) None

8) The sync function can be defined as SINC(x) = _____

a) $\frac{\sin x}{x}$ b) $\frac{\sin \pi x}{x}$ c) $\frac{\sin \pi x}{\pi x}$ d) SINC$\left(\frac{\sin x}{x}\right)$

9) The impulse response of discrete time is h[n] = $(3)^n$ u[n – 3], the system is

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10) The Fourier transform of impulse response of differentiator is

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13) If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h2(t)*h1(t) will be

a) u(t) b) δ(t) c) δ(–t) d) None of these

14) A system is having impulse response h(t) will be BIBO stable if

a) $\int_{-\infty}^{\infty} |h(t)| > \infty$ b) $\int_{-\infty}^{\infty} |h(t)| < \infty$

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_____

SLR-EP – 99

Seat No.	

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
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SECTION – I

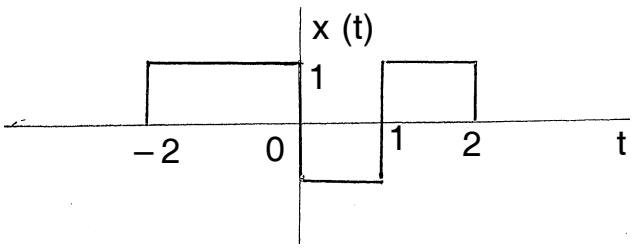
2. Solve **any four** of the following : **(4×4=16)**

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

$x[n] = \{2, 4, 2, 1, 3, -2\}$
$\uparrow$

a) x[–n+1] b) x[n/2] c) x[n+1]u[n] d) {x[n]+x[–n]}u[n–1]

b) Represent following continuous time signal in terms of unit step sequence u(t).



Sketch all intermediate signals.

c) 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.

$y(t) = 2x(t - 3)$

d) Draw the block diagram representation for causal LTI systems described by following difference equations

$y[n] = 1/3y[n - 1] + 1/2x[n]$

e) Give expression for Trignometric Fourier series and derive the expression for computing the coefficients a_0 and a_n of Trignometric Fourier series.

Set Q

f) State following properties of Fourier transform
   i) Time shifting
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3. Solve **any two** of the following : **(2×6=12)**

a) Compute convolution integral of $x(t) = u(t + 1) - u(t - 1)$ and

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Sketch the output.

b) For the continuous time periodic signal

$$x(t) = 2 + \cos\left(\frac{2\pi}{3}t\right) + 4\sin\left(\frac{5\pi}{3}t\right)$$

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c) Given the Fourier transform of x(t) as $X(j\omega)$, express the Fourier transform of following signal in terms of $X(j\omega)$ using the suitable properties of Fourier transform. State the properties used.

$x_1(t) = x(1 - t) + x(t - 1)$.

SECTION – II

4. Solve **any four** of the following : **(4×4=16)**

a) Explain in brief how to reconstruct a signal from its samples using interpolation.

b) State the conditions for ROC of system function H(z) of an LTI system for stable system. Obtain impulse response of system if following system is stable.

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

c) What is autocorrelation ? Explain its properties.

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Obtain A. Also find the mean and variance of the random variable.

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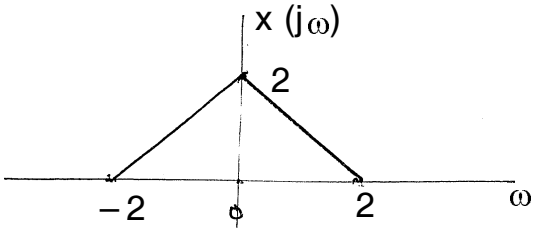

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Find :

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Set Q

SLR-EP – 99

Seat No.	

Set R

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
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4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The Fourier transform of $x(t) = \delta(t + 2)$ is

a) $e^{j2\omega}$ b) $e^{-j2\omega}$ c) 1 d) None of these

2) If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h2(t)*h1(t) will be

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P.T.O.

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SLR-EP – 99

Seat No.	

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

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SECTION – I

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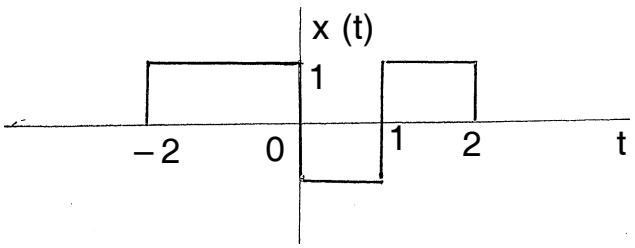

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c) Given the Fourier transform of x(t) as $X(j\omega)$, express the Fourier transform of following signal in terms of $X(j\omega)$ using the suitable properties of Fourier transform. State the properties used.

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SECTION – II

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c) What is autocorrelation ? Explain its properties.

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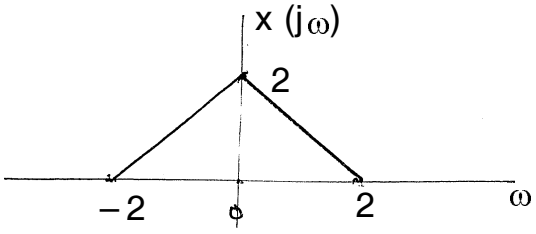

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Set R

SLR-EP – 99

Seat No.	

Set S

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

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1) The probability of an event B under the condition the event A has already occurred is known as
   a) Probability
   b) Conditional probability
   c) Joint probability
   d) Both b) and c)

2) The ROC of $x(t) = e^{-3t}\,u(t) + e^{-2t}\,u(t)$ is _____
   a) $S <- 2$
   b) $S > -2$
   c) $S < -3$
   d) $S > -3$

3) The autocorrelation function is _____
   a) Even
   b) Odd
   c) Both
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   a) Entire z plane Expect $z = 0$ and $z = \infty$
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P.T.O.

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   c) Unstable and casual d) Stable and non casual

8) The Fourier transform of impulse response of differentiator is
   a) $j\omega$ b) $2\pi\delta(\omega)$ c) ω d) None of these

9) The range of n for which the signal $u(n+2) - u(n-4)$ exists is
   a) – 2 to 4 b) – 4 to 2 c) – 2 to 3 d) –3 to 2

10) The Fourier transform of $x(t) = \delta(t+2)$ is
   a) $e^{j2\omega}$ b) $e^{-j2\omega}$ c) 1 d) None of these

11) If h1(t) is the impulse response of invertible system and h2(t) is the impulse response of its inverse system then their convolution h2(t)*h1(t) will be
   a) u(t) b) $\delta(t)$ c) $\delta(-t)$ d) None of these

12) A system is having impulse response h(t) will be BIBO stable if
   a) $\int_{-\infty}^{\infty} |h(t)| > \infty$ b) $\int_{-\infty}^{\infty} |h(t)| < \infty$
   c) $\int_{-\infty}^{\infty} |h(t)| = 0$ d) $\int_{-\infty}^{\infty} |h(t)| = 1$

13) For the statically independent random variable the correlation coefficient ρ is
   a) 1 b) –1
   c) Zero d) Infinite

14) Which of the following is true for probability of any event A ?
   a) $0 \le P(A) \le 1$ b) $P(A) \ge 1$
   c) $P(A) \ge 0$ d) $-1 \le P(A) \le 1$

_____

SLR-EP – 99

Seat No.	

S.E. (Electronics Engineering) (Part – II) Examination, 2016
SIGNALS AND SYSTEMS (CGPA)

Day and Date : Friday, 25-11-2016 Marks : 56
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) **Assume** suitable data **if required** and **state** the assumptions.*

SECTION – I

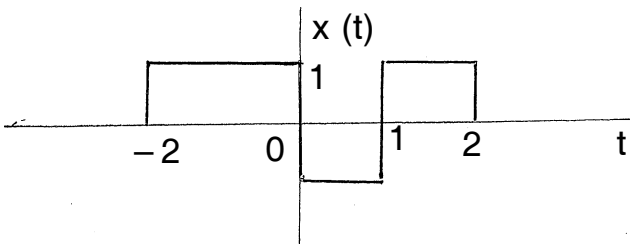
2. Solve **any four** of the following : **(4×4=16)**

a) A discrete time signal x[n] is given below. Sketch and label each of the following signals.

$x[n] = \{2, \underset{\uparrow}{4}, 2, 1, 3, -2\}$

a) x[–n+1] b) x[n/2] c) x[n+1]u[n] d) {x[n]+x[–n]}u[n–1]

b) Represent following continuous time signal in terms of unit step sequence u(t).



Sketch all intermediate signals.

c) 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.

$y(t) = 2x(t - 3)$

d) Draw the block diagram representation for causal LTI systems described by following difference equations

$y[n] = 1/3y[n - 1] + 1/2x[n]$

e) Give expression for Trignometric Fourier series and derive the expression for computing the coefficients a_0 and a_n of Trignometric Fourier series.

f) State following properties of Fourier transform
   i) Time shifting
   ii) Differentiation and integration
   iii) Time and frequency scaling
   iv) Convolution.

3. Solve **any two** of the following : **(2×6=12)**

a) Compute convolution integral of x(t) = u(t + 1) –u(t – 1) and

$$h(t) = \begin{cases} t & 0 \le t \le 1 \\ 0 & \text{otherwise} \end{cases}$$

Sketch the output.

b) For the continuous time periodic signal

$$x(t) = 2 + \cos\left(\frac{2\pi}{3}t\right) + 4\sin\left(\frac{5\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of exponential Fourier series ak. Sketch the magnitude.

c) Given the Fourier transform of x(t) as X(jω), express the Fourier transform of following signal in terms of X(jω) using the suitable properties of Fourier transform. State the properties used.

$x_1(t) = x(1 – t) + x(t – 1)$.

SECTION – II

4. Solve **any four** of the following : **(4×4=16)**

a) Explain in brief how to reconstruct a signal from its samples using interpolation.

b) State the conditions for ROC of system function H(z) of an LTI system for stable system. Obtain impulse response of system if following system is stable.

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

c) What is autocorrelation ? Explain its properties.

d) Define cumulative distribution function and state its properties.

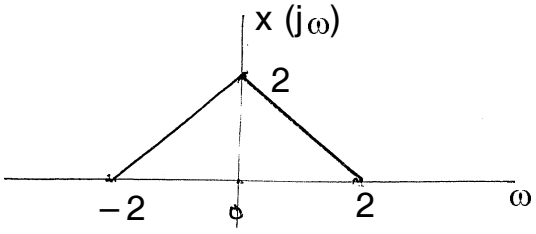
e) Consider the uniform distribution function as defined below

$$fx(x) = \begin{cases} A & 0 \le x \le 4 \\ 0 & \text{otherwise} \end{cases}$$

Obtain A. Also find the mean and variance of the random variable.

5. Solve **any two** of the following : **(2×6=12)**

a) Given $X(j\omega)$ as below draw $Xp(j\omega)$ for the following cases if $xp(t) = x(t)p(t)$, where p(t) is a periodic train of impulses with period T.



i) $T = \pi/3$ sec ii) $T = \pi/2$ sec iii) T = 1 sec

In which of the above cases x(t) can be reconstructed back without any error.

b) Define and sketch following distribution function

i) Uniform distribution

ii) Gaussian distribution.

Obtain the expression for mean and variance of uniform distribution.

c) A random variable has a probability distribution function given by

$Fx(x) = (1 - e^{-3x})\, u(x)$

Find :

i) The probability that $X > 0.4$

ii) The probability that $X \le 0.3$

iii) The probability that $0.1 < x \le 0.4$.

SLR-EP – 100

Seat No.	

Set **P**

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

N.B. : *1) Figures to the **right** indicate **full** marks.*
*2) Assume data, **if necessary**.*
*3) **All** questions are **compulsory**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **14**

1) Settling time for 2% tolerance is _____

a) $\frac{4}{\delta\omega_n}$ b) $\frac{3}{\delta\omega_n}$ c) $\frac{2}{\delta\omega_n}$ d) $\frac{1}{\delta\omega_n}$

2) Damped frequency of IInd order system is given by

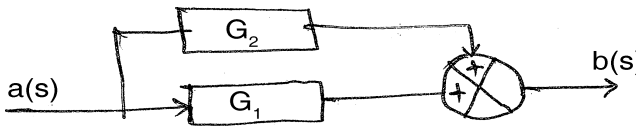
a) $\omega_n(1-\delta^2)$ b) $\omega_n\sqrt{1-\delta^2}$ c) $\sqrt{\omega_n}(1-\delta^2)$ d) $\sqrt{\omega_n(1-\delta^2)}$

3) Example of digital position control system is _____

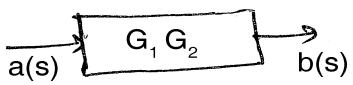
a) Stepper motor b) D.C. series motor c) D.C. Shunt motor d) 1ϕ AC motor

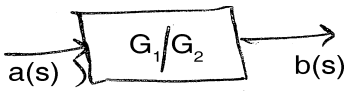
4) Higher accuracy is provided by _____ system.

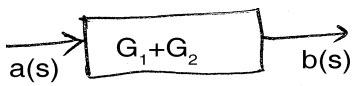
a) open loop b) closed loop c) both a) and b) d) can't say

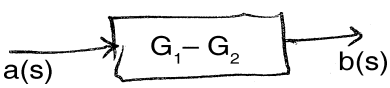
5) 

can be replaced by _____

a) 

b) 

c) 

d) 

6) Unit step is applied to Ist order system, then the maximum value of response at $t \to \infty$ is _____

a) Zero b) Unity c) Two d) Infinity

P.T.O.

7) $f(t) = A \cdot \delta(t)$ in this equation 'A' stands for _____
   a) function in time domain b) function strength
   c) deviation in time domain d) all of the above

8) For a system having transfer function $G(s) = \frac{K(s+1)}{(s+3)}$ root locus starts from point.
   a) 3 b) –3 c) 1 d) –1

9) Routh-Hurwitz criterion for determining stability of control system is _____ method.
   a) algebraic b) graphical c) semi-graphical d) all of the above

10) Lag compensator reduces _____
   a) Band width b) Rise time c) Settling time d) All of the above

11) In frequency domain analysis the input is _____
   a) Sine wave with variable frequency b) Step signal
   c) Ramp signal d) Parabolic signal

12) In root locus centroid is given by _____
   a) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P - Z}$
   b) $\frac{\Sigma \text{ real parts of zeros} - \Sigma \text{ real parts of poles}}{P - Z}$
   c) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P + Z}$
   d) $\frac{\Sigma \text{ real parts of poles} - \Sigma \text{ real parts of zeros}}{P - Z}$

13) In polar plot, if $\omega_{gc} = \omega_{pc}$ the system is _____
   a) Stable b) Unstable c) Marginally stable d) None of these

14) The angle with real axis by asymptote in root locus is given by _____
   a) $\propto = \frac{(2q-1)\,180}{P-Z}$ where q = 0, 1, 2, ..., (P – Z – 1)
   b) $\propto = \frac{(2q+1)\,180}{P-Z}$ where q = 1, 2, ..., (P – Z – 1)
   c) $\propto = \frac{(2q+1)\,180}{P+Z}$ where q = 0, 1, 2, ..., (P – Z – 1)
   d) $\propto = \frac{(2q+1)\,180}{Z-P}$ where q = 1, 2, ..., (P – Z)

_____

SLR-EP – 100

Seat No.	

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

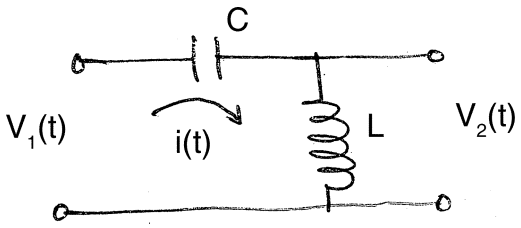
N.B. *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume data, **if necessary**.*
*3) **All** questions are **compulsory**.*

SECTION – I

2. Solve **any four** (**4** marks **each**) : **16**

a) Explain advantages of feed back control system and explain pole zero and time constant form.

b) Find the transfer function of given circuit



c) Derive relation for rise time of II order system.

d) Write a short note on stepper motor.

e) Determine position, velocity and acceleration constant of unity feedback control system with open loop transfer function.

$$G(s) = \frac{50}{[1+0.15s][1+2s]}$$

3. Solve **any two** (**6** marks **each**) : **12**

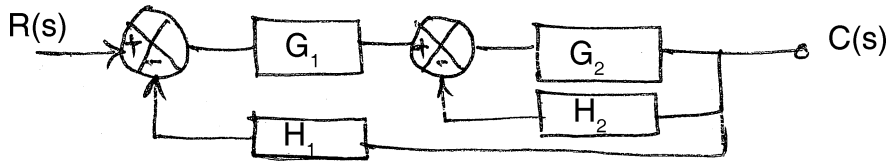
a) Explain use of potentiometer as an error detector.

b) For unity f/b control system, open loop transfer function is $G(s) = \frac{25}{s(s+6)}$ and H(s) = 1.

Calculate :

i) damping factor
ii) damping frequency
iii) rise time
iv) peak time
v) settling time
vi) peak over shoot.

c) Find transfer function :



SECTION – II

4. Solve **any four** : **(4×4=16)**

a) Using Herwitz's criterion determine satiability of the following system

$$T(s) = \frac{5(s+1)}{s^3 + 5s^2 + 5s - 2}$$

b) State advantages and limitations of frequency domain analysis.

c) What is polar plot ? Draw polar plot for type zero system.

d) Determine angle of asymptote and centroid for transfer function given bellow

$$G(s)\,H(s) = \frac{K}{s(s+5)\,(s+10)}.$$

e) Explain with example special case number one of Routh's criterion.

5. Solve **any two** : **(2×6=12)**

a) What is bode plot ? Explain gain cross over frequency, phase cross over frequency, gain margin and phase margin.

b) Plot the root locus pattern of a system whose forward path transfer function is

$$G(s) = \frac{K}{s(s+3)\,(s+4)}$$

c) Using Routh criterion determine satiability of the following characteristic equation $F(s) = s^5 + 2s^4 + 3s^3 + 6s^2 + 10\,s + 15 = 0$.

SLR-EP – 100

Seat No.	

Set **Q**

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

N.B. : *1) Figures to the **right** indicate **full** marks.*
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*3) **All** questions are **compulsory**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **14**

1) For a system having transfer function $G(s) = \frac{K(s+1)}{(s+3)}$ root locus starts from point.
   a) 3 b) –3 c) 1 d) –1

2) Routh-Hurwitz criterion for determining stability of control system is _____ method.
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8) Settling time for 2% tolerance is _____
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11) Higher accuracy is provided by _____ system.
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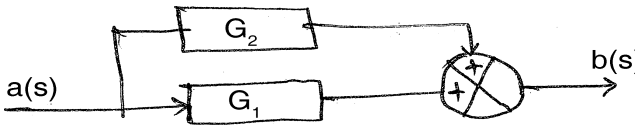
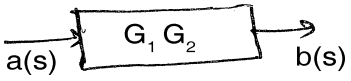
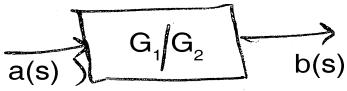
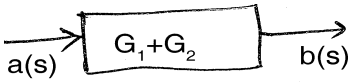
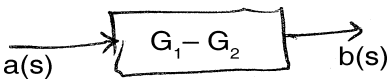
12) 

can be replaced by _____

   a) 

   b) 

   c) 

   d) 

13) Unit step is applied to Ist order system, then the maximum value of response at $t \to \infty$ is _____
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14) $f(t) = A \cdot \delta(t)$ in this equation 'A' stands for _____
   a) function in time domain b) function strength
   c) deviation in time domain d) all of the above

_____

Set Q

SLR-EP – 100

Seat No.	

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

N.B. *: 1) Figures to the **right** indicate **full** marks.*
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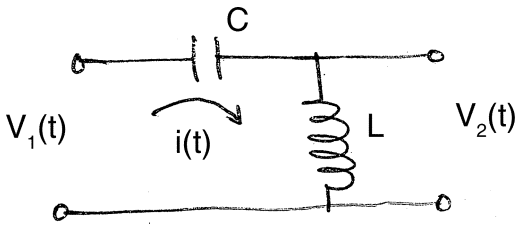
SECTION – I

2. Solve **any four** (**4** marks **each**) : **16**

a) Explain advantages of feed back control system and explain pole zero and time constant form.

b) Find the transfer function of given circuit



c) Derive relation for rise time of II order system.

d) Write a short note on stepper motor.

e) Determine position, velocity and acceleration constant of unity feedback control system with open loop transfer function.

$$G(s) = \frac{50}{[1+0.15s][1+2s]}$$

3. Solve **any two** (**6** marks **each**) : **12**

a) Explain use of potentiometer as an error detector.

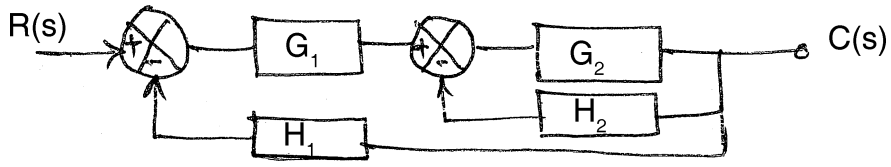
b) For unity f/b control system, open loop transfer function is $G(s) = \frac{25}{s(s+6)}$ and H(s) = 1.

Calculate :

i) damping factor
ii) damping frequency
iii) rise time
iv) peak time
v) settling time
vi) peak over shoot.

Set Q

c) Find transfer function :



SECTION – II

4. Solve **any four** : **(4×4=16)**

a) Using Herwitz's criterion determine satiability of the following system

$$T(s) = \frac{5(s+1)}{s^3 + 5s^2 + 5s - 2}$$

b) State advantages and limitations of frequency domain analysis.

c) What is polar plot ? Draw polar plot for type zero system.

d) Determine angle of asymptote and centroid for transfer function given bellow

$$G(s)\,H(s) = \frac{K}{s(s+5)\,(s+10)}.$$

e) Explain with example special case number one of Routh's criterion.

5. Solve **any two** : **(2×6=12)**

a) What is bode plot ? Explain gain cross over frequency, phase cross over frequency, gain margin and phase margin.

b) Plot the root locus pattern of a system whose forward path transfer function is

$$G(s) = \frac{K}{s(s+3)\,(s+4)}$$

c) Using Routh criterion determine satiability of the following characteristic equation $F(s) = s^5 + 2s^4 + 3s^3 + 6s^2 + 10\,s + 15 = 0$.

SLR-EP – 100

Seat No.	

Set **R**

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

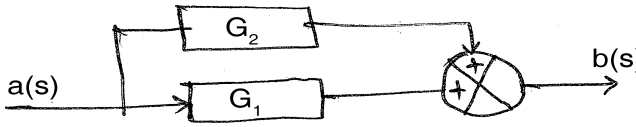
Day and Date : Monday, 28-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

N.B. : 1) *Figures to the **right** indicate **full** marks.*
2) *Assume data, **if necessary**.*
3) ***All** questions are **compulsory**.*
4) *Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

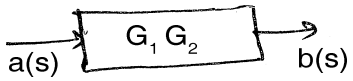
MCQ/Objective Type Questions

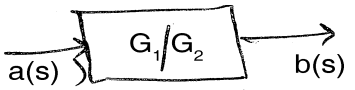
Duration : 30 Minutes Marks : 14

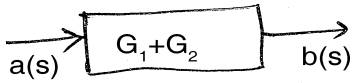
1. Choose the correct answer : **14**

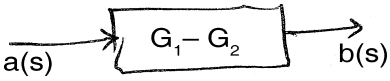
1) 

can be replaced by _____

a) 

b) 

c) 

d) 

2) Unit step is applied to Ist order system, then the maximum value of response at $t \to \infty$ is _____
a) Zero b) Unity c) Two d) Infinity

3) $f(t) = A \cdot \delta(t)$ in this equation 'A' stands for _____
a) function in time domain b) function strength
c) deviation in time domain d) all of the above

4) For a system having transfer function $G(s) = \frac{K(s+1)}{(s+3)}$ root locus starts from point.
a) 3 b) –3 c) 1 d) –1

5) Routh-Hurwitz criterion for determining stability of control system is _____ method.
a) algebraic b) graphical c) semi-graphical d) all of the above

6) Lag compensator reduces _____
a) Band width b) Rise time c) Settling time d) All of the above

P.T.O.

7) In frequency domain analysis the input is _____
   a) Sine wave with variable frequency b) Step signal
   c) Ramp signal d) Parabolic signal

8) In root locus centroid is given by _____

   a) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P - Z}$

   b) $\frac{\Sigma \text{ real parts of zeros} - \Sigma \text{ real parts of poles}}{P - Z}$

   c) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P + Z}$

   d) $\frac{\Sigma \text{ real parts of poles} - \Sigma \text{ real parts of zeros}}{P - Z}$

9) In polar plot, if $\omega_{gc} = \omega_{pc}$ the system is _____
   a) Stable b) Unstable c) Marginally stable d) None of these

10) The angle with real axis by asymptote in root locus is given by _____

   a) $\propto = \frac{(2q-1)\,180}{P-Z}$ where q = 0, 1, 2, ..., (P – Z – 1)

   b) $\propto = \frac{(2q+1)\,180}{P-Z}$ where q = 1, 2, ..., (P – Z – 1)

   c) $\propto = \frac{(2q+1)\,180}{P+Z}$ where q = 0, 1, 2, ..., (P – Z – 1)

   d) $\propto = \frac{(2q+1)\,180}{Z-P}$ where q = 1, 2, ..., (P – Z)

11) Settling time for 2% tolerance is _____
   a) $\frac{4}{\delta\omega_n}$ b) $\frac{3}{\delta\omega_n}$ c) $\frac{2}{\delta\omega_n}$ d) $\frac{1}{\delta\omega_n}$

12) Damped frequency of IInd order system is given by
   a) $\omega_n(1-\delta^2)$ b) $\omega_n\sqrt{1-\delta^2}$ c) $\sqrt{\omega_n}(1-\delta^2)$ d) $\sqrt{\omega_n(1-\delta^2)}$

13) Example of digital position control system is _____
   a) Stepper motor b) D.C. series motor c) D.C. Shunt motor d) 1 ϕ AC motor

14) Higher accuracy is provided by _____ system.
   a) open loop b) closed loop c) both a) and b) d) can't say

_____

SLR-EP – 100

Seat No.	

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

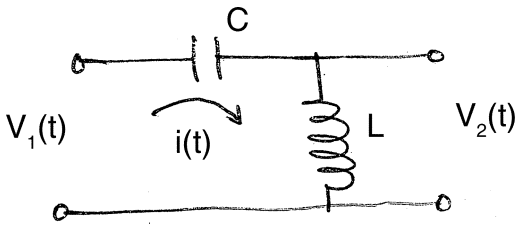
N.B. *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume data, **if necessary**.*
*3) **All** questions are **compulsory**.*

SECTION – I

2. Solve **any four** (**4** marks **each**) : **16**

a) Explain advantages of feed back control system and explain pole zero and time constant form.

b) Find the transfer function of given circuit



c) Derive relation for rise time of II order system.

d) Write a short note on stepper motor.

e) Determine position, velocity and acceleration constant of unity feedback control system with open loop transfer function.

$$G(s) = \frac{50}{[1+0.15s][1+2s]}$$

3. Solve **any two** (**6** marks **each**) : **12**

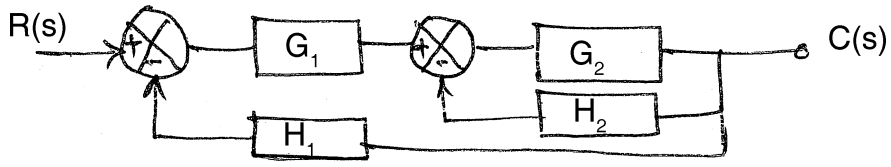
a) Explain use of potentiometer as an error detector.

b) For unity f/b control system, open loop transfer function is $G(s) = \frac{25}{s(s+6)}$ and H(s) = 1.

Calculate :

i) damping factor
ii) damping frequency
iii) rise time
iv) peak time
v) settling time
vi) peak over shoot.

c) Find transfer function :



SECTION – II

4. Solve **any four** : **(4×4=16)**

a) Using Herwitz's criterion determine satiability of the following system

$$T(s) = \frac{5(s+1)}{s^3 + 5s^2 + 5s - 2}$$

b) State advantages and limitations of frequency domain analysis.

c) What is polar plot ? Draw polar plot for type zero system.

d) Determine angle of asymptote and centroid for transfer function given bellow

$$G(s)\,H(s) = \frac{K}{s(s+5)\,(s+10)}.$$

e) Explain with example special case number one of Routh's criterion.

5. Solve **any two** : **(2×6=12)**

a) What is bode plot ? Explain gain cross over frequency, phase cross over frequency, gain margin and phase margin.

b) Plot the root locus pattern of a system whose forward path transfer function is

$$G(s) = \frac{K}{s(s+3)\,(s+4)}$$

c) Using Routh criterion determine satiability of the following characteristic equation $F(s) = s^5 + 2s^4 + 3s^3 + 6s^2 + 10\,s + 15 = 0$.

SLR-EP – 100

Seat No.	

Set **S**

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

N.B. *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume data, **if necessary**.*
*3) **All** questions are **compulsory**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **14**

1) Lag compensator reduces _____
   a) Band width b) Rise time
   c) Settling time d) All of the above

2) In frequency domain analysis the input is _____
   a) Sine wave with variable frequency
   b) Step signal
   c) Ramp signal
   d) Parabolic signal

3) In root locus centroid is given by _____
   a) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P - Z}$
   b) $\frac{\Sigma \text{ real parts of zeros} - \Sigma \text{ real parts of poles}}{P - Z}$
   c) $\frac{\Sigma \text{ real parts of poles} + \Sigma \text{ real parts of zeros}}{P + Z}$
   d) $\frac{\Sigma \text{ real parts of poles} - \Sigma \text{ real parts of zeros}}{P - Z}$

4) In polar plot, if $\omega_{gc} = \omega_{pc}$ the system is _____
   a) Stable b) Unstable
   c) Marginally stable d) None of these

5) The angle with real axis by asymptote in root locus is given by _____

a) $\propto = \frac{(2q-1)\,180}{P-Z}$ where q = 0, 1, 2, ..., (P – Z – 1)

b) $\propto = \frac{(2q+1)\,180}{P-Z}$ where q = 1, 2, ..., (P – Z – 1)

c) $\propto = \frac{(2q+1)\,180}{P+Z}$ where q = 0, 1, 2, ..., (P – Z – 1)

d) $\propto = \frac{(2q+1)\,180}{Z-P}$ where q = 1, 2, ..., (P – Z)

6) Settling time for 2% tolerance is _____

a) $\frac{4}{\delta\omega_n}$ b) $\frac{3}{\delta\omega_n}$ c) $\frac{2}{\delta\omega_n}$ d) $\frac{1}{\delta\omega_n}$

7) Damped frequency of IInd order system is given by

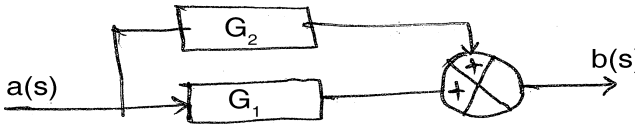
a) $\omega_n(1-\delta^2)$ b) $\omega_n\sqrt{1-\delta^2}$ c) $\sqrt{\omega_n}(1-\delta^2)$ d) $\sqrt{\omega_n(1-\delta^2)}$

8) Example of digital position control system is _____

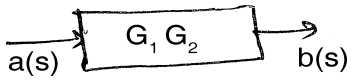
a) Stepper motor b) D.C. series motor c) D.C. Shunt motor d) 1ϕ AC motor

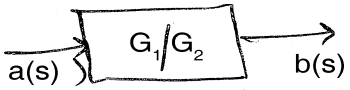
9) Higher accuracy is provided by _____ system.

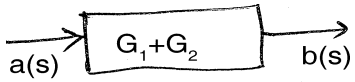
a) open loop b) closed loop c) both a) and b) d) can't say

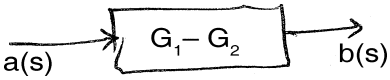
10) 

can be replaced by _____

a) 

b) 

c) 

d) 

11) Unit step is applied to Ist order system, then the maximum value of response at $t \to \infty$ is ___

a) Zero b) Unity c) Two d) Infinity

12) $f(t) = A \cdot \delta(t)$ in this equation 'A' stands for _____

a) function in time domain b) function strength
c) deviation in time domain d) all of the above

13) For a system having transfer function $G(s) = \frac{K(s+1)}{(s+3)}$ root locus starts from point.

a) 3 b) –3 c) 1 d) –1

14) Routh-Hurwitz criterion for determining stability of control system is _____ method.

a) algebraic b) graphical c) semi-graphical d) all of the above

_____

SLR-EP – 100

Seat No.	

T.E. (Electronics) (Part – I) (New) (CGPA) Examination, 2016
CONTROL SYSTEMS

Day and Date : Monday, 28-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

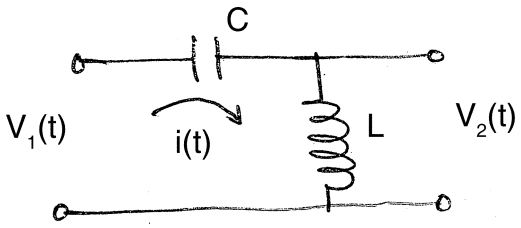
N.B. *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume data, **if necessary**.*
*3) **All** questions are **compulsory**.*

SECTION – I

2. Solve **any four** (**4** marks **each**) : **16**

a) Explain advantages of feed back control system and explain pole zero and time constant form.

b) Find the transfer function of given circuit



c) Derive relation for rise time of II order system.

d) Write a short note on stepper motor.

e) Determine position, velocity and acceleration constant of unity feedback control system with open loop transfer function.

$$G(s) = \frac{50}{[1+0.15s][1+2s]}$$

3. Solve **any two** (**6** marks **each**) : **12**

a) Explain use of potentiometer as an error detector.

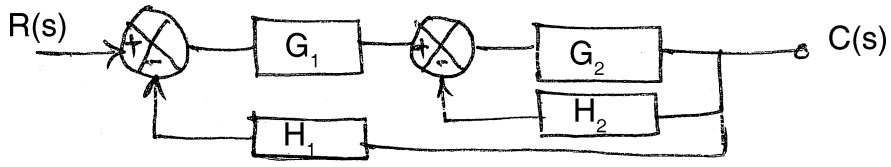
b) For unity f/b control system, open loop transfer function is $G(s) = \frac{25}{s(s+6)}$ and H(s) = 1.

Calculate :

i) damping factor
ii) damping frequency
iii) rise time
iv) peak time
v) settling time
vi) peak over shoot.

Set S

c) Find transfer function :



SECTION – II

4. Solve **any four** : **(4×4=16)**

a) Using Herwitz's criterion determine satiability of the following system

$$T(s) = \frac{5(s+1)}{s^3 + 5s^2 + 5s - 2}$$

b) State advantages and limitations of frequency domain analysis.

c) What is polar plot ? Draw polar plot for type zero system.

d) Determine angle of asymptote and centroid for transfer function given bellow

$$G(s)\,H(s) = \frac{K}{s(s+5)\,(s+10)}.$$

e) Explain with example special case number one of Routh's criterion.

5. Solve **any two** : **(2×6=12)**

a) What is bode plot ? Explain gain cross over frequency, phase cross over frequency, gain margin and phase margin.

b) Plot the root locus pattern of a system whose forward path transfer function is

$$G(s) = \frac{K}{s(s+3)\,(s+4)}$$

c) Using Routh criterion determine satiability of the following characteristic equation $F(s) = s^5 + 2s^4 + 3s^3 + 6s^2 + 10\,s + 15 = 0$.

SLR-EP – 101

Seat No.	

Set **P**

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Draw ***neat*** *diagrams where* ***required****.*
5) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
6) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The value of the twiddle factor W_4^5 is
   a) j b) 1
   c) – 0.707 + j 0.707 d) – j

2) The DFT of the signal x(n) = {0, 3, 0, – 3}
   a) {0, –2, 0, 2} b) {0, – 6 j, 0, 6 j}
   c) {2, – 6 j, 0, 6 j} d) {2, – 6 j, – 2, 6 j}

3) The only signal whose ROC is entire z plane is
   a) $\delta(n)$ b) u(n) c) r(n) d) a^n

4) The following realization minimizes the delay elements
   a) Direct form – I b) Direct form – II
   c) Cascade form d) Parallel form

5) The first six points of the 8-point DFT of a real valued sequence are 5, 1, – j3, 0, 3, – 4j and 3 + j4. The last two points of the DFT are respectively
   a) 0, 1, – j3 b) 0, 1 + j3 c) 1 + j3, 5 d) 1 – j3, 5

6) Decimation in time FFT decimates
   a) DFT coefficients b) Input sequence
   c) Both sequence and DFT d) None

P.T.O.

7) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is
   a) N^2 b) $N\log_2 N$
   c) $(N/2)\log_2 N$ d) None of the above

8) The P-DSPs follow the _____ architecture
   a) Von Neumann b) Harward
   c) Modified Harward d) VLIW

9) Bit reversed addressing is used for
   a) FIR filter implementation b) FFT computation
   c) Any computation d) Transform coefficient computation

10) To convert the analog LPF with cutoff frequency Ωc to LPF with cutoff frequency Ωc^* we need to transform
   a) $s \rightarrow \frac{\Omega c \Omega c *}{s}$ b) $s \rightarrow \frac{\Omega c^*}{\Omega c} s$
   c) $s \rightarrow s\sqrt{\Omega c \, \Omega c^*}$ d) $s \rightarrow \frac{\Omega c}{\Omega c^*} s$

11) The poles of the Butterworth LPF with cutoff frequency Ωc
   a) Lie on the unit circle in s plane b) Lie on the RHS of s plane
   c) Lie on a circle of radius Ωc d) None of these

12) The FIR filter of order M gives linear phase response if
   a) h (n) = h (M – 1 – n) b) h (n) < ∞
   c) h (n) = h (– n) d) None of these

13) Which of the following is true for FIR filters ?
   a) They can have linear phase b) Are always stable
   c) They are all zero filters d) All above a, b and c

14) Robot vision is the _____ application of DSP.
   a) General b) Image
   c) Audio d) Biomedical

_____

SLR-EP – 101

Seat No.	

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Draw ***neat*** *diagrams where required.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Prove that X(k) is real and even when x(n) is real and even where X(k) is DFT of an N-point sequence x(n).

b) Find 4 point DFT of DT signal x[n] = {1, 0, 0, 1}.

c) The linear phase FIR filter transfer function is $H[z] = 1 + \frac{z^{-1}}{2} + \frac{z^{-2}}{3} + \frac{z^{-3}}{2} + z^{-4}$.

Draw the structure for linear phase FIR filter.

d) Consider the signal x(n) = {1 2 4 3 6}, obtain following sequences

i) $x((-n))_5$ ii) $x((n+1))_5$ iii) $x((n-2))_5$

e) Compare overlap save and overlap add method.

3. Attempt **any two** : **(2×6=12)**

a) Explain basic butterfly structure of DIF FFT algorithm. Given x(n) = n + 1 and N = 4 find X(k) using DIF FFT algorithm.

b) Determine the output response y(n) if h(n) = {1, 1, 1}; x(n) = {1, 2, 3, 1}. By using

i) Linear convolution

ii) Circular convolution

iii) 6 point circular convolution

c) Obtain the cascade realization of system function

$H(z) = (1 + 2z^{-1} - z^{-2})(1 + z^{-1} - z^{-2})$

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Write the analog transfer function for butterworth low pass filter of order 2 and cutoff frequency $\Omega c = 1$.

   Using frequency transformations convert above filter to
   i) Low pass filter with cutoff frequency $\Omega c' = 0.75$
   ii) High pass filter with cutoff frequency $\Omega c' = 1.52$

   b) Describe the applications of DSP in image processing.

   c) Draw and explain the architecture of TMS 320C54 DSP.

   d) Give the transfer function of Butterworth LPF of order N. Explain in brief how to compute order and cutoff frequency of the filter from the desired specifications of filter.

   e) Draw and explain the barrel shifter block of DSP chip.

   f) Explain in brief windowing. Give mathematical expression for different windows. Compare different window characteristics based on transition width and stop band attenuation.

5. Attempt **any two** : **(2×6=12)**

   a) Explain the Bilinear transformation for digital filters in detail.

   b) Design a digital Butterworth filter to meet the following constraints.

$$0.85 \le \left|H\left(e^{j\omega}\right)\right| \le 1 \quad 0 \le \omega \le 0.2\pi$$

$$\left|H\left(e^{j\omega}\right)\right| \le 0.2 \qquad 0.5\pi \le \omega \le \pi$$

   Using Bilinear transformation. Use T = 1 sec.

   c) Explain finite word length effect in designing FIR filters.

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SLR-EP – 101

Seat No.	

Set **Q**

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Draw ***neat*** *diagrams where* ***required****.*
5) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
6) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The P-DSPs follow the _____ architecture
   a) Von Neumann b) Harward
   c) Modified Harward d) VLIW

2) Bit reversed addressing is used for
   a) FIR filter implementation b) FFT computation
   c) Any computation d) Transform coefficient computation

3) To convert the analog LPF with cutoff frequency Ωc to LPF with cutoff frequency Ωc^* we need to transform
   a) $s \rightarrow \frac{\Omega c \Omega c *}{s}$ b) $s \rightarrow \frac{\Omega c^*}{\Omega c} s$
   c) $s \rightarrow s\sqrt{\Omega c \, \Omega c^*}$ d) $s \rightarrow \frac{\Omega c}{\Omega c^*} s$

4) The poles of the Butterworth LPF with cutoff frequency Ωc
   a) Lie on the unit circle in s plane b) Lie on the RHS of s plane
   c) Lie on a circle of radius Ωc d) None of these

P.T.O.

5) The FIR filter of order M gives linear phase response if
   a) h (n) = h (M – 1 – n) b) h (n) < ∞
   c) h (n) = h (– n) d) None of these

6) Which of the following is true for FIR filters ?
   a) They can have linear phase b) Are always stable
   c) They are all zero filters d) All above a, b and c

7) Robot vision is the _____ application of DSP.
   a) General b) Image
   c) Audio d) Biomedical

8) The value of the twiddle factor W_4^5 is
   a) j b) 1
   c) – 0.707 + j 0.707 d) – j

9) The DFT of the signal x(n) = {0, 3, 0, – 3}
   a) {0, –2, 0, 2} b) {0, – 6 j, 0, 6 j}
   c) {2, – 6 j, 0, 6 j} d) {2, – 6 j, – 2, 6 j}

10) The only signal whose ROC is entire z plane is
   a) $\delta(n)$ b) u(n) c) r(n) d) a^n

11) The following realization minimizes the delay elements
   a) Direct form – I b) Direct form – II
   c) Cascade form d) Parallel form

12) The first six points of the 8-point DFT of a real valued sequence are 5, 1, – j3, 0, 3, – 4j and 3 + j4. The last two points of the DFT are respectively
   a) 0, 1, – j3 b) 0, 1 + j3 c) 1 + j3, 5 d) 1 – j3, 5

13) Decimation in time FFT decimates
   a) DFT coefficients b) Input sequence
   c) Both sequence and DFT d) None

14) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is
   a) N^2 b) $N\log_2 N$
   c) $(N/2)\log_2 N$ d) None of the above

_____

SLR-EP – 101

Seat No.	

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Draw ***neat*** *diagrams where required.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Prove that X(k) is real and even when x(n) is real and even where X(k) is DFT of an N-point sequence x(n).

b) Find 4 point DFT of DT signal x[n] = {1, 0, 0, 1}.

c) The linear phase FIR filter transfer function is $H[z] = 1 + \frac{z^{-1}}{2} + \frac{z^{-2}}{3} + \frac{z^{-3}}{2} + z^{-4}$.

Draw the structure for linear phase FIR filter.

d) Consider the signal x(n) = {1 2 4 3 6}, obtain following sequences

i) $x((-n))_5$ ii) $x((n+1))_5$ iii) $x((n-2))_5$

e) Compare overlap save and overlap add method.

3. Attempt **any two** : **(2×6=12)**

a) Explain basic butterfly structure of DIF FFT algorithm. Given x(n) = n + 1 and N = 4 find X(k) using DIF FFT algorithm.

b) Determine the output response y(n) if h(n) = {1, 1, 1}; x(n) = {1, 2, 3, 1}. By using

i) Linear convolution

ii) Circular convolution

iii) 6 point circular convolution

c) Obtain the cascade realization of system function

$H(z) = (1 + 2z^{-1} - z^{-2})(1 + z^{-1} - z^{-2})$

Set Q

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Write the analog transfer function for butterworth low pass filter of order 2 and cutoff frequency $\Omega c = 1$.

   Using frequency transformations convert above filter to
   i) Low pass filter with cutoff frequency $\Omega c' = 0.75$
   ii) High pass filter with cutoff frequency $\Omega c' = 1.52$

   b) Describe the applications of DSP in image processing.

   c) Draw and explain the architecture of TMS 320C54 DSP.

   d) Give the transfer function of Butterworth LPF of order N. Explain in brief how to compute order and cutoff frequency of the filter from the desired specifications of filter.

   e) Draw and explain the barrel shifter block of DSP chip.

   f) Explain in brief windowing. Give mathematical expression for different windows. Compare different window characteristics based on transition width and stop band attenuation.

5. Attempt **any two** : **(2×6=12)**

   a) Explain the Bilinear transformation for digital filters in detail.

   b) Design a digital Butterworth filter to meet the following constraints.

$$0.85 \le \left|H\left(e^{j\omega}\right)\right| \le 1 \quad 0 \le \omega \le 0.2\pi$$

$$\left|H\left(e^{j\omega}\right)\right| \le 0.2 \qquad 0.5\pi \le \omega \le \pi$$

   Using Bilinear transformation. Use T = 1 sec.

   c) Explain finite word length effect in designing FIR filters.

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SLR-EP – 101

Seat No.	

Set **R**

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Assume suitable data **if necessary**.*
*4) Draw **neat** diagrams where **required**.*
*5) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*6) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The first six points of the 8-point DFT of a real valued sequence are 5, 1, – j3, 0, 3, – 4j and 3 + j4. The last two points of the DFT are respectively
   a) 0, 1, – j3 b) 0, 1 + j3
   c) 1 + j3, 5 d) 1 – j3, 5

2) Decimation in time FFT decimates
   a) DFT coefficients b) Input sequence
   c) Both sequence and DFT d) None

3) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is
   a) N^2 b) $N\log_2 N$
   c) $(N/2)\log_2 N$ d) None of the above

4) The P-DSPs follow the _____ architecture
   a) Von Neumann b) Harward
   c) Modified Harward d) VLIW

5) Bit reversed addressing is used for
   a) FIR filter implementation b) FFT computation
   c) Any computation d) Transform coefficient computation

P.T.O.

6) To convert the analog LPF with cutoff frequency Ωc to LPF with cutoff frequency Ωc^* we need to transform

a) $s \rightarrow \frac{\Omega c \Omega c *}{s}$ b) $s \rightarrow \frac{\Omega c^*}{\Omega c} s$

c) $s \rightarrow s\sqrt{\Omega c \, \Omega c^*}$ d) $s \rightarrow \frac{\Omega c}{\Omega c^*} s$

7) The poles of the Butterworth LPF with cutoff frequency Ωc

a) Lie on the unit circle in s plane b) Lie on the RHS of s plane

c) Lie on a circle of radius Ωc d) None of these

8) The FIR filter of order M gives linear phase response if

a) h (n) = h (M – 1 – n) b) h (n) < ∞

c) h (n) = h (– n) d) None of these

9) Which of the following is true for FIR filters ?

a) They can have linear phase b) Are always stable

c) They are all zero filters d) All above a, b and c

10) Robot vision is the _____ application of DSP.

a) General b) Image

c) Audio d) Biomedical

11) The value of the twiddle factor W_4^5 is

a) j b) 1

c) – 0.707 + j 0.707 d) – j

12) The DFT of the signal x(n) = {0, 3, 0, – 3}

a) {0, –2, 0, 2} b) {0, – 6 j, 0, 6 j}

c) {2, – 6 j, 0, 6 j} d) {2, – 6 j, – 2, 6 j}

13) The only signal whose ROC is entire z plane is

a) $\delta(n)$ b) u(n) c) r(n) d) a^n

14) The following realization minimizes the delay elements

a) Direct form – I b) Direct form – II

c) Cascade form d) Parallel form

_____

SLR-EP – 101

Seat No.	

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Draw ***neat*** *diagrams where required.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Prove that X(k) is real and even when x(n) is real and even where X(k) is DFT of an N-point sequence x(n).

b) Find 4 point DFT of DT signal x[n] = {1, 0, 0, 1}.

c) The linear phase FIR filter transfer function is $H[z] = 1 + \frac{z^{-1}}{2} + \frac{z^{-2}}{3} + \frac{z^{-3}}{2} + z^{-4}$.

Draw the structure for linear phase FIR filter.

d) Consider the signal x(n) = {1 2 4 3 6}, obtain following sequences

i) $x((-n))_5$ ii) $x((n+1))_5$ iii) $x((n-2))_5$

e) Compare overlap save and overlap add method.

3. Attempt **any two** : **(2×6=12)**

a) Explain basic butterfly structure of DIF FFT algorithm. Given x(n) = n + 1 and N = 4 find X(k) using DIF FFT algorithm.

b) Determine the output response y(n) if h(n) = {1, 1, 1}; x(n) = {1, 2, 3, 1}. By using

i) Linear convolution

ii) Circular convolution

iii) 6 point circular convolution

c) Obtain the cascade realization of system function

$H(z) = (1 + 2z^{-1} - z^{-2})(1 + z^{-1} - z^{-2})$

Set R

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Write the analog transfer function for butterworth low pass filter of order 2 and cutoff frequency $\Omega c = 1$.

   Using frequency transformations convert above filter to
   i) Low pass filter with cutoff frequency $\Omega c' = 0.75$
   ii) High pass filter with cutoff frequency $\Omega c' = 1.52$

   b) Describe the applications of DSP in image processing.

   c) Draw and explain the architecture of TMS 320C54 DSP.

   d) Give the transfer function of Butterworth LPF of order N. Explain in brief how to compute order and cutoff frequency of the filter from the desired specifications of filter.

   e) Draw and explain the barrel shifter block of DSP chip.

   f) Explain in brief windowing. Give mathematical expression for different windows. Compare different window characteristics based on transition width and stop band attenuation.

5. Attempt **any two** : **(2×6=12)**

   a) Explain the Bilinear transformation for digital filters in detail.

   b) Design a digital Butterworth filter to meet the following constraints.

$$0.85 \le \left|H\left(e^{j\omega}\right)\right| \le 1 \quad 0 \le \omega \le 0.2\pi$$

$$\left|H\left(e^{j\omega}\right)\right| \le 0.2 \qquad 0.5\pi \le \omega \le \pi$$

   Using Bilinear transformation. Use T = 1 sec.

   c) Explain finite word length effect in designing FIR filters.

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SLR-EP – 101

Seat No.	

Set **S**

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Draw ***neat*** *diagrams where* ***required****.*
5) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
6) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) To convert the analog LPF with cutoff frequency Ωc to LPF with cutoff frequency Ωc^* we need to transform

a) $s \rightarrow \frac{\Omega c \Omega c *}{s}$ b) $s \rightarrow \frac{\Omega c^*}{\Omega c} s$

c) $s \rightarrow s\sqrt{\Omega c \, \Omega c^*}$ d) $s \rightarrow \frac{\Omega c}{\Omega c^*} s$

2) The poles of the Butterworth LPF with cutoff frequency Ωc
a) Lie on the unit circle in s plane b) Lie on the RHS of s plane
c) Lie on a circle of radius Ωc d) None of these

3) The FIR filter of order M gives linear phase response if
a) h (n) = h (M – 1 – n) b) h (n) < ∞
c) h (n) = h (– n) d) None of these

4) Which of the following is true for FIR filters ?
a) They can have linear phase b) Are always stable
c) They are all zero filters d) All above a, b and c

P.T.O.

5) Robot vision is the _____ application of DSP.
   a) General b) Image
   c) Audio d) Biomedical

6) The value of the twiddle factor W_4^5 is
   a) j b) 1
   c) – 0.707 + j 0.707 d) – j

7) The DFT of the signal x(n) = {0, 3, 0, – 3}
   a) {0, –2, 0, 2} b) {0, – 6 j, 0, 6 j}
   c) {2, – 6 j, 0, 6 j} d) {2, – 6 j, – 2, 6 j}

8) The only signal whose ROC is entire z plane is
   a) $\delta(n)$ b) u(n) c) r(n) d) a^n

9) The following realization minimizes the delay elements
   a) Direct form – I b) Direct form – II
   c) Cascade form d) Parallel form

10) The first six points of the 8-point DFT of a real valued sequence are 5, 1, – j3, 0, 3, – 4j and 3 + j4. The last two points of the DFT are respectively
   a) 0, 1, – j3 b) 0, 1 + j3 c) 1 + j3, 5 d) 1 – j3, 5

11) Decimation in time FFT decimates
   a) DFT coefficients b) Input sequence
   c) Both sequence and DFT d) None

12) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is
   a) N^2 b) $N\log_2 N$
   c) $(N/2)\log_2 N$ d) None of the above

13) The P-DSPs follow the _____ architecture
   a) Von Neumann b) Harward
   c) Modified Harward d) VLIW

14) Bit reversed addressing is used for
   a) FIR filter implementation b) FFT computation
   c) Any computation d) Transform coefficient computation

_____

SLR-EP – 101

Seat No.	

T.E. (Electronics Engg.) (Part – I) Examination, 2016
DIGITAL SIGNAL PROCESSING (New CGPA)

Day and Date : Wednesday, 30-11-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Assume ***suitable*** *data if necessary.*
4) Draw ***neat*** *diagrams where required.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Prove that X(k) is real and even when x(n) is real and even where X(k) is DFT of an N-point sequence x(n).

b) Find 4 point DFT of DT signal x[n] = {1, 0, 0, 1}.

c) The linear phase FIR filter transfer function is $H[z] = 1 + \frac{z^{-1}}{2} + \frac{z^{-2}}{3} + \frac{z^{-3}}{2} + z^{-4}$.

Draw the structure for linear phase FIR filter.

d) Consider the signal x(n) = {1 2 4 3 6}, obtain following sequences

i) $x((-n))_5$ ii) $x((n+1))_5$ iii) $x((n-2))_5$

e) Compare overlap save and overlap add method.

3. Attempt **any two** : **(2×6=12)**

a) Explain basic butterfly structure of DIF FFT algorithm. Given x(n) = n + 1 and N = 4 find X(k) using DIF FFT algorithm.

b) Determine the output response y(n) if h(n) = {1, 1, 1}; x(n) = {1, 2, 3, 1}. By using

i) Linear convolution

ii) Circular convolution

iii) 6 point circular convolution

c) Obtain the cascade realization of system function

$H(z) = (1 + 2z^{-1} - z^{-2})(1 + z^{-1} - z^{-2})$

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) Write the analog transfer function for butterworth low pass filter of order 2 and cutoff frequency $\Omega c = 1$.

   Using frequency transformations convert above filter to
   i) Low pass filter with cutoff frequency $\Omega c' = 0.75$
   ii) High pass filter with cutoff frequency $\Omega c' = 1.52$

   b) Describe the applications of DSP in image processing.

   c) Draw and explain the architecture of TMS 320C54 DSP.

   d) Give the transfer function of Butterworth LPF of order N. Explain in brief how to compute order and cutoff frequency of the filter from the desired specifications of filter.

   e) Draw and explain the barrel shifter block of DSP chip.

   f) Explain in brief windowing. Give mathematical expression for different windows. Compare different window characteristics based on transition width and stop band attenuation.

5. Attempt **any two** : **(2×6=12)**

   a) Explain the Bilinear transformation for digital filters in detail.

   b) Design a digital Butterworth filter to meet the following constraints.

$$0.85 \le \left|H\left(e^{j\omega}\right)\right| \le 1 \quad 0 \le \omega \le 0.2\pi$$

$$\left|H\left(e^{j\omega}\right)\right| \le 0.2 \qquad 0.5\pi \le \omega \le \pi$$

   Using Bilinear transformation. Use T = 1 sec.

   c) Explain finite word length effect in designing FIR filters.

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SLR-EP – 102

Seat No.	

Set P

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*
*3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) What is the addressing mode used in instruction MOV M, D ?
a) Direct b) Indirect c) Indexed d) Immediate

2) In the TRAP, RST 7.5, RST 6.5, RST 5.5, which is having top priority ?
a) TRAP b) RST 7.5 c) RST 6.5 d) RST 5.5

3) Vector location of TRAP interrupt is
a) 0024H b) 002CH c) 0034H d) 003CH

4) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is
a) A5H b) 5AH c) AAH d) 55H

5) The synchronization between microprocessor and memory is done by
a) ALE signal b) HOLD signal c) READY signal d) None of these

6) 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

7) The stack is a specialized temporary _____ access memory during _____ and _____ instructions.
a) random, store, load b) random, push, load
c) sequential, store, pop d) sequential, push, pop

P.T.O.

8) The status register of 8251 is
   a) 16 bit b) 4 bit c) 8 bit d) 6 bit

9) Which bit of control word of 8255 decides either BSR or I/O mode ?
   a) D4 b) D0 c) D6 d) D7

10) The 8253 mode 0 is
   a) Interrupt on terminal count b) H/W retriggerable one shot
   c) Rate generator d) Square wave generator

11) To increase resolution of DAC.
   a) Increase number of input bits b) Use registers with better tolerance
   c) Increase Vref d) Use faster op-amp

12) For I/O mapped I/O, address lines used are
   a) 10 bit b) 8 bit c) 16 bit d) 4 bit

13) The 8255 strobed input/output mode is another name of
   a) mode 0 b) mode 1 c) mode 2 d) none

14) 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

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SLR-EP – 102

Seat No.	

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*

SECTION – I

2. Answer **any four** : **(4×4=16)**
   a) Explain different types of memory.
   b) Discuss various addressing modes of 8085 with suitable examples.
   c) Explain the following instruction :
      a) DAA b) LDA
      c) SHLD d) CMP
   d) Write a 8085 assembly program to add two 16 bit hex numbers.
   e) Write a program to sort a given array of 10 elements in ascending order.

3. Answer **any two** : **(2×6=12)**
   a) What is the use of READY pin of 8085 microprocessor ? How to interface slow speed memories with microprocessors ?
   b) Interface a 4K EPROM, one 4K RAM and one 8K RAM with the following address from 0000h, 2000h and 4000h respectively. Use NAND gates to decode addresses and avoid bus contention.
   c) Write a program to find factorial of a given number using subroutine.

SECTION – II

4. Answer **any four** : **(4×4=16)**
   a) Draw the block diagram of 8255 and explain it.
   b) How 8255 operates in bidirectional I/O mode ?
   c) Interface timer 8253 to the 8085 from address 20h.
   d) Draw the block diagram of 8251 and explain it.
   e) Draw and explain binary weighted resister DAC.

5. Answer **any two** : **(2×6=12)**

   a) Interface DAC to 8085 and write a program :
      i) to generate triangular wave
      ii) saw tooth wave.

   b) Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.

   c) Explain the mode 3 (square wave generator) operations of 8253. Set up the 8253 as a square wave generator with 1 ms period if the input frequency to the 8253 is 1 MHz.

SLR-EP – 102

Seat No.	

Set Q

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*
*3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The status register of 8251 is
a) 16 bit b) 4 bit c) 8 bit d) 6 bit

2) Which bit of control word of 8255 decides either BSR or I/O mode ?
a) D4 b) D0 c) D6 d) D7

3) The 8253 mode 0 is
a) Interrupt on terminal count b) H/W retriggerable one shot
c) Rate generator d) Square wave generator

4) To increase resolution of DAC.
a) Increase number of input bits b) Use registers with better tolerance
c) Increase Vref d) Use faster op-amp

5) For I/O mapped I/O, address lines used are
a) 10 bit b) 8 bit c) 16 bit d) 4 bit

6) The 8255 strobed input/output mode is another name of
a) mode 0 b) mode 1 c) mode 2 d) none

7) 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

8) What is the addressing mode used in instruction MOV M, D ?
a) Direct b) Indirect c) Indexed d) Immediate

P.T.O.

9) In the TRAP, RST 7.5, RST 6.5, RST 5.5, which is having top priority ?
   a) TRAP b) RST 7.5 c) RST 6.5 d) RST 5.5

10) Vector location of TRAP interrupt is
   a) 0024H b) 002CH c) 0034H d) 003CH

11) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is
   a) A5H b) 5AH c) AAH d) 55H

12) The synchronization between microprocessor and memory is done by
   a) ALE signal b) HOLD signal c) READY signal d) None of these

13) 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

14) The stack is a specialized temporary _____ access memory during _____ and _____ instructions.
   a) random, store, load b) random, push, load
   c) sequential, store, pop d) sequential, push, pop

_____

SLR-EP – 102

Seat No.	

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*

SECTION – I

2. Answer **any four** : **(4×4=16)**
   a) Explain different types of memory.
   b) Discuss various addressing modes of 8085 with suitable examples.
   c) Explain the following instruction :
      a) DAA b) LDA
      c) SHLD d) CMP
   d) Write a 8085 assembly program to add two 16 bit hex numbers.
   e) Write a program to sort a given array of 10 elements in ascending order.

3. Answer **any two** : **(2×6=12)**
   a) What is the use of READY pin of 8085 microprocessor ? How to interface slow speed memories with microprocessors ?
   b) Interface a 4K EPROM, one 4K RAM and one 8K RAM with the following address from 0000h, 2000h and 4000h respectively. Use NAND gates to decode addresses and avoid bus contention.
   c) Write a program to find factorial of a given number using subroutine.

SECTION – II

4. Answer **any four** : **(4×4=16)**
   a) Draw the block diagram of 8255 and explain it.
   b) How 8255 operates in bidirectional I/O mode ?
   c) Interface timer 8253 to the 8085 from address 20h.
   d) Draw the block diagram of 8251 and explain it.
   e) Draw and explain binary weighted resister DAC.

5. Answer **any two** : **(2×6=12)**

   a) Interface DAC to 8085 and write a program :
      i) to generate triangular wave
      ii) saw tooth wave.

   b) Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.

   c) Explain the mode 3 (square wave generator) operations of 8253. Set up the 8253 as a square wave generator with 1 ms period if the input frequency to the 8253 is 1 MHz.

SLR-EP – 102

Seat No.	

Set R

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*
*3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The synchronization between microprocessor and memory is done by
a) ALE signal b) HOLD signal c) READY signal d) None of these

2) 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

3) The stack is a specialized temporary _____ access memory during _____ and _____ instructions.
a) random, store, load b) random, push, load
c) sequential, store, pop d) sequential, push, pop

4) The status register of 8251 is
a) 16 bit b) 4 bit c) 8 bit d) 6 bit

5) Which bit of control word of 8255 decides either BSR or I/O mode ?
a) D4 b) D0 c) D6 d) D7

6) The 8253 mode 0 is
a) Interrupt on terminal count b) H/W retriggerable one shot
c) Rate generator d) Square wave generator

P.T.O.

7) To increase resolution of DAC.
   a) Increase number of input bits b) Use registers with better tolerance
   c) Increase Vref d) Use faster op-amp

8) For I/O mapped I/O, address lines used are
   a) 10 bit b) 8 bit c) 16 bit d) 4 bit

9) The 8255 strobed input/output mode is another name of
   a) mode 0 b) mode 1 c) mode 2 d) none

10) 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

11) What is the addressing mode used in instruction MOV M, D ?
   a) Direct b) Indirect c) Indexed d) Immediate

12) In the TRAP, RST 7.5, RST 6.5, RST 5.5, which is having top priority ?
   a) TRAP b) RST 7.5 c) RST 6.5 d) RST 5.5

13) Vector location of TRAP interrupt is
   a) 0024H b) 002CH c) 0034H d) 003CH

14) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is
   a) A5H b) 5AH c) AAH d) 55H

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SLR-EP – 102

Seat No.	

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*

SECTION – I

2. Answer **any four** : **(4×4=16)**
   a) Explain different types of memory.
   b) Discuss various addressing modes of 8085 with suitable examples.
   c) Explain the following instruction :
      a) DAA b) LDA
      c) SHLD d) CMP
   d) Write a 8085 assembly program to add two 16 bit hex numbers.
   e) Write a program to sort a given array of 10 elements in ascending order.

3. Answer **any two** : **(2×6=12)**
   a) What is the use of READY pin of 8085 microprocessor ? How to interface slow speed memories with microprocessors ?
   b) Interface a 4K EPROM, one 4K RAM and one 8K RAM with the following address from 0000h, 2000h and 4000h respectively. Use NAND gates to decode addresses and avoid bus contention.
   c) Write a program to find factorial of a given number using subroutine.

SECTION – II

4. Answer **any four** : **(4×4=16)**
   a) Draw the block diagram of 8255 and explain it.
   b) How 8255 operates in bidirectional I/O mode ?
   c) Interface timer 8253 to the 8085 from address 20h.
   d) Draw the block diagram of 8251 and explain it.
   e) Draw and explain binary weighted resister DAC.

5. Answer **any two** : **(2×6=12)**

   a) Interface DAC to 8085 and write a program :
      i) to generate triangular wave
      ii) saw tooth wave.

   b) Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.

   c) Explain the mode 3 (square wave generator) operations of 8253. Set up the 8253 as a square wave generator with 1 ms period if the input frequency to the 8253 is 1 MHz.

SLR-EP – 102

Seat No.	

Set S

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Total Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) ***Assume*** *suitable data* ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The 8253 mode 0 is
   a) Interrupt on terminal count b) H/W retriggerable one shot
   c) Rate generator d) Square wave generator

2) To increase resolution of DAC.
   a) Increase number of input bits b) Use registers with better tolerance
   c) Increase Vref d) Use faster op-amp

3) For I/O mapped I/O, address lines used are
   a) 10 bit b) 8 bit c) 16 bit d) 4 bit

4) The 8255 strobed input/output mode is another name of
   a) mode 0 b) mode 1 c) mode 2 d) none

5) 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

6) What is the addressing mode used in instruction MOV M, D ?
   a) Direct b) Indirect c) Indexed d) Immediate

7) In the TRAP, RST 7.5, RST 6.5, RST 5.5, which is having top priority ?
   a) TRAP b) RST 7.5 c) RST 6.5 d) RST 5.5

8) Vector location of TRAP interrupt is
   a) 0024H b) 002CH c) 0034H d) 003CH

P.T.O.

9) The contents of accumulator before CMA instruction is A5H. Its content after instruction execution is
   a) A5H b) 5AH c) AAH d) 55H

10) The synchronization between microprocessor and memory is done by
   a) ALE signal b) HOLD signal c) READY signal d) None of these

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, load
   c) sequential, store, pop d) sequential, push, pop

13) The status register of 8251 is
   a) 16 bit b) 4 bit c) 8 bit d) 6 bit

14) Which bit of control word of 8255 decides either BSR or I/O mode ?
   a) D4 b) D0 c) D6 d) D7

_____

SLR-EP – 102

Seat No.	

T.E. (Electronics) (CGPA) (Part – I) Examination, 2016
MICROPROCESSORS AND INTERFACING (New)

Day and Date : Friday, 2-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **Assume** suitable data **wherever** necessary.*

SECTION – I

2. Answer **any four** : **(4×4=16)**
   a) Explain different types of memory.
   b) Discuss various addressing modes of 8085 with suitable examples.
   c) Explain the following instruction :
      a) DAA b) LDA
      c) SHLD d) CMP
   d) Write a 8085 assembly program to add two 16 bit hex numbers.
   e) Write a program to sort a given array of 10 elements in ascending order.

3. Answer **any two** : **(2×6=12)**
   a) What is the use of READY pin of 8085 microprocessor ? How to interface slow speed memories with microprocessors ?
   b) Interface a 4K EPROM, one 4K RAM and one 8K RAM with the following address from 0000h, 2000h and 4000h respectively. Use NAND gates to decode addresses and avoid bus contention.
   c) Write a program to find factorial of a given number using subroutine.

SECTION – II

4. Answer **any four** : **(4×4=16)**
   a) Draw the block diagram of 8255 and explain it.
   b) How 8255 operates in bidirectional I/O mode ?
   c) Interface timer 8253 to the 8085 from address 20h.
   d) Draw the block diagram of 8251 and explain it.
   e) Draw and explain binary weighted resister DAC.

5. Answer **any two** : **(2×6=12)**

   a) Interface DAC to 8085 and write a program :
      i) to generate triangular wave
      ii) saw tooth wave.

   b) Interface stepper motor to the 8085. Write a program to rotate the stepper motor for five rotations.

   c) Explain the mode 3 (square wave generator) operations of 8253. Set up the 8253 as a square wave generator with 1 ms period if the input frequency to the 8253 is 1 MHz.

SLR-EP – 103

Seat No.	

Set **P**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The surface in az direction in cylindrical co-ordinate system can be given as
   a) $r\,d\Phi\,dz$ b) $r\,dr\,d\Phi$
   c) $d\Phi\,dz$ d) None of the above

2) The divergence of curl is
   a) Non zero vector b) Scalar c) Zero d) None of these

3) Cross product of two vectors A and B indicated by $A \times B =$
   a) $A.B \sin\theta$ b) $A.B \sin\theta\ a_n$
   c) $A.B \cos\theta\ a_n$ d) $A.B \cos\theta$

4) Divergence operates on _____ and results in _____.
   a) Scalar, vector b) Vector, vector
   c) Vector, scalar d) Scalar, scalar

5) Stokes theorem relates in line integral with
   a) Volume integral b) Surface integral
   c) Line integral d) None of the above

6) Current flowing through capacitor is known as
   a) Conduction current b) Convection current
   c) Convention current d) None

7) Boundary condition for conductor and free space for normal component is
   a) $D_{N1} = D_{N2}$ b) $D_{N1}/\varepsilon_1 = D_{N2}/\varepsilon_2$
   c) $D_N = \rho_s$ d) $\varepsilon_1 D_{N1} = \varepsilon_2 D_{N2}$
8) The γ is known as
   a) Proportional constant b) Personal constant
   c) Parameter constant d) Propagation constant
9) If $\mu = 2\ \mu$ H/m for a medium, H = 1 A/m, the energy stored is
   a) 0.5 J/m^3 b) 1 μ J/m^3 c) 2 μ J/m^3 d) None
10) For static field following equation is correct
   a) $\nabla \times B = J$ b) $\nabla \times H = J + D$ c) $\nabla \times H = J$ d) $\nabla \cdot B = J$
11) The following term indicates velocity
   a) $\sqrt{\mu\varepsilon}$ b) $1/\sqrt{\mu\varepsilon}$ c) $\sqrt{\mu/\varepsilon}$ d) $\sqrt{\varepsilon/\mu}$
12) Radiation resistance of half wave dipole is
   a) 36Ω b) 73Ω c) 292Ω d) $80\pi^2(dl/\lambda)^2$
13) Poynting vector is
   a) $P = E \cdot H$ b) $P = 1/2\ (E \times H)$
   c) $P = E \times H$ d) $P = \nabla \cdot (E \times H)$
14) For the uniform plane wave travelling in x-direction.
   a) $E_x = 0$ b) $H_x = 0$
   c) $E_x = 0$ & $H_x = 0$ d) $E_y = 0$

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SLR-EP – 103

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) **Assume** suitable data **if necessary**.*

SECTION – I

2. Answer **any four** questions : **(4×4=16)**
   a) Transform a Cartesian vector $A = 4a_x - 2a_y - 4a_z$ to the cylindrical coordinates at point P(2, 3, 5).
   b) Two dipoles with dipole moments $-5a_z$ nC-m and $9a_z$ nC-m are located at point (0, 0, – 2) and (0, 0, 3) respectively. Find potential at origin.
   c) State and explain Stokes theorem.
   d) A 2mC positive charge is located in vacuum at P1(3, – 2, – 4) and 5 μC negative charge is at P2(1, – 4, 2). Find the vector force on the negative charge and what is the magnitude of the force.
   e) Derive Magnetic field intensity due to circular current carrying filament placed in Z = 0 plane.

3. Answer **any two** questions : **(6×2=12)**
   a) A point charge of 6 μC is located at origin, a uniform line charge density of 180 nC/m lies along x-axis and a uniform sheet charge equal to 25 nC/m^2 lies in the Z = 0 plane. Find D at A(1, 2, 4).
   b) State and derive point form of Ampere's law.
   c) Derive equation for electric potential due to electric dipole.

SECTION – II

4. Answer **any four** questions : **(4×4=16)**
   a) Derive the wave equation for electric field and magnetic field in Free Space.
   b) Explain intrinsic impedance of the medium.
   c) Define polarization and explain its types.
   d) What is radiation resistance and give its significance ?
   e) Find the radiation resistance of a dipole antenna $\lambda/10$ long. What will be antenna efficiency if the loss resistance of the dipole antenna is 2 Ω.

5. Answer **any two** questions : **(6×2=12)**

   a) Derive the equation for attenuation constant and phase shift constant for conducting media.

   b) A lossless $50\,\Omega$ transmission line is terminated in $25 + j50\,\Omega$. Find
      i) Voltage and Current reflection coefficient
      ii) VSWR
      iii) Impedance at $0.3\,\lambda$ from load.

   c) State and explain Maxwell's equation in integral and point form for general time varying field.

SLR-EP – 103

Seat No.	

Set **Q**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) The γ is known as
   a) Proportional constant b) Personal constant
   c) Parameter constant d) Propagation constant

2) If $\mu = 2\ \mu$ H/m for a medium, H = 1 A/m, the energy stored is
   a) 0.5 J/m^3 b) 1 μ J/m^3 c) 2 μ J/m^3 d) None

3) For static field following equation is correct
   a) $\nabla \times B = J$ b) $\nabla \times H = J + D$ c) $\nabla \times H = J$ d) $\nabla \cdot B = J$

4) The following term indicates velocity
   a) $\sqrt{\mu\varepsilon}$ b) $1/\sqrt{\mu\varepsilon}$ c) $\sqrt{\mu/\varepsilon}$ d) $\sqrt{\varepsilon/\mu}$

5) Radiation resistance of half wave dipole is
   a) 36 Ω b) 73 Ω c) 292 Ω d) $80\pi^2(dl/\lambda)^2$

6) Poynting vector is
   a) P = E·H b) P = 1/2 (E × H)
   c) P = E × H d) P = $\nabla \cdot (E \times H)$

7) For the uniform plane wave travelling in x-direction.
   a) $E_x = 0$ b) $H_x = 0$
   c) $E_x = 0$ & $H_x = 0$ d) $E_y = 0$

P.T.O.

8) The surface in az direction in cylindrical co-ordinate system can be given as
   a) r dΦ dz
   b) r dr dΦ
   c) dΦ dz
   d) None of the above

9) The divergence of curl is
   a) Non zero vector b) Scalar
   c) Zero
   d) None of these

10) Cross product of two vectors A and B indicated by A × B =
   a) A.B sinθ
   b) A.B sinθ a_n
   c) A.B cosθ a_n
   d) A.B cosθ

11) Divergence operates on _____ and results in _____.
   a) Scalar, vector
   b) Vector, vector
   c) Vector, scalar
   d) Scalar, scalar

12) Stokes theorem relates in line integral with
   a) Volume integral
   b) Surface integral
   c) Line integral
   d) None of the above

13) Current flowing through capacitor is known as
   a) Conduction current
   b) Convection current
   c) Convention current
   d) None

14) Boundary condition for conductor and free space for normal component is
   a) $D_{N1} = D_{N2}$
   b) $D_{N1}/\varepsilon_1 = D_{N2}/\varepsilon_2$
   c) $D_N = \rho_s$
   d) $\varepsilon_1 D_{N1} = \varepsilon_2 D_{N2}$

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SLR-EP – 103

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Answer **any four** questions : **(4×4=16)**
   a) Transform a Cartesian vector $A = 4a_x - 2a_y - 4a_z$ to the cylindrical coordinates at point P(2, 3, 5).
   b) Two dipoles with dipole moments $-5a_z$ nC-m and $9a_z$ nC-m are located at point (0, 0, – 2) and (0, 0, 3) respectively. Find potential at origin.
   c) State and explain Stokes theorem.
   d) A 2mC positive charge is located in vacuum at P1(3, – 2, – 4) and $5\mu C$ negative charge is at P2(1, – 4, 2). Find the vector force on the negative charge and what is the magnitude of the force.
   e) Derive Magnetic field intensity due to circular current carrying filament placed in Z = 0 plane.

3. Answer **any two** questions : **(6×2=12)**
   a) A point charge of 6 μC is located at origin, a uniform line charge density of 180 nC/m lies along x-axis and a uniform sheet charge equal to 25 nC/m^2 lies in the Z = 0 plane. Find D at A(1, 2, 4).
   b) State and derive point form of Ampere's law.
   c) Derive equation for electric potential due to electric dipole.

SECTION – II

4. Answer **any four** questions : **(4×4=16)**
   a) Derive the wave equation for electric field and magnetic field in Free Space.
   b) Explain intrinsic impedance of the medium.
   c) Define polarization and explain its types.
   d) What is radiation resistance and give its significance ?
   e) Find the radiation resistance of a dipole antenna $\lambda/10$ long. What will be antenna efficiency if the loss resistance of the dipole antenna is 2Ω.

5. Answer **any two** questions : **(6×2=12)**

   a) Derive the equation for attenuation constant and phase shift constant for conducting media.

   b) A lossless $50\,\Omega$ transmission line is terminated in $25 + j50\,\Omega$. Find
      i) Voltage and Current reflection coefficient
      ii) VSWR
      iii) Impedance at 0.3λ from load.

   c) State and explain Maxwell's equation in integral and point form for general time varying field.

SLR-EP – 103

Seat No.	

Set **R**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) Stokes theorem relates in line integral with
   a) Volume integral b) Surface integral
   c) Line integral d) None of the above

2) Current flowing through capacitor is known as
   a) Conduction current b) Convection current
   c) Convention current d) None

3) Boundary condition for conductor and free space for normal component is
   a) $D_{N1} = D_{N2}$ b) $D_{N1}/\varepsilon_1 = D_{N2}/\varepsilon_2$
   c) $D_N = \rho_s$ d) $\varepsilon_1 D_{N1} = \varepsilon_2 D_{N2}$

4) The γ is known as
   a) Proportional constant b) Personal constant
   c) Parameter constant d) Propagation constant

5) If $\mu = 2\ \mu$ H/m for a medium, H = 1 A/m, the energy stored is
   a) 0.5 J/m^3 b) 1 μ J/m^3 c) 2 μ J/m^3 d) None

6) For static field following equation is correct
   a) $\nabla \times B = J$ b) $\nabla \times H = J + D$ c) $\nabla \times H = J$ d) $\nabla \cdot B = J$

P.T.O.

7) The following term indicates velocity

a) $\sqrt{\mu\varepsilon}$ b) $1/\sqrt{\mu\varepsilon}$ c) $\sqrt{\mu/\varepsilon}$ d) $\sqrt{\varepsilon/\mu}$

8) Radiation resistance of half wave dipole is

a) 36Ω b) 73Ω c) 292Ω d) $80\pi^2(dl/\lambda)^2$

9) Poynting vector is

a) $P = E \cdot H$ b) $P = 1/2\ (E \times H)$

c) $P = E \times H$ d) $P = \nabla \cdot (E \times H)$

10) For the uniform plane wave travelling in x-direction.

a) $E_x = 0$ b) $H_x = 0$

c) $E_x = 0$ & $H_x = 0$ d) $E_y = 0$

11) The surface in az direction in cylindrical co-ordinate system can be given as

a) $r\ d\Phi\ dz$ b) $r\ dr\ d\Phi$

c) $d\Phi\ dz$ d) None of the above

12) The divergence of curl is

a) Non zero vector b) Scalar c) Zero d) None of these

13) Cross product of two vectors A and B indicated by $A \times B =$

a) $A.B \sin\theta$ b) $A.B \sin\theta\ a_n$

c) $A.B \cos\theta\ a_n$ d) $A.B \cos\theta$

14) Divergence operates on _____ and results in _____.

a) Scalar, vector b) Vector, vector

c) Vector, scalar d) Scalar, scalar

SLR-EP – 103

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) **Assume** suitable data **if necessary**.*

SECTION – I

2. Answer **any four** questions : **(4×4=16)**
   a) Transform a Cartesian vector $A = 4a_x - 2a_y - 4a_z$ to the cylindrical coordinates at point P(2, 3, 5).
   b) Two dipoles with dipole moments $-5a_z$ nC-m and $9a_z$ nC-m are located at point (0, 0, – 2) and (0, 0, 3) respectively. Find potential at origin.
   c) State and explain Stokes theorem.
   d) A 2mC positive charge is located in vacuum at P1(3, – 2, – 4) and $5\mu C$ negative charge is at P2(1, – 4, 2). Find the vector force on the negative charge and what is the magnitude of the force.
   e) Derive Magnetic field intensity due to circular current carrying filament placed in Z = 0 plane.

3. Answer **any two** questions : **(6×2=12)**
   a) A point charge of 6 μC is located at origin, a uniform line charge density of 180 nC/m lies along x-axis and a uniform sheet charge equal to 25 nC/m^2 lies in the Z = 0 plane. Find D at A(1, 2, 4).
   b) State and derive point form of Ampere's law.
   c) Derive equation for electric potential due to electric dipole.

SECTION – II

4. Answer **any four** questions : **(4×4=16)**
   a) Derive the wave equation for electric field and magnetic field in Free Space.
   b) Explain intrinsic impedance of the medium.
   c) Define polarization and explain its types.
   d) What is radiation resistance and give its significance ?
   e) Find the radiation resistance of a dipole antenna $\lambda/10$ long. What will be antenna efficiency if the loss resistance of the dipole antenna is 2Ω.

Set R

5. Answer **any two** questions : **(6×2=12)**

   a) Derive the equation for attenuation constant and phase shift constant for conducting media.

   b) A lossless $50\,\Omega$ transmission line is terminated in $25 + j50\,\Omega$. Find
      i) Voltage and Current reflection coefficient
      ii) VSWR
      iii) Impedance at 0.3λ from load.

   c) State and explain Maxwell's equation in integral and point form for general time varying field.

SLR-EP – 103

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(14×1=14)**

1) For static field following equation is correct
a) $\nabla \times B = J$ b) $\nabla \times H = J + D$ c) $\nabla \times H = J$ d) $\nabla \cdot B = J$

2) The following term indicates velocity
a) $\sqrt{\mu\varepsilon}$ b) $1/\sqrt{\mu\varepsilon}$ c) $\sqrt{\mu/\varepsilon}$ d) $\sqrt{\varepsilon/\mu}$

3) Radiation resistance of half wave dipole is
a) $36\,\Omega$ b) $73\,\Omega$ c) $292\,\Omega$ d) $80\,\pi^2 (dl/\lambda)^2$

4) Poynting vector is
a) $P = E \cdot H$ b) $P = 1/2\ (E \times H)$
c) $P = E \times H$ d) $P = \nabla \cdot (E \times H)$

5) For the uniform plane wave travelling in x-direction.
a) $E_x = 0$ b) $H_x = 0$
c) $E_x = 0$ & $H_x = 0$ d) $E_y = 0$

6) The surface in az direction in cylindrical co-ordinate system can be given as
a) $r\,d\Phi\,dz$ b) $r\,dr\,d\Phi$
c) $d\Phi\,dz$ d) None of the above

7) The divergence of curl is
a) Non zero vector b) Scalar c) Zero d) None of these

P.T.O.

8) Cross product of two vectors A and B indicated by $A \times B$ =
   a) $A.B \sin\theta$ b) $A.B \sin\theta\ a_n$
   c) $A.B \cos\theta\ a_n$ d) $A.B \cos\theta$

9) Divergence operates on _____ and results in _____.
   a) Scalar, vector b) Vector, vector
   c) Vector, scalar d) Scalar, scalar

10) Stokes theorem relates in line integral with
   a) Volume integral b) Surface integral
   c) Line integral d) None of the above

11) Current flowing through capacitor is known as
   a) Conduction current b) Convection current
   c) Convention current d) None

12) Boundary condition for conductor and free space for normal component is
   a) $D_{N1} = D_{N2}$ b) $D_{N1}/\varepsilon_1 = D_{N2}/\varepsilon_2$
   c) $D_N = \rho_s$ d) $\varepsilon_1 D_{N1} = \varepsilon_2 D_{N2}$

13) The γ is known as
   a) Proportional constant b) Personal constant
   c) Parameter constant d) Propagation constant

14) If $\mu = 2\ \mu$ H/m for a medium, H = 1 A/m, the energy stored is
   a) 0.5 J/m^3 b) 1 μ J/m^3 c) 2 μ J/m^3 d) None

_____

SLR-EP – 103

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
ELECTROMAGNETIC ENGINEERING

Day and Date : Monday, 5-12-2016 Marks : 56
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Answer **any four** questions : **(4×4=16)**
   a) Transform a Cartesian vector $A = 4a_x - 2a_y - 4a_z$ to the cylindrical coordinates at point P(2, 3, 5).
   b) Two dipoles with dipole moments $-5a_z$ nC-m and $9a_z$ nC-m are located at point (0, 0, – 2) and (0, 0, 3) respectively. Find potential at origin.
   c) State and explain Stokes theorem.
   d) A 2mC positive charge is located in vacuum at P1(3, – 2, – 4) and $5\mu C$ negative charge is at P2(1, – 4, 2). Find the vector force on the negative charge and what is the magnitude of the force.
   e) Derive Magnetic field intensity due to circular current carrying filament placed in Z = 0 plane.

3. Answer **any two** questions : **(6×2=12)**
   a) A point charge of 6 μC is located at origin, a uniform line charge density of 180 nC/m lies along x-axis and a uniform sheet charge equal to 25 nC/m^2 lies in the Z = 0 plane. Find D at A(1, 2, 4).
   b) State and derive point form of Ampere's law.
   c) Derive equation for electric potential due to electric dipole.

SECTION – II

4. Answer **any four** questions : **(4×4=16)**
   a) Derive the wave equation for electric field and magnetic field in Free Space.
   b) Explain intrinsic impedance of the medium.
   c) Define polarization and explain its types.
   d) What is radiation resistance and give its significance ?
   e) Find the radiation resistance of a dipole antenna $\lambda/10$ long. What will be antenna efficiency if the loss resistance of the dipole antenna is 2Ω.

5. Answer **any two** questions : **(6×2=12)**

   a) Derive the equation for attenuation constant and phase shift constant for conducting media.

   b) A lossless $50\,\Omega$ transmission line is terminated in $25 + j50\,\Omega$. Find
      i) Voltage and Current reflection coefficient
      ii) VSWR
      iii) Impedance at $0.3\,\lambda$ from load.

   c) State and explain Maxwell's equation in integral and point form for general time varying field.

SLR-EP – 104

Seat No.	

Set **P**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) ***Assume*** *suitable data* ***if necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) Take odd man out-MS Project, MS Access, DB2, Oracle
a) MS Project b) MS Access c) DB2 d) Oracle

2) NEFT is an abbreviation for
a) National Exchange Fund Transfer
b) National Electronic Finance Transfer
c) National Electronic Fund Transfer
d) National Electronic Fund Token

3) Intellectual Laws are _____ issues of E-commerce.
a) Management b) Legal c) Privacy d) All of these

4) _____ is a major step for selecting project.
a) Resource management b) Installation standards
c) Feasibility study d) All of these

5) Data items that has been organized so that it has a particular value and meaning to recipient is called
a) Data mart b) Data store
c) Information d) Knowledge

6) _____ and _____ are the two views of database.
a) Action, Query b) Partitioned, Replicated
c) Information, knowledge d) Physical, Logical

P.T.O.

7) A person having a insight of specific functional area of project is called
   a) Project manager b) Technical expert
   c) Software engineer d) Subject matter expert

8) A _____ is a product or outcome that is given to the client.
   a) Milestone b) SDLC
   c) Waterfall d) None of these

9) Which of below is not a correct rule for constructing precedence network ?
   a) Node has duration
   b) Links normally have no duration
   c) Project network should have only one start
   d) None of these

10) Portability and maintainability are the examples of _____ requirement specifications.
   a) Functional b) Quality
   c) Resource d) Management

11) The processes required to ensure that the project includes all the work required is called project _____ management.
   a) Integration b) Scope c) Time d) Quality

12) Which of below is not a SDLC model ?
   a) Spiral b) v c) READ d) Waterfall

13) Which of below is not true about organization ?
   a) Social unit b) Structured
   c) Has goals d) Closed

14) The difference between activity's earliest start date and its latest start date is called _____
   a) Critical path b) Activity's float
   c) Forward float d) Slippage

_____

SLR-EP – 104

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Solve **any two** : **(2×6=12)**

a) What are emerging computing environments ? Explain any one in detail.

b) With one suitable application discuss electronic content management in detail.

c) With suitable example explain concept of data warehouse.

3. Solve **any four** : **(4×4=16)**

a) Discuss De-skilling and alienation.

b) What are different types of E-commerce transaction ? Give suitable example for each.

c) Discuss E-commerce benefits to customers.

d) What is business analystics ? What are its types ?

e) What are components of information system ? Discuss with suitable example.

SECTION – II

4. Solve **any two** : **(2×6=12)**

   a) What do you mean by organization structure ? With suitable examples explain organization structure.

   b) Discuss different steps in ISO 12207 Software Development Life Cycle.

   c) Discuss forward and reverse path of activity network.

5. Solve **any four** : **(4×4=16)**

   a) What are activities involved in software project management ?

   b) With suitable example explain behavioral impact of information system on organization.

   c) Discuss various project requirement specifications.

   d) What are the objectives of activity planning ?

   e) With suitable example explain deliverables and milestones.

SLR-EP – 104

Seat No.	

Set **Q**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Figures to the **right** indicates **full** marks.*
*5) **Assume** suitable data **if necessary**.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) A _____ is a product or outcome that is given to the client.
   a) Milestone b) SDLC
   c) Waterfall d) None of these

2) Which of below is not a correct rule for constructing precedence network ?
   a) Node has duration
   b) Links normally have no duration
   c) Project network should have only one start
   d) None of these

3) Portability and maintainability are the examples of _____ requirement specifications.
   a) Functional b) Quality
   c) Resource d) Management

4) The processes required to ensure that the project includes all the work required is called project _____ management.
   a) Integration b) Scope c) Time d) Quality

5) Which of below is not a SDLC model ?
   a) Spiral b) v c) READ d) Waterfall

6) Which of below is not true about organization ?
   a) Social unit b) Structured
   c) Has goals d) Closed

P.T.O.

7) The difference between activity's earliest start date and its latest start date is called _____
   a) Critical path b) Activity's float
   c) Forward float d) Slippage

8) Take odd man out-MS Project, MS Access, DB2, Oracle
   a) MS Project b) MS Access c) DB2 d) Oracle

9) NEFT is an abbreviation for
   a) National Exchange Fund Transfer
   b) National Electronic Finance Transfer
   c) National Electronic Fund Transfer
   d) National Electronic Fund Token

10) Intellectual Laws are _____ issues of E-commerce.
   a) Management b) Legal c) Privacy d) All of these

11) _____ is a major step for selecting project.
   a) Resource management b) Installation standards
   c) Feasibility study d) All of these

12) Data items that has been organized so that it has a particular value and meaning to recipient is called
   a) Data mart b) Data store
   c) Information d) Knowledge

13) _____ and _____ are the two views of database.
   a) Action, Query b) Partitioned, Replicated
   c) Information, knowledge d) Physical, Logical

14) A person having a insight of specific functional area of project is called
   a) Project manager b) Technical expert
   c) Software engineer d) Subject matter expert

_____

SLR-EP – 104

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Solve **any two** : **(2×6=12)**

a) What are emerging computing environments ? Explain any one in detail.

b) With one suitable application discuss electronic content management in detail.

c) With suitable example explain concept of data warehouse.

3. Solve **any four** : **(4×4=16)**

a) Discuss De-skilling and alienation.

b) What are different types of E-commerce transaction ? Give suitable example for each.

c) Discuss E-commerce benefits to customers.

d) What is business analystics ? What are its types ?

e) What are components of information system ? Discuss with suitable example.

SECTION – II

4. Solve **any two** : **(2×6=12)**

   a) What do you mean by organization structure ? With suitable examples explain organization structure.

   b) Discuss different steps in ISO 12207 Software Development Life Cycle.

   c) Discuss forward and reverse path of activity network.

5. Solve **any four** : **(4×4=16)**

   a) What are activities involved in software project management ?

   b) With suitable example explain behavioral impact of information system on organization.

   c) Discuss various project requirement specifications.

   d) What are the objectives of activity planning ?

   e) With suitable example explain deliverables and milestones.

SLR-EP – 104

Seat No.	

Set **R**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) ***Assume*** *suitable data* ***if necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) Data items that has been organized so that it has a particular value and meaning to recipient is called
   a) Data mart b) Data store
   c) Information d) Knowledge

2) _____ and _____ are the two views of database.
   a) Action, Query b) Partitioned, Replicated
   c) Information, knowledge d) Physical, Logical

3) A person having a insight of specific functional area of project is called
   a) Project manager b) Technical expert
   c) Software engineer d) Subject matter expert

4) A _____ is a product or outcome that is given to the client.
   a) Milestone b) SDLC
   c) Waterfall d) None of these

5) Which of below is not a correct rule for constructing precedence network ?
   a) Node has duration
   b) Links normally have no duration
   c) Project network should have only one start
   d) None of these

P.T.O.

6) Portability and maintainability are the examples of _____ requirement specifications.
   a) Functional b) Quality
   c) Resource d) Management

7) The processes required to ensure that the project includes all the work required is called project _____ management.
   a) Integration b) Scope c) Time d) Quality

8) Which of below is not a SDLC model ?
   a) Spiral b) v c) READ d) Waterfall

9) Which of below is not true about organization ?
   a) Social unit b) Structured
   c) Has goals d) Closed

10) The difference between activity's earliest start date and its latest start date is called _____
   a) Critical path b) Activity's float
   c) Forward float d) Slippage

11) Take odd man out-MS Project, MS Access, DB2, Oracle
   a) MS Project b) MS Access c) DB2 d) Oracle

12) NEFT is an abbreviation for
   a) National Exchange Fund Transfer
   b) National Electronic Finance Transfer
   c) National Electronic Fund Transfer
   d) National Electronic Fund Token

13) Intellectual Laws are _____ issues of E-commerce.
   a) Management b) Legal c) Privacy d) All of these

14) _____ is a major step for selecting project.
   a) Resource management b) Installation standards
   c) Feasibility study d) All of these

_____

SLR-EP – 104

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Solve **any two** : **(2×6=12)**

a) What are emerging computing environments ? Explain any one in detail.

b) With one suitable application discuss electronic content management in detail.

c) With suitable example explain concept of data warehouse.

3. Solve **any four** : **(4×4=16)**

a) Discuss De-skilling and alienation.

b) What are different types of E-commerce transaction ? Give suitable example for each.

c) Discuss E-commerce benefits to customers.

d) What is business analystics ? What are its types ?

e) What are components of information system ? Discuss with suitable example.

SECTION – II

4. Solve **any two** : **(2×6=12)**

   a) What do you mean by organization structure ? With suitable examples explain organization structure.

   b) Discuss different steps in ISO 12207 Software Development Life Cycle.

   c) Discuss forward and reverse path of activity network.

5. Solve **any four** : **(4×4=16)**

   a) What are activities involved in software project management ?

   b) With suitable example explain behavioral impact of information system on organization.

   c) Discuss various project requirement specifications.

   d) What are the objectives of activity planning ?

   e) With suitable example explain deliverables and milestones.

SLR-EP – 104

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Max. Marks : 70
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Figures to the **right** indicates **full** marks.*
*5) **Assume** suitable data **if necessary**.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 14

1. Choose the correct answer : **(1×14=14)**

1) Portability and maintainability are the examples of _____ requirement specifications.
   a) Functional b) Quality
   c) Resource d) Management

2) The processes required to ensure that the project includes all the work required is called project _____ management.
   a) Integration b) Scope c) Time d) Quality

3) Which of below is not a SDLC model ?
   a) Spiral b) v c) READ d) Waterfall

4) Which of below is not true about organization ?
   a) Social unit b) Structured
   c) Has goals d) Closed

5) The difference between activity's earliest start date and its latest start date is called _____
   a) Critical path b) Activity's float
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6) Take odd man out-MS Project, MS Access, DB2, Oracle
   a) MS Project b) MS Access c) DB2 d) Oracle

7) NEFT is an abbreviation for
   a) National Exchange Fund Transfer
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   a) Management b) Legal c) Privacy d) All of these

9) _____ is a major step for selecting project.
   a) Resource management b) Installation standards
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10) Data items that has been organized so that it has a particular value and meaning to recipient is called
   a) Data mart b) Data store
   c) Information d) Knowledge

11) _____ and _____ are the two views of database.
   a) Action, Query b) Partitioned, Replicated
   c) Information, knowledge d) Physical, Logical

12) A person having a insight of specific functional area of project is called
   a) Project manager b) Technical expert
   c) Software engineer d) Subject matter expert

13) A _____ is a product or outcome that is given to the client.
   a) Milestone b) SDLC
   c) Waterfall d) None of these

14) Which of below is not a correct rule for constructing precedence network ?
   a) Node has duration
   b) Links normally have no duration
   c) Project network should have only one start
   d) None of these

_____

SLR-EP – 104

Seat No.	

T.E. (Electronics Engineering) (Part – I) (New CGPA) Examination, 2016
INFORMATION TECHNOLOGY AND MANAGEMENT

Day and Date : Wednesday, 7-12-2016 Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data* ***if necessary****.*

SECTION – I

2. Solve **any two** : **(2×6=12)**

a) What are emerging computing environments ? Explain any one in detail.

b) With one suitable application discuss electronic content management in detail.

c) With suitable example explain concept of data warehouse.

3. Solve **any four** : **(4×4=16)**

a) Discuss De-skilling and alienation.

b) What are different types of E-commerce transaction ? Give suitable example for each.

c) Discuss E-commerce benefits to customers.

d) What is business analystics ? What are its types ?

e) What are components of information system ? Discuss with suitable example.

SECTION – II

4. Solve **any two** : **(2×6=12)**

   a) What do you mean by organization structure ? With suitable examples explain organization structure.

   b) Discuss different steps in ISO 12207 Software Development Life Cycle.

   c) Discuss forward and reverse path of activity network.

5. Solve **any four** : **(4×4=16)**

   a) What are activities involved in software project management ?

   b) With suitable example explain behavioral impact of information system on organization.

   c) Discuss various project requirement specifications.

   d) What are the objectives of activity planning ?

   e) With suitable example explain deliverables and milestones.

SLR-EP – 106

Seat No.	

Set P

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*

2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

3) ***All*** *questions are* ***compulsory****.*

4) Figures to the ***right*** *indicates* ***full*** *marks.*

5) Assume suitable data ***if*** *necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) Which scheduling algorithm is best suited for time sharing OS ?
   a) SJF b) Round robin c) FCFS d) None of these

2) Scheduler which select process from secondary storage device to main memory is called
   a) Short term b) Long term
   c) Medium term d) Process scheduler

3) _____ is technique for improving priority of processes.
   a) Aging b) Starvation c) Relocation d) Revocation

4) If dinning philosopher problem chopsticks are represented by
   a) single Semaphore b) 5 distinct semaphore variables
   c) array of 5 semaphore variables d) none

5) How many semaphore variables are needed to allow execution of two processes in parallel ?
   a) 0 b) 1 c) 2 d) 3

6) _____ algorithms causes minimum average waiting delay.
   a) Round robin b) SJF c) FCFS d) None

7) Operating system is
   a) Software b) Hardware c) Both a and b d) None

P.T.O.

8) _____ OS needed to process request in most interactive way.
a) Real time b) Time sharing c) Distributed d) None

9) A process can be terminated due to
a) normal exit b) fatal error
c) killed by another process d) all of the mentioned

10) Swapping is carried out by _____ scheduler.
a) long term b) medium term c) short term d) none

11) In Resource Allocation Graph, a directed edge from Pi → Rj is called
a) Assignment Edge b) Request Edge
c) Both a and b d) None of above

12) Addresses generated by CPU are commonly referred as _____ addresses.
a) Physical b) Logical c) Permanent d) None of above

13) In memory allocation, allocate the smallest hole that is big enough among all the holes is
a) Best fit b) Worst fit c) First fit d) None of above

14) Banker's Algorithm is used by _____ method.
a) Deadlock Avoidance b) Deadlock Recovery
c) Deadlock Prevention d) None of above

15) Which is not the necessary condition for a deadlock situation to occur ?
a) Mutual exclusion b) Hold and wait
c) Progress d) No preemption

16) If each resource type has exactly one instance, then a cycle in RAG indicate that deadlock has occurred.
a) False b) True c) Can't says d) None of above

17) Physical memory is divided into fixed-sized blocks called as
a) Pages b) Frames c) Both a and b d) Segments

18) Which of the following page replacement algorithm suffers from Belady's anomaly ?
a) FIFO b) LRU c) Optimal d) None of above

19) A process is thrashing if it is spending more time in paging than executing.
a) False b) True c) Can't says d) None of above

20) The mechanism that brings a page into memory only when it is needed is called
a) Segmentation b) Paging
c) Demand Segmentation d) Demand Paging

_____

SLR-EP – 106

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

1) Describe the following Scheduling Criteria's to decide the performance of any Scheduling algorithm.

a) CPU Utilization

b) Throughput

c) Turnaround Time

d) Waiting Time

e) Response Time

How the performance of any scheduling algorithm can be increased ?

2) What is a process ? Describe the different fields stored in a Process Control Block.

3) What are Batch Operating Systems ?

4) Elaborate the three Multithreading Models with diagram.

5) What is deadlock ? Explain the safe and unsafe deadlock avoidance method.

3. Attempt **any two** : **(2×8=16)**

1) Describe the deadlock prevention scheme in detail.

2) Explain the message passing method of interprocess communication in detail.

3) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	CPU Burst Time	Arrival Time
P1	7	0
P2	5	1
P3	2	3
P4	3	4

a) How will these processes be schedules according to FCFS and SJF Scheduling algorithm ?

b) Draw the Gantt Chart for FCFS and SJF scheduling algorithm.

c) Compute the average waiting time and average turnaround time.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

a) Write a note on – Free Space Management.

b) Write note on dynamic memory allocation.

c) Explain difference between Internal and External Fragmentation.

d) Explain need of page replacement with diagram.

e) Explain Segmentation with Hardware structure.

5. Attempt **any two** : **(2×8=16)**

1) Explain Kernel I/O subsystem.

2) List and explain different File Access Methods.

3) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults occur for the following algorithm assuming four frames ?

LRU, FIFO and optimal replacement algorithm. Which algorithm is efficient ?

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SLR-EP – 106

Seat No.	

Set Q

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*

2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

3) ***All*** *questions are* ***compulsory****.*

4) Figures to the ***right*** *indicates* ***full*** *marks.*

5) Assume suitable data ***if*** *necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) If each resource type has exactly one instance, then a cycle in RAG indicate that deadlock has occurred.
   a) False b) True c) Can't says d) None of above

2) Physical memory is divided into fixed-sized blocks called as
   a) Pages b) Frames c) Both a and b d) Segments

3) Which of the following page replacement algorithm suffers from Belady's anomaly ?
   a) FIFO b) LRU c) Optimal d) None of above

4) A process is thrashing if it is spending more time in paging than executing.
   a) False b) True c) Can't says d) None of above

5) The mechanism that brings a page into memory only when it is needed is called
   a) Segmentation b) Paging
   c) Demand Segmentation d) Demand Paging

6) Which scheduling algorithm is best suited for time sharing OS ?
   a) SJF b) Round robin c) FCFS d) None of these

7) Scheduler which select process from secondary storage device to main memory is called
   a) Short term b) Long term
   c) Medium term d) Process scheduler

P.T.O.

8) _____ is technique for improving priority of processes.
a) Aging b) Starvation c) Relocation d) Revocation

9) If dinning philosopher problem chopsticks are represented by
a) single Semaphore b) 5 distinct semaphore variables
c) array of 5 semaphore variables d) none

10) How many semaphore variables are needed to allow execution of two processes in parallel ?
a) 0 b) 1 c) 2 d) 3

11) _____ algorithms causes minimum average waiting delay.
a) Round robin b) SJF c) FCFS d) None

12) Operating system is
a) Software b) Hardware c) Both a and b d) None

13) _____ OS needed to process request in most interactive way.
a) Real time b) Time sharing c) Distributed d) None

14) A process can be terminated due to
a) normal exit b) fatal error
c) killed by another process d) all of the mentioned

15) Swapping is carried out by _____ scheduler.
a) long term b) medium term c) short term d) none

16) In Resource Allocation Graph, a directed edge from Pi $\rightarrow$ Rj is called
a) Assignment Edge b) Request Edge
c) Both a and b d) None of above

17) Addresses generated by CPU are commonly referred as _____ addresses.
a) Physical b) Logical c) Permanent d) None of above

18) In memory allocation, allocate the smallest hole that is big enough among all the holes is
a) Best fit b) Worst fit c) First fit d) None of above

19) Banker's Algorithm is used by _____ method.
a) Deadlock Avoidance b) Deadlock Recovery
c) Deadlock Prevention d) None of above

20) Which is not the necessary condition for a deadlock situation to occur ?
a) Mutual exclusion b) Hold and wait
c) Progress d) No preemption

_____

SLR-EP – 106

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

1) Describe the following Scheduling Criteria's to decide the performance of any Scheduling algorithm.

a) CPU Utilization

b) Throughput

c) Turnaround Time

d) Waiting Time

e) Response Time

How the performance of any scheduling algorithm can be increased ?

2) What is a process ? Describe the different fields stored in a Process Control Block.

3) What are Batch Operating Systems ?

4) Elaborate the three Multithreading Models with diagram.

5) What is deadlock ? Explain the safe and unsafe deadlock avoidance method.

3. Attempt **any two** : **(2×8=16)**

1) Describe the deadlock prevention scheme in detail.

2) Explain the message passing method of interprocess communication in detail.

3) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	CPU Burst Time	Arrival Time
P1	7	0
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a) How will these processes be schedules according to FCFS and SJF Scheduling algorithm ?

b) Draw the Gantt Chart for FCFS and SJF scheduling algorithm.

c) Compute the average waiting time and average turnaround time.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

a) Write a note on – Free Space Management.

b) Write note on dynamic memory allocation.

c) Explain difference between Internal and External Fragmentation.

d) Explain need of page replacement with diagram.

e) Explain Segmentation with Hardware structure.

5. Attempt **any two** : **(2×8=16)**

1) Explain Kernel I/O subsystem.

2) List and explain different File Access Methods.

3) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults occur for the following algorithm assuming four frames ?

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———————

SLR-EP – 106

Seat No.	

Set R

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*

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4) Figures to the ***right*** *indicates* ***full*** *marks.*

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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) In Resource Allocation Graph, a directed edge from Pi → Rj is called
   a) Assignment Edge b) Request Edge
   c) Both a and b d) None of above

2) Addresses generated by CPU are commonly referred as _____ addresses.
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3) In memory allocation, allocate the smallest hole that is big enough among all the holes is
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4) Banker's Algorithm is used by _____ method.
   a) Deadlock Avoidance b) Deadlock Recovery
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5) Which is not the necessary condition for a deadlock situation to occur ?
   a) Mutual exclusion b) Hold and wait
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6) If each resource type has exactly one instance, then a cycle in RAG indicate that deadlock has occurred.
   a) False b) True c) Can't says d) None of above

P.T.O.

7) Physical memory is divided into fixed-sized blocks called as
   a) Pages b) Frames c) Both a and b d) Segments

8) Which of the following page replacement algorithm suffers from Belady's anomaly ?
   a) FIFO b) LRU c) Optimal d) None of above

9) A process is thrashing if it is spending more time in paging than executing.
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10) The mechanism that brings a page into memory only when it is needed is called
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11) Which scheduling algorithm is best suited for time sharing OS ?
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12) Scheduler which select process from secondary storage device to main memory is called
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13) _____ is technique for improving priority of processes.
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14) If dinning philosopher problem chopsticks are represented by
   a) single Semaphore b) 5 distinct semaphore variables
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16) _____ algorithms causes minimum average waiting delay.
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_____

SLR-EP – 106

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

1) Describe the following Scheduling Criteria's to decide the performance of any Scheduling algorithm.

a) CPU Utilization

b) Throughput

c) Turnaround Time

d) Waiting Time

e) Response Time

How the performance of any scheduling algorithm can be increased ?

2) What is a process ? Describe the different fields stored in a Process Control Block.

3) What are Batch Operating Systems ?

4) Elaborate the three Multithreading Models with diagram.

5) What is deadlock ? Explain the safe and unsafe deadlock avoidance method.

3. Attempt **any two** : **(2×8=16)**

1) Describe the deadlock prevention scheme in detail.

2) Explain the message passing method of interprocess communication in detail.

3) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	CPU Burst Time	Arrival Time
P1	7	0
P2	5	1
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a) How will these processes be schedules according to FCFS and SJF Scheduling algorithm ?

b) Draw the Gantt Chart for FCFS and SJF scheduling algorithm.

c) Compute the average waiting time and average turnaround time.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

a) Write a note on – Free Space Management.

b) Write note on dynamic memory allocation.

c) Explain difference between Internal and External Fragmentation.

d) Explain need of page replacement with diagram.

e) Explain Segmentation with Hardware structure.

5. Attempt **any two** : **(2×8=16)**

1) Explain Kernel I/O subsystem.

2) List and explain different File Access Methods.

3) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults occur for the following algorithm assuming four frames ?

LRU, FIFO and optimal replacement algorithm. Which algorithm is efficient ?

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SLR-EP – 106

Seat No.	

Set S

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*

2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

3) ***All*** *questions are* ***compulsory****.*

4) Figures to the ***right*** *indicates* ***full*** *marks.*

5) Assume suitable data ***if*** *necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) _____ algorithms causes minimum average waiting delay.
a) Round robin b) SJF c) FCFS d) None

2) Operating system is
a) Software b) Hardware c) Both a and b d) None

3) _____ OS needed to process request in most interactive way.
a) Real time b) Time sharing c) Distributed d) None

4) A process can be terminated due to
a) normal exit b) fatal error
c) killed by another process d) all of the mentioned

5) Swapping is carried out by _____ scheduler.
a) long term b) medium term c) short term d) none

6) In Resource Allocation Graph, a directed edge from Pi $\rightarrow$ Rj is called
a) Assignment Edge b) Request Edge
c) Both a and b d) None of above

7) Addresses generated by CPU are commonly referred as _____ addresses.
a) Physical b) Logical c) Permanent d) None of above

P.T.O.

8) In memory allocation, allocate the smallest hole that is big enough among all the holes is
   a) Best fit b) Worst fit c) First fit d) None of above

9) Banker's Algorithm is used by _____ method.
   a) Deadlock Avoidance b) Deadlock Recovery
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10) Which is not the necessary condition for a deadlock situation to occur ?
   a) Mutual exclusion b) Hold and wait
   c) Progress d) No preemption

11) If each resource type has exactly one instance, then a cycle in RAG indicate that deadlock has occurred.
   a) False b) True c) Can't says d) None of above

12) Physical memory is divided into fixed-sized blocks called as
   a) Pages b) Frames c) Both a and b d) Segments

13) Which of the following page replacement algorithm suffers from Belady's anomaly ?
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18) _____ is technique for improving priority of processes.
   a) Aging b) Starvation c) Relocation d) Revocation

19) If dinning philosopher problem chopsticks are represented by
   a) single Semaphore b) 5 distinct semaphore variables
   c) array of 5 semaphore variables d) none

20) How many semaphore variables are needed to allow execution of two processes in parallel ?
   a) 0 b) 1 c) 2 d) 3

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SLR-EP – 106

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
OPERATING SYSTEMS

Day and Date : Monday, 21-11-2016 Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if*** *necessary.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

1) Describe the following Scheduling Criteria's to decide the performance of any Scheduling algorithm.

a) CPU Utilization

b) Throughput

c) Turnaround Time

d) Waiting Time

e) Response Time

How the performance of any scheduling algorithm can be increased ?

2) What is a process ? Describe the different fields stored in a Process Control Block.

3) What are Batch Operating Systems ?

4) Elaborate the three Multithreading Models with diagram.

5) What is deadlock ? Explain the safe and unsafe deadlock avoidance method.

3. Attempt **any two** : **(2×8=16)**

1) Describe the deadlock prevention scheme in detail.

2) Explain the message passing method of interprocess communication in detail.

3) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	CPU Burst Time	Arrival Time
P1	7	0
P2	5	1
P3	2	3
P4	3	4

a) How will these processes be schedules according to FCFS and SJF Scheduling algorithm ?

b) Draw the Gantt Chart for FCFS and SJF scheduling algorithm.

c) Compute the average waiting time and average turnaround time.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

a) Write a note on – Free Space Management.

b) Write note on dynamic memory allocation.

c) Explain difference between Internal and External Fragmentation.

d) Explain need of page replacement with diagram.

e) Explain Segmentation with Hardware structure.

5. Attempt **any two** : **(2×8=16)**

1) Explain Kernel I/O subsystem.

2) List and explain different File Access Methods.

3) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults occur for the following algorithm assuming four frames ?

LRU, FIFO and optimal replacement algorithm. Which algorithm is efficient ?

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SLR-EP – 107

Seat No.	

Set **P**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicates **full** marks.*
*3) Assume suitable data **if necessary**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **20**

1) In a PCM system, the quantization operation is operated at
   a) the transmitter only
   b) the receiver only
   c) both the transmitter and the receiver
   d) either the transmitter or the receiver

2) Pulse shaping is done to reduce the
   a) Intersymbol Interference b) Errors in received data
   c) Bit rate of the signal d) Complexity of the system

3) The transmitter in a delta modulation system transmits the
   a) integration of the input signal b) derivative of the input signal
   c) input signal as it is d) none of the above

4) The quantization error in a PCM system depends on the
   a) sampling rate b) step size
   c) encoder d) all of the above

5) The maximum permissible distance between two samples of a 2 KHz signals is
   a) 1000 μs b) 500 μs c) 250 μs d) none of above

6) The PWM needs
   a) more power than PPM b) more samples per sec than PPM
   c) more bandwidth than PPM d) none of the above

7) Entropy gives
   a) amount of information b) rate of information
   c) measure of uncertainty d) probability of message

P.T.O.

8) Which of the following is correct ?

a) $H\left(\frac{y}{x}\right) = H(x, y) - H(x)$ b) b.I $(x, y) = H(x) - H\left(\frac{y}{x}\right)$

c) $H(x, y) = H\left(\frac{x}{y}\right) + H(x)$ d) d.I $(x, y) = H(y) - H\left(\frac{y}{x}\right)$

9) The mutual information of a channel with independent input and output is
a) zero b) constant c) infinite d) variable

10) Capacity of a binary channel is
a) 1 – H(p) b) 1 – H(q)
c) log $(2^{Q_1} + 2^{Q_2})$ d) $2^{Q_1} + 2^{Q_2}$

11) ASK, PSK, FSK and QAM are examples of _____ encoding.
a) Digital-to-digital b) Digital-to-analog
c) Analog-to-analog d) Analog-to-digital

12) In QAM, both phase and _____ of a carrier frequency are varied.
a) Amplitude b) Frequency c) Bit rate d) Baud rate

13) Which of the following is most affected by noise ?
a) PSK b) ASK c) FSK d) QAM

14) Which of the following modulation techniques are used by modems ?
a) 16-QAM b) FSK c) 8-PSK d) All of the above

15) In cyclic redundancy checking, the divisor is _____ the CRC.
a) one bit less than b) one bit more than
c) the same size as d) none of the above

16) In _____ error correction, the receiver corrects errors without requesting retransmission.
a) onward b) forward c) backward d) none of the above

17) The Hamming distance between equal codewords is _____
a) 0 b) 1 c) n d) none of the above

18) A simple parity-check code can detect _____ errors.
a) an odd-number of b) an even-number of
c) two d) no errors

19) The early late gate synchronizer is a technique used for
a) carrier synchronization b) symbol synchronization
c) frame synchronization d) none of these

20) Costas loop is a method for
a) Frame synchronization b) Carrier synchronization
c) Symbol synchronization d) None of these

_____

SLR-EP – 107

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) Explain the block diagram of a PCM transmitter and receiver with help of waveforms at the output of each block. Derive an expression for the bandwidth requirement of PCM.

b) Explain the operation of a Continuously Variable Slope Delta (CVSD) modulation. How does it take care of hunting error ?

c) Apply Huffman Coding procedure for the following message ensemble for M = 3. Also find the coding efficiency.

[X]	x_1	x_2	x_3	x_4	x_5	x_6	x_7
[P]	0.4	0.2	0.12	0.08	0.08	0.08	0.04

3. Solve **any four** : **(5×4=20)**

a) Explain Aliasing error. How can it be overcome with the help of an anti-aliasing filter ?

b) With the help of circuit diagram, explain the operation of PAM modulator and demodulator.

c) Compare PCM and delta modulation.

d) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

e) Explain companding with the help of input output characteristics.

SECTION – II

4. Attempt **any two** : **(10×2=20)**

a) The parity check matrix of a particular (7, 4) linear block code is given by,

$$H = \begin{bmatrix} 1110100 \\ 1101010 \\ 1011001 \end{bmatrix}$$

i) Find the generator matrix (G)
ii) List all the code vectors
iii) What is the minimum distance between the code vectors ?
iv) How many errors can be detected ? How many error can be correct ?

b) Realize operation of differentially encoder PSK system. Explain why errors always occurs in pairs in this system.

c) With suitable application examples explain correlation receiver.

5. Solve **any four** : **(4×5=20)**

a) Derive an expression for BPSK.

b) Draw block diagram of syndrome decoder linear block code.

c) Find the code word for systematic (7, 4) cyclic code for message [1 0 0 1] and $g(x) = 1 + x^2 + x^3$.

d) Explain decoding of a convolution code.

e) Explain optimum receiver.

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SLR-EP – 107

Seat No.	

Set **Q**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
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MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **20**

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P.T.O.

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12) Entropy gives
   a) amount of information b) rate of information
   c) measure of uncertainty d) probability of message

13) Which of the following is correct ?
   a) $H\left(\frac{y}{x}\right) = H(x, y) - H(x)$ b) b. $I(x, y) = H(x) - H\left(\frac{y}{x}\right)$
   c) $H(x, y) = H\left(\frac{x}{y}\right) + H(x)$ d) d. $I(x, y) = H(y) - H\left(\frac{y}{x}\right)$

14) The mutual information of a channel with independent input and output is
   a) zero b) constant c) infinite d) variable

15) Capacity of a binary channel is
   a) 1 – H(p) b) 1 – H(q)
   c) $\log (2^{Q_1} + 2^{Q_2})$ d) $2^{Q_1} + 2^{Q_2}$

16) ASK, PSK, FSK and QAM are examples of _____ encoding.
   a) Digital-to-digital b) Digital-to-analog
   c) Analog-to-analog d) Analog-to-digital

17) In QAM, both phase and _____ of a carrier frequency are varied.
   a) Amplitude b) Frequency c) Bit rate d) Baud rate

18) Which of the following is most affected by noise ?
   a) PSK b) ASK c) FSK d) QAM

19) Which of the following modulation techniques are used by modems ?
   a) 16-QAM b) FSK c) 8-PSK d) All of the above

20) In cyclic redundancy checking, the divisor is _____ the CRC.
   a) one bit less than b) one bit more than
   c) the same size as d) none of the above

_____

SLR-EP – 107

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) Explain the block diagram of a PCM transmitter and receiver with help of waveforms at the output of each block. Derive an expression for the bandwidth requirement of PCM.

b) Explain the operation of a Continuously Variable Slope Delta (CVSD) modulation. How does it take care of hunting error ?

c) Apply Huffman Coding procedure for the following message ensemble for M = 3. Also find the coding efficiency.

[X]	x_1	x_2	x_3	x_4	x_5	x_6	x_7
[P]	0.4	0.2	0.12	0.08	0.08	0.08	0.04

3. Solve **any four** : **(5×4=20)**

a) Explain Aliasing error. How can it be overcome with the help of an anti-aliasing filter ?

b) With the help of circuit diagram, explain the operation of PAM modulator and demodulator.

c) Compare PCM and delta modulation.

d) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

e) Explain companding with the help of input output characteristics.

SECTION – II

4. Attempt **any two** : **(10×2=20)**

a) The parity check matrix of a particular (7, 4) linear block code is given by,

$$H = \begin{bmatrix} 1110100 \\ 1101010 \\ 1011001 \end{bmatrix}$$

i) Find the generator matrix (G)
ii) List all the code vectors
iii) What is the minimum distance between the code vectors ?
iv) How many errors can be detected ? How many error can be correct ?

b) Realize operation of differentially encoder PSK system. Explain why errors always occurs in pairs in this system.

c) With suitable application examples explain correlation receiver.

5. Solve **any four** : **(4×5=20)**

a) Derive an expression for BPSK.

b) Draw block diagram of syndrome decoder linear block code.

c) Find the code word for systematic (7, 4) cyclic code for message [1 0 0 1] and $g(x) = 1 + x^2 + x^3$.

d) Explain decoding of a convolution code.

e) Explain optimum receiver.

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SLR-EP – 107

Seat No.	

Set **R**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicates **full** marks.*
*3) Assume suitable data **if necessary**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **20**

1) ASK, PSK, FSK and QAM are examples of _____ encoding.
   a) Digital-to-digital b) Digital-to-analog
   c) Analog-to-analog d) Analog-to-digital

2) In QAM, both phase and _____ of a carrier frequency are varied.
   a) Amplitude b) Frequency c) Bit rate d) Baud rate

3) Which of the following is most affected by noise ?
   a) PSK b) ASK c) FSK d) QAM

4) Which of the following modulation techniques are used by modems ?
   a) 16-QAM b) FSK c) 8-PSK d) All of the above

5) In cyclic redundancy checking, the divisor is _____ the CRC.
   a) one bit less than b) one bit more than
   c) the same size as d) none of the above

6) In _____ error correction, the receiver corrects errors without requesting retransmission.
   a) onward b) forward c) backward d) none of the above

7) The Hamming distance between equal codewords is _____
   a) 0 b) 1 c) n d) none of the above

8) A simple parity-check code can detect _____ errors.
   a) an odd-number of b) an even-number of
   c) two d) no errors

9) The early late gate synchronizer is a technique used for
   a) carrier synchronization b) symbol synchronization
   c) frame synchronization d) none of these

P.T.O.

10) Costas loop is a method for
   a) Frame synchronization
   b) Carrier synchronization
   c) Symbol synchronization
   d) None of these

11) In a PCM system, the quantization operation is operated at
   a) the transmitter only
   b) the receiver only
   c) both the transmitter and the receiver
   d) either the transmitter or the receiver

12) Pulse shaping is done to reduce the
   a) Intersymbol Interference
   b) Errors in received data
   c) Bit rate of the signal
   d) Complexity of the system

13) The transmitter in a delta modulation system transmits the
   a) integration of the input signal
   b) derivative of the input signal
   c) input signal as it is
   d) none of the above

14) The quantization error in a PCM system depends on the
   a) sampling rate
   b) step size
   c) encoder
   d) all of the above

15) The maximum permissible distance between two samples of a 2 KHz signals is
   a) 1000 μs b) 500 μs c) 250 μs d) none of above

16) The PWM needs
   a) more power than PPM
   b) more samples per sec than PPM
   c) more bandwidth than PPM
   d) none of the above

17) Entropy gives
   a) amount of information
   b) rate of information
   c) measure of uncertainty
   d) probability of message

18) Which of the following is correct ?
   a) $H\left(\frac{y}{x}\right) = H(x, y) - H(x)$
   b) b.I $(x, y) = H(x) - H\left(\frac{y}{x}\right)$
   c) $H(x, y) = H\left(\frac{x}{y}\right) + H(x)$
   d) d.I $(x, y) = H(y) - H\left(\frac{y}{x}\right)$

19) The mutual information of a channel with independent input and output is
   a) zero b) constant c) infinite d) variable

20) Capacity of a binary channel is
   a) $1 - H(p)$
   b) $1 - H(q)$
   c) $\log (2^{Q_1} + 2^{Q_2})$
   d) $2^{Q_1} + 2^{Q_2}$

SLR-EP – 107

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) Explain the block diagram of a PCM transmitter and receiver with help of waveforms at the output of each block. Derive an expression for the bandwidth requirement of PCM.

b) Explain the operation of a Continuously Variable Slope Delta (CVSD) modulation. How does it take care of hunting error ?

c) Apply Huffman Coding procedure for the following message ensemble for M = 3. Also find the coding efficiency.

[X]	x_1	x_2	x_3	x_4	x_5	x_6	x_7
[P]	0.4	0.2	0.12	0.08	0.08	0.08	0.04

3. Solve **any four** : **(5×4=20)**

a) Explain Aliasing error. How can it be overcome with the help of an anti-aliasing filter ?

b) With the help of circuit diagram, explain the operation of PAM modulator and demodulator.

c) Compare PCM and delta modulation.

d) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

e) Explain companding with the help of input output characteristics.

SECTION – II

4. Attempt **any two** : **(10×2=20)**

a) The parity check matrix of a particular (7, 4) linear block code is given by,

$$H = \begin{bmatrix} 1110100 \\ 1101010 \\ 1011001 \end{bmatrix}$$

i) Find the generator matrix (G)
ii) List all the code vectors
iii) What is the minimum distance between the code vectors ?
iv) How many errors can be detected ? How many error can be correct ?

b) Realize operation of differentially encoder PSK system. Explain why errors always occurs in pairs in this system.

c) With suitable application examples explain correlation receiver.

5. Solve **any four** : **(4×5=20)**

a) Derive an expression for BPSK.

b) Draw block diagram of syndrome decoder linear block code.

c) Find the code word for systematic (7, 4) cyclic code for message [1 0 0 1] and $g(x) = 1 + x^2 + x^3$.

d) Explain decoding of a convolution code.

e) Explain optimum receiver.

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SLR-EP – 107

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicates **full** marks.*
*3) Assume suitable data **if necessary**.*
*4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **20**

1) The PWM needs
   a) more power than PPM
   b) more samples per sec than PPM
   c) more bandwidth than PPM
   d) none of the above

2) Entropy gives
   a) amount of information
   b) rate of information
   c) measure of uncertainty
   d) probability of message

3) Which of the following is correct ?
   a) $H\left(\frac{y}{x}\right) = H(x, y) - H(x)$
   b) b.I $(x, y) = H(x) - H\left(\frac{y}{x}\right)$
   c) $H(x, y) = H\left(\frac{x}{y}\right) + H(x)$
   d) d.I $(x, y) = H(y) - H\left(\frac{y}{x}\right)$

4) The mutual information of a channel with independent input and output is
   a) zero b) constant c) infinite d) variable

5) Capacity of a binary channel is
   a) $1 - H(p)$
   b) $1 - H(q)$
   c) $\log (2^{Q_1} + 2^{Q_2})$
   d) $2^{Q_1} + 2^{Q_2}$

6) ASK, PSK, FSK and QAM are examples of _____ encoding.
   a) Digital-to-digital
   b) Digital-to-analog
   c) Analog-to-analog
   d) Analog-to-digital

7) In QAM, both phase and _____ of a carrier frequency are varied.
   a) Amplitude b) Frequency c) Bit rate d) Baud rate

P.T.O.

8) Which of the following is most affected by noise ?
   a) PSK b) ASK c) FSK d) QAM

9) Which of the following modulation techniques are used by modems ?
   a) 16-QAM b) FSK c) 8-PSK d) All of the above

10) In cyclic redundancy checking, the divisor is _____ the CRC.
   a) one bit less than b) one bit more than
   c) the same size as d) none of the above

11) In _____ error correction, the receiver corrects errors without requesting retransmission.
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12) The Hamming distance between equal codewords is _____
   a) 0 b) 1 c) n d) none of the above

13) A simple parity-check code can detect _____ errors.
   a) an odd-number of b) an even-number of
   c) two d) no errors

14) The early late gate synchronizer is a technique used for
   a) carrier synchronization b) symbol synchronization
   c) frame synchronization d) none of these

15) Costas loop is a method for
   a) Frame synchronization b) Carrier synchronization
   c) Symbol synchronization d) None of these

16) In a PCM system, the quantization operation is operated at
   a) the transmitter only
   b) the receiver only
   c) both the transmitter and the receiver
   d) either the transmitter or the receiver

17) Pulse shaping is done to reduce the
   a) Intersymbol Interference b) Errors in received data
   c) Bit rate of the signal d) Complexity of the system

18) The transmitter in a delta modulation system transmits the
   a) integration of the input signal b) derivative of the input signal
   c) input signal as it is d) none of the above

19) The quantization error in a PCM system depends on the
   a) sampling rate b) step size
   c) encoder d) all of the above

20) The maximum permissible distance between two samples of a 2 KHz signals is
   a) 1000 μs b) 500 μs c) 250 μs d) none of above

_____

SLR-EP – 107

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
DIGITAL COMMUNICATION

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) Explain the block diagram of a PCM transmitter and receiver with help of waveforms at the output of each block. Derive an expression for the bandwidth requirement of PCM.

b) Explain the operation of a Continuously Variable Slope Delta (CVSD) modulation. How does it take care of hunting error ?

c) Apply Huffman Coding procedure for the following message ensemble for M = 3. Also find the coding efficiency.

[X]	x_1	x_2	x_3	x_4	x_5	x_6	x_7
[P]	0.4	0.2	0.12	0.08	0.08	0.08	0.04

3. Solve **any four** : **(5×4=20)**

a) Explain Aliasing error. How can it be overcome with the help of an anti-aliasing filter ?

b) With the help of circuit diagram, explain the operation of PAM modulator and demodulator.

c) Compare PCM and delta modulation.

d) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

e) Explain companding with the help of input output characteristics.

SECTION – II

4. Attempt **any two** : **(10×2=20)**

a) The parity check matrix of a particular (7, 4) linear block code is given by,

$$H = \begin{bmatrix} 1110100 \\ 1101010 \\ 1011001 \end{bmatrix}$$

i) Find the generator matrix (G)
ii) List all the code vectors
iii) What is the minimum distance between the code vectors ?
iv) How many errors can be detected ? How many error can be correct ?

b) Realize operation of differentially encoder PSK system. Explain why errors always occurs in pairs in this system.

c) With suitable application examples explain correlation receiver.

5. Solve **any four** : **(4×5=20)**

a) Derive an expression for BPSK.

b) Draw block diagram of syndrome decoder linear block code.

c) Find the code word for systematic (7, 4) cyclic code for message [1 0 0 1] and $g(x) = 1 + x^2 + x^3$.

d) Explain decoding of a convolution code.

e) Explain optimum receiver.

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SLR-EP – 108

Seat No.	

Set P

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) The internal RAM memory of the 8051 is
a) 32 bytes b) 64 bytes c) 128 bytes d) 256 bytes

2) This program code will be executed continuously

```
STAT : MOV A, #01h
       JNZ A, STAT
```

a) True b) False

3) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2 c) 3 d) 4

4) MOV A, @ R1 will
a) Copy R1 to the accumulator
b) Copy the accumulator to R1
c) Copy the contents of memory whose address is in R1 to the accumulator
d) Copy the accumulator to the contents of memory whose address is in R1

5) When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the
a) Internal code memory b) External code memory
c) Internal data memory d) External data memory

6) The I/O ports that are used as address and data for external memory are
a) Ports 1 and 2 b) Ports 1 and 3 c) Ports 0 and 2 d) Ports 0 and 3

P.T.O.

7) The total external data memory that can be interfaced to the 8051 is
a) 32 K b) 64 K c) 128 K d) 256 K

8) In 8051 an external interrupt 1 vector address is of
a) 000BH b) 001BH c) 0013H d) 0023H

9) LCALL instruction of 8051 is _____ byte instruction.
a) One b) Two c) Three d) Four

10) In 8051 _____ bit of _____ register can be used to double the baud rate.
a) SM0, SCON b) SMOD, PCON c) Gate, TMOD d) SM0, PCON

11) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR 2 c) PR 2 d) CCP1RL

12) In PIC to make Port B an input port, we must place _____ in register_____
a) 00 h, PORTB b) FF h, PORTB c) 00 h, TRISB d) FF h, TRISB

13) In PIC 16F877 interrupt vector is at _____ in program memory.
a) 0000 h b) 0004 h c) 0040 h d) 0400 h

14) If IRP bit of STATUS register is set, then _____ will gets selected.
a) Bank 0 b) Bank 1 c) Bank 2 or 3 d) Bank 0 or 1

15) 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

16) The file with the _____ extension is downloaded into PIC ROM.
a) hex b) asm c) obj d) all

17) The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack.
a) 8, 13 b) 13, 8 c) 8, 12 d) 12, 8

18) An instruction using the _____ register actually accesses the register pointed by the _____.
a) FSR, INDF b) INDF, FSR c) FSR, W d) INDF, W

19) In PIC 16F877 the Timer 1 module increments on every _____ edge of the external clock input.
a) Falling b) Rising
c) Falling/Rising d) None of the above

20) In PIC 16F877 _____ port can be configured as parallel slave port.
a) PORT A b) PORT C c) PORT D d) PORT E

_____

SLR-EP – 108

Seat No.	

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Solve **any four** : **(5×4=20)**
   a) Write 8051 assembly program to add two 32 bit numbers.
   b) Explain the Timer/Counter operation in 8051.
   c) Draw the memory organization in 8051.
   d) Explain interrupts in 8051.
   e) Write 8051 assembly program to toggle all bits of P2 continuously every 250 ms. Use Timer 1, mode 1, XTAL = 11.0592 MHz.

3. Solve **any two** : **(10×2=20)**
   a) Draw and explain interfacing of 16K × 8 Data RAM to 8051. Write a assembly program to read 100 bytes of data from P1 and save the data in external starting at RAM location 5000h.
   b) What are the steps to be follow to program the 8051 to receive and transmit data serially ? Write 8051 assembly program to transfer the message “Hello Everybody” serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.
   c) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “WELCOME” from second row-fifth column.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Explain the operation of Timer-0 module in PIC 16F877.
   b) What is the use of W, STATUS, FSR, INDF, PCL and PCLATCH registers in PIC 16F877 ?
   c) Write a assembly program for PIC to add two 16 bit numbers.
   d) Draw and explain memory organization in PIC 16F877.
   e) Explain the parallel slave port mode of operation in PIC.

5. Solve **any two** : **(8×2=16)**
   a) Draw and explain interfacing of 4 × 4 keypad to PIC 16F877.
   b) Explain SPI operation in PIC microcontroller.
   c) How PWM module in PIC 16F877 works ? How to specify PWM period and duty cycle ?

Set P

Set P

SLR-EP – 108

Seat No.	

Set **Q**

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) The file with the _____ extension is downloaded into PIC ROM.
a) hex b) asm c) obj d) all

2) The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack.
a) 8, 13 b) 13, 8 c) 8, 12 d) 12, 8

3) An instruction using the _____ register actually accesses the register pointed by the _____.
a) FSR, INDF b) INDF, FSR c) FSR, W d) INDF, W

4) In PIC 16F877 the Timer 1 module increments on every _____ edge of the external clock input.
a) Falling b) Rising
c) Falling/Rising d) None of the above

5) In PIC 16F877 _____ port can be configured as parallel slave port.
a) PORT A b) PORT C c) PORT D d) PORT E

6) The internal RAM memory of the 8051 is
a) 32 bytes b) 64 bytes c) 128 bytes d) 256 bytes

7) This program code will be executed continuously

```
STAT : MOV A, #01h
       JNZ A, STAT
```

a) True b) False

P.T.O.

8) The 8051 has _____ 16-bit counter/timers.
   a) 1 b) 2 c) 3 d) 4

9) MOV A, @ R1 will
   a) Copy R1 to the accumulator
   b) Copy the accumulator to R1
   c) Copy the contents of memory whose address is in R1 to the accumulator
   d) Copy the accumulator to the contents of memory whose address is in R1

10) When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the
   a) Internal code memory b) External code memory
   c) Internal data memory d) External data memory

11) The I/O ports that are used as address and data for external memory are
   a) Ports 1 and 2 b) Ports 1 and 3 c) Ports 0 and 2 d) Ports 0 and 3

12) The total external data memory that can be interfaced to the 8051 is
   a) 32 K b) 64 K c) 128 K d) 256 K

13) In 8051 an external interrupt 1 vector address is of
   a) 000BH b) 001BH c) 0013H d) 0023H

14) LCALL instruction of 8051 is _____ byte instruction.
   a) One b) Two c) Three d) Four

15) In 8051 _____ bit of _____ register can be used to double the baud rate.
   a) SM0, SCON b) SMOD, PCON c) Gate, TMOD d) SM0, PCON

16) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
   a) PR1 b) TMR 2 c) PR 2 d) CCP1RL

17) In PIC to make Port B an input port, we must place _____ in register_____
   a) 00 h, PORTB b) FF h, PORTB c) 00 h, TRISB d) FF h, TRISB

18) In PIC 16F877 interrupt vector is at _____ in program memory.
   a) 0000 h b) 0004 h c) 0040 h d) 0400 h

19) If IRP bit of STATUS register is set, then _____ will gets selected.
   a) Bank 0 b) Bank 1 c) Bank 2 or 3 d) Bank 0 or 1

20) 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

_____

SLR-EP – 108

Seat No.	

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the **right** indicate **full** marks.*
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SECTION – I

2. Solve **any four** : **(5×4=20)**
   a) Write 8051 assembly program to add two 32 bit numbers.
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   c) Draw the memory organization in 8051.
   d) Explain interrupts in 8051.
   e) Write 8051 assembly program to toggle all bits of P2 continuously every 250 ms. Use Timer 1, mode 1, XTAL = 11.0592 MHz.

3. Solve **any two** : **(10×2=20)**
   a) Draw and explain interfacing of 16K × 8 Data RAM to 8051. Write a assembly program to read 100 bytes of data from P1 and save the data in external starting at RAM location 5000h.
   b) What are the steps to be follow to program the 8051 to receive and transmit data serially ? Write 8051 assembly program to transfer the message “Hello Everybody” serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.
   c) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “WELCOME” from second row-fifth column.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Explain the operation of Timer-0 module in PIC 16F877.
   b) What is the use of W, STATUS, FSR, INDF, PCL and PCLATCH registers in PIC 16F877 ?
   c) Write a assembly program for PIC to add two 16 bit numbers.
   d) Draw and explain memory organization in PIC 16F877.
   e) Explain the parallel slave port mode of operation in PIC.

5. Solve **any two** : **(8×2=16)**
   a) Draw and explain interfacing of 4 × 4 keypad to PIC 16F877.
   b) Explain SPI operation in PIC microcontroller.
   c) How PWM module in PIC 16F877 works ? How to specify PWM period and duty cycle ?

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Set Q

Set Q

SLR-EP – 108

Seat No.	

Set **R**

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR 2 c) PR 2 d) CCP1RL

2) In PIC to make Port B an input port, we must place _____ in register_____
a) 00 h, PORTB b) FF h, PORTB c) 00 h, TRISB d) FF h, TRISB

3) In PIC 16F877 interrupt vector is at _____ in program memory.
a) 0000 h b) 0004 h c) 0040 h d) 0400 h

4) If IRP bit of STATUS register is set, then _____ will gets selected.
a) Bank 0 b) Bank 1 c) Bank 2 or 3 d) Bank 0 or 1

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 file with the _____ extension is downloaded into PIC ROM.
a) hex b) asm c) obj d) all

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) An instruction using the _____ register actually accesses the register pointed by the _____.
a) FSR, INDF b) INDF, FSR c) FSR, W d) INDF, W

P.T.O.

9) In PIC 16F877 the Timer 1 module increments on every _____ edge of the external clock input.
   a) Falling b) Rising
   c) Falling/Rising d) None of the above

10) In PIC 16F877 _____ port can be configured as parallel slave port.
   a) PORT A b) PORT C c) PORT D d) PORT E

11) The internal RAM memory of the 8051 is
   a) 32 bytes b) 64 bytes c) 128 bytes d) 256 bytes

12) This program code will be executed continuously

```
STAT : MOV A, #01h
       JNZ A, STAT
```

   a) True b) False

13) The 8051 has _____ 16-bit counter/timers.
   a) 1 b) 2 c) 3 d) 4

14) MOV A, @ R1 will
   a) Copy R1 to the accumulator
   b) Copy the accumulator to R1
   c) Copy the contents of memory whose address is in R1 to the accumulator
   d) Copy the accumulator to the contents of memory whose address is in R1

15) When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the
   a) Internal code memory b) External code memory
   c) Internal data memory d) External data memory

16) The I/O ports that are used as address and data for external memory are
   a) Ports 1 and 2 b) Ports 1 and 3 c) Ports 0 and 2 d) Ports 0 and 3

17) The total external data memory that can be interfaced to the 8051 is
   a) 32 K b) 64 K c) 128 K d) 256 K

18) In 8051 an external interrupt 1 vector address is of
   a) 000BH b) 001BH c) 0013H d) 0023H

19) LCALL instruction of 8051 is _____ byte instruction.
   a) One b) Two c) Three d) Four

20) In 8051 _____ bit of _____ register can be used to double the baud rate.
   a) SM0, SCON b) SMOD, PCON c) Gate, TMOD d) SM0, PCON

_____

SLR-EP – 108

Seat No.	

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Solve **any four** : **(5×4=20)**
   a) Write 8051 assembly program to add two 32 bit numbers.
   b) Explain the Timer/Counter operation in 8051.
   c) Draw the memory organization in 8051.
   d) Explain interrupts in 8051.
   e) Write 8051 assembly program to toggle all bits of P2 continuously every 250 ms. Use Timer 1, mode 1, XTAL = 11.0592 MHz.

3. Solve **any two** : **(10×2=20)**
   a) Draw and explain interfacing of 16K × 8 Data RAM to 8051. Write a assembly program to read 100 bytes of data from P1 and save the data in external starting at RAM location 5000h.
   b) What are the steps to be follow to program the 8051 to receive and transmit data serially ? Write 8051 assembly program to transfer the message "Hello Everybody" serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.
   c) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display "WELCOME" from second row-fifth column.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Explain the operation of Timer-0 module in PIC 16F877.
   b) What is the use of W, STATUS, FSR, INDF, PCL and PCLATCH registers in PIC 16F877 ?
   c) Write a assembly program for PIC to add two 16 bit numbers.
   d) Draw and explain memory organization in PIC 16F877.
   e) Explain the parallel slave port mode of operation in PIC.

5. Solve **any two** : **(8×2=16)**
   a) Draw and explain interfacing of 4 × 4 keypad to PIC 16F877.
   b) Explain SPI operation in PIC microcontroller.
   c) How PWM module in PIC 16F877 works ? How to specify PWM period and duty cycle ?

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Set R

Set R

SLR-EP – 108

Seat No.	

Set **S**

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) The I/O ports that are used as address and data for external memory are
a) Ports 1 and 2 b) Ports 1 and 3 c) Ports 0 and 2 d) Ports 0 and 3

2) The total external data memory that can be interfaced to the 8051 is
a) 32 K b) 64 K c) 128 K d) 256 K

3) In 8051 an external interrupt 1 vector address is of
a) 000BH b) 001BH c) 0013H d) 0023H

4) LCALL instruction of 8051 is _____ byte instruction.
a) One b) Two c) Three d) Four

5) In 8051 _____ bit of _____ register can be used to double the baud rate.
a) SM0, SCON b) SMOD, PCON c) Gate, TMOD d) SM0, PCON

6) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR 2 c) PR 2 d) CCP1RL

7) In PIC to make Port B an input port, we must place _____ in register_____
a) 00 h, PORTB b) FF h, PORTB c) 00 h, TRISB d) FF h, TRISB

8) In PIC 16F877 interrupt vector is at _____ in program memory.
a) 0000 h b) 0004 h c) 0040 h d) 0400 h

9) If IRP bit of STATUS register is set, then _____ will gets selected.
a) Bank 0 b) Bank 1 c) Bank 2 or 3 d) Bank 0 or 1

P.T.O.

10) 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

11) The file with the _____ extension is downloaded into PIC ROM.
a) hex b) asm c) obj d) all

12) The PIC 16F877 has a _____ level deep x _____ bit wide hardware stack.
a) 8, 13 b) 13, 8 c) 8, 12 d) 12, 8

13) An instruction using the _____ register actually accesses the register pointed by the _____.
a) FSR, INDF b) INDF, FSR c) FSR, W d) INDF, W

14) In PIC 16F877 the Timer 1 module increments on every _____ edge of the external clock input.
a) Falling b) Rising
c) Falling/Rising d) None of the above

15) In PIC 16F877 _____ port can be configured as parallel slave port.
a) PORT A b) PORT C c) PORT D d) PORT E

16) The internal RAM memory of the 8051 is
a) 32 bytes b) 64 bytes c) 128 bytes d) 256 bytes

17) This program code will be executed continuously

```
STAT : MOV A, #01h
       JNZ A, STAT
```

a) True b) False

18) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2 c) 3 d) 4

19) MOV A, @ R1 will
a) Copy R1 to the accumulator
b) Copy the accumulator to R1
c) Copy the contents of memory whose address is in R1 to the accumulator
d) Copy the accumulator to the contents of memory whose address is in R1

20) When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the
a) Internal code memory b) External code memory
c) Internal data memory d) External data memory

_____

SLR-EP – 108

Seat No.	

T.E. (Electronics) Part – II Examination, 2016
MICROCONTROLLERS

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Solve **any four** : **(5×4=20)**
   a) Write 8051 assembly program to add two 32 bit numbers.
   b) Explain the Timer/Counter operation in 8051.
   c) Draw the memory organization in 8051.
   d) Explain interrupts in 8051.
   e) Write 8051 assembly program to toggle all bits of P2 continuously every 250 ms. Use Timer 1, mode 1, XTAL = 11.0592 MHz.

3. Solve **any two** : **(10×2=20)**
   a) Draw and explain interfacing of 16K × 8 Data RAM to 8051. Write a assembly program to read 100 bytes of data from P1 and save the data in external starting at RAM location 5000h.
   b) What are the steps to be follow to program the 8051 to receive and transmit data serially ? Write 8051 assembly program to transfer the message “Hello Everybody” serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.
   c) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “WELCOME” from second row-fifth column.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Explain the operation of Timer-0 module in PIC 16F877.
   b) What is the use of W, STATUS, FSR, INDF, PCL and PCLATCH registers in PIC 16F877 ?
   c) Write a assembly program for PIC to add two 16 bit numbers.
   d) Draw and explain memory organization in PIC 16F877.
   e) Explain the parallel slave port mode of operation in PIC.

5. Solve **any two** : **(8×2=16)**
   a) Draw and explain interfacing of 4 × 4 keypad to PIC 16F877.
   b) Explain SPI operation in PIC microcontroller.
   c) How PWM module in PIC 16F877 works ? How to specify PWM period and duty cycle ?

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Set S

Set S

SLR-EP – 109

Seat No.	

Set P

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) 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
2) Thyristor is a semiconductor switch which is
   a) > unilateral and latching b) >bilateral and astable
   c) >unilateral and latch proof d) >bilateral and bistable
3) A conducting thyristor can be opened by reducing _____ to zero.
   a) Supply voltage b) Gate current
   c) Gate voltage d) Anode current
4) A GTO
   a) > requires special turn off circuitry like thyristors
   b) >can be turned off by removing the gate pulse
   c) >can be turned off by negative current pulse at the gate
   d) >can be turned off by positive current pulse at the gate
5) IGBT
   a) Performance is closer to BJT than MOSFET
   b) Is combination MOSFET and BJT
   c) Performance is closer to MOSFET than BJT
   d) Both a and b
6) The body layer is connected to source terminal in a MOSFET in order to
   a) reduce power dissipation b) increase speed of operation
   c) reduce noise interference d) to avoid latch up in a MOSFET
7) A single phase semiconverter is operated from 230 V, 60 Hz supply, then maximum possible output voltage is
   a) 207 V b) 103.5 V c) 73.21 V d) 270 V
8) The on state drop of IGBT is
   a) Less than MOSFET b) Greater than MOSFET
   c) Equal to MOSFET d) Both b and c

9) In single phase fully controlled converter with freewheeling diode and inductive load with firing angle of 60° and amplitude of input voltage is 150 V, the PIV is

a) $\frac{225}{\pi}$ b) 150 c) $\frac{150}{\pi}$ d) $\frac{50}{\pi}$

10) A freewheeling diode is placed across inductive load
a) To prevent reversal of load voltage
b) Transfer load current away from source
c) To protect circulation of reactive power
d) All above

11) In resistance triggering circuit range of firing angle control is
a) 0 to 180° b) 0 to 90° c) 90 to 180° d) 0 to 360°

12) Which of the following PNPN device has two gate terminal ?
a) SCS b) SUS c) LASCR d) PUT

13) A UJT is used for triggering SCR then the wave shape of the voltage obtained from the UJT circuit is
a) Trapezoidal wave b) Sine wave
c) Swatooth wave d) Square wave

14) An PUT has VBB = 24V and interbase resistance $R_{B1} = 3\ R_{B2}$, then intrinsic stand off ratio is
a) 1/3 b) 2/3 c) >3/4 d) >4/3

15) In CVT as compared with ordinary transformer
a) Primary and secondary winding are wound near each other
b) Primary and secondary winding are wound separately from each other
c) Some part of winding is common to both primary and secondary winding
d) None of above

16) An optocoupler is combination
a) IRED and photo SCR b) Infra red light source and light detector
c) IRED and photo darlingtion d) All above

17) In SMPS for operation 20 KHz to 100 KHz range _____ uses as the main control element.
a) E-MOSFET b) Thyristor c) Triac d) UJT

18) Induction heating can be employed for heating the objects of ____ materials.
a) only non conducting b) only conducting
c) both a and b d) plastic

19) In solid state stabilizer output voltage is controlled by
a) By varying conduction angle of power device
b) By changing transformer
c) By changing supply voltage
d) All above

20) In _____ the heating is uniform throughout workpiece.
a) Dielectric heating b) Induction heating
c) Resistance heating d) Infrared heating

_____

Set P

SLR-EP – 109

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Figure to the ***right*** *indicate* ***full*** *marks.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**

1) Explain turn on mechanism of SCR using two transistor model.
2) What is complementary commutation ? Explain operation of Class C commutation circuit with associated waveforms.
3) Derive an expression for Avg. voltage and RMS load voltage for semiconverter with inductive load. Sketch associated waveforms for $\alpha = 60°$.
4) Draw planner structure of GTO. Explain what are different modifications made in ordinary SCR to improve turn off performance.
5) In single phase fully controlled thyristor bridge converter supplies a load consisting of RLE load. The inductance in the circuit is so large that output current may be considered to virtually constant. Assume SCR to be ideal with following data. RMS supply voltage = 230 V, $R_L = 0.4\,\Omega$, L = 12 mH, I_{dc} = 8A. Determine
   a) Firing angle if E_b = 100 V
   b) Firing angle if E_b = – 100 V
   c) Which source (AC or DC) is supplying power in a and b.

3. Attempt **any two** : **(2×10=20)**

1) Discuss the effect of source inductance on the performance of single phase full controlled rectifier. Derive an expression for its output voltage in terms of i> V_m, α, u and ii> V_m, α, L_s and I_d.
2) Explain following methods of over voltage protections circuits
   i) Snubber circuits for dv/dt suppression
   ii) Non linear surge suppressor
   iii) Electronic crowbar circuit.
3) Explain VI characteristics TRIAC and explain switching action and different triggering mode with suitable structural integrated structure.

SECTION – II

4. Attempt **any four** : **(4×5=20)**

   1) With help of block diagram explain triggering scheme for single phase controlled rectifier.

   2) Explain solid state fan regulator circuit using TRIAC.

   3) Explain principle of dielectric heating. Compare dielectric heating with induction heating.

   4) Explain operation of automatic street lighting system.

   5) With help of circuit diagram and waveforms explain the operation of full bridge SMPS.

5. Attempt **any two** : **(2×10=20)**

   1) Explain equivalent circuit and VI characteristics of UJT. Explain working of an oscillator employing UJT. Derive an expression for frequency of triggering.

   2) With help of block diagram explain working of AC servo controlled voltage stabilizer.

   3) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR. And explain working of optical isolated driver using LASCR to trigger high current SCR's.

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SLR-EP – 109

Seat No.	

Set Q

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) An optocoupler is combination
   a) IRED and photo SCR b) Infra red light source and light detector
   c) IRED and photo darlingtion d) All above

2) In SMPS for operation 20 KHz to 100 KHz range _____ uses as the main control element.
   a) E-MOSFET b) Thyristor c) Triac d) UJT

3) Induction heating can be employed for heating the objects of ____ materials.
   a) only non conducting b) only conducting
   c) both a and b d) plastic

4) In solid state stabilizer output voltage is controlled by
   a) By varying conduction angle of power device
   b) By changing transformer
   c) By changing supply voltage
   d) All above

5) In _____ the heating is uniform throughout workpiece.
   a) Dielectric heating b) Induction heating
   c) Resistance heating d) Infrared heating

6) 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

7) Thyristor is a semiconductor switch which is
   a) > unilateral and latching b) >bilateral and astable
   c) >unilateral and latch proof d) >bilateral and bistable

8) A conducting thyristor can be opened by reducing _____ to zero.
   a) Supply voltage b) Gate current
   c) Gate voltage d) Anode current

9) A GTO
   a) > requires special turn off circuitry like thyristors
   b) >can be turned off by removing the gate pulse
   c) >can be turned off by negative current pulse at the gate
   d) >can be turned off by positive current pulse at the gate
10) IGBT
   a) Performance is closer to BJT than MOSFET
   b) Is combination MOSFET and BJT
   c) Performance is closer to MOSFET than BJT
   d) Both a and b
11) The body layer is connected to source terminal in a MOSFET in order to
   a) reduce power dissipation b) increase speed of operation
   c) reduce noise interference d) to avoid latch up in a MOSFET
12) A single phase semiconverter is operated from 230 V, 60 Hz supply, then maximum possible output voltage is
   a) 207 V b) 103.5 V c) 73.21 V d) 270 V
13) The on state drop of IGBT is
   a) Less than MOSFET b) Greater than MOSFET
   c) Equal to MOSFET d) Both b and c
14) In single phase fully controlled converter with freewheeling diode and inductive load with firing angle of 60° and amplitude of input voltage is 150 V, the PIV is
   a) $\frac{225}{\pi}$ b) 150 c) $\frac{150}{\pi}$ d) $\frac{50}{\pi}$
15) A freewheeling diode is placed across inductive load
   a) To prevent reversal of load voltage
   b) Transfer load current away from source
   c) To protect circulation of reactive power
   d) All above
16) In resistance triggering circuit range of firing angle control is
   a) 0 to 180° b) 0 to 90° c) 90 to 180° d) 0 to 360°
17) Which of the following PNPN device has two gate terminal ?
   a) SCS b) SUS c) LASCR d) PUT
18) A UJT is used for triggering SCR then the wave shape of the voltage obtained from the UJT circuit is
   a) Trapezoidal wave b) Sine wave
   c) Swatooth wave d) Square wave
19) An PUT has VBB = 24V and interbase resistance $R_{B1} = 3\ R_{B2}$, then intrinsic stand off ratio is
   a) 1/3 b) 2/3 c) >3/4 d) >4/3
20) In CVT as compared with ordinary transformer
   a) Primary and secondary winding are wound near each other
   b) Primary and secondary winding are wound separately from each other
   c) Some part of winding is common to both primary and secondary winding
   d) None of above

SLR-EP – 109

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Figure to the ***right*** *indicate* ***full*** *marks.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**

1) Explain turn on mechanism of SCR using two transistor model.
2) What is complementary commutation ? Explain operation of Class C commutation circuit with associated waveforms.
3) Derive an expression for Avg. voltage and RMS load voltage for semiconverter with inductive load. Sketch associated waveforms for $\alpha = 60°$.
4) Draw planner structure of GTO. Explain what are different modifications made in ordinary SCR to improve turn off performance.
5) In single phase fully controlled thyristor bridge converter supplies a load consisting of RLE load. The inductance in the circuit is so large that output current may be considered to virtually constant. Assume SCR to be ideal with following data. RMS supply voltage = 230 V, $R_L = 0.4\,\Omega$, L = 12 mH, I_{dc} = 8A. Determine
   a) Firing angle if E_b = 100 V
   b) Firing angle if E_b = – 100 V
   c) Which source (AC or DC) is supplying power in a and b.

3. Attempt **any two** : **(2×10=20)**

1) Discuss the effect of source inductance on the performance of single phase full controlled rectifier. Derive an expression for its output voltage in terms of i> V_m, α, u and ii> V_m, α, L_s and I_d.
2) Explain following methods of over voltage protections circuits
   i) Snubber circuits for dv/dt suppression
   ii) Non linear surge suppressor
   iii) Electronic crowbar circuit.
3) Explain VI characteristics TRIAC and explain switching action and different triggering mode with suitable structural integrated structure.

Set Q

SECTION – II

4. Attempt **any four** : **(4×5=20)**

   1) With help of block diagram explain triggering scheme for single phase controlled rectifier.

   2) Explain solid state fan regulator circuit using TRIAC.

   3) Explain principle of dielectric heating. Compare dielectric heating with induction heating.

   4) Explain operation of automatic street lighting system.

   5) With help of circuit diagram and waveforms explain the operation of full bridge SMPS.

5. Attempt **any two** : **(2×10=20)**

   1) Explain equivalent circuit and VI characteristics of UJT. Explain working of an oscillator employing UJT. Derive an expression for frequency of triggering.

   2) With help of block diagram explain working of AC servo controlled voltage stabilizer.

   3) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR. And explain working of optical isolated driver using LASCR to trigger high current SCR's.

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SLR-EP – 109

Seat No.	

Set R

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) In resistance triggering circuit range of firing angle control is
   a) 0 to 180° b) 0 to 90° c) 90 to 180° d) 0 to 360°
2) Which of the following PNPN device has two gate terminal ?
   a) SCS b) SUS c) LASCR d) PUT
3) A UJT is used for triggering SCR then the wave shape of the voltage obtained from the UJT circuit is
   a) Trapezoidal wave b) Sine wave
   c) Swatooth wave d) Square wave
4) An PUT has VBB = 24V and interbase resistance $R_{B1} = 3\ R_{B2}$, then intrinsic stand off ratio is
   a) 1/3 b) 2/3 c) >3/4 d) >4/3
5) In CVT as compared with ordinary transformer
   a) Primary and secondary winding are wound near each other
   b) Primary and secondary winding are wound separately from each other
   c) Some part of winding is common to both primary and secondary winding
   d) None of above
6) An optocoupler is combination
   a) IRED and photo SCR b) Infra red light source and light detector
   c) IRED and photo darlingtion d) All above
7) In SMPS for operation 20 KHz to 100 KHz range _____ uses as the main control element.
   a) E-MOSFET b) Thyristor c) Triac d) UJT
8) Induction heating can be employed for heating the objects of ____ materials.
   a) only non conducting b) only conducting
   c) both a and b d) plastic
9) In solid state stabilizer output voltage is controlled by
   a) By varying conduction angle of power device
   b) By changing transformer
   c) By changing supply voltage
   d) All above

P.T.O.

10) In _____ the heating is uniform throughout workpiece.
   a) Dielectric heating b) Induction heating
   c) Resistance heating d) Infrared heating

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 semiconductor switch which is
   a) > unilateral and latching b) >bilateral and astable
   c) >unilateral and latch proof d) >bilateral and bistable

13) A conducting thyristor can be opened by reducing _____ to zero.
   a) Supply voltage b) Gate current
   c) Gate voltage d) Anode current

14) A GTO
   a) > requires special turn off circuitry like thyristors
   b) >can be turned off by removing the gate pulse
   c) >can be turned off by negative current pulse at the gate
   d) >can be turned off by positive current pulse at the gate

15) IGBT
   a) Performance is closer to BJT than MOSFET
   b) Is combination MOSFET and BJT
   c) Performance is closer to MOSFET than BJT
   d) Both a and b

16) The body layer is connected to source terminal in a MOSFET in order to
   a) reduce power dissipation b) increase speed of operation
   c) reduce noise interference d) to avoid latch up in a MOSFET

17) A single phase semiconverter is operated from 230 V, 60 Hz supply, then maximum possible output voltage is
   a) 207 V b) 103.5 V c) 73.21 V d) 270 V

18) The on state drop of IGBT is
   a) Less than MOSFET b) Greater than MOSFET
   c) Equal to MOSFET d) Both b and c

19) In single phase fully controlled converter with freewheeling diode and inductive load with firing angle of 60° and amplitude of input voltage is 150 V, the PIV is
   a) $\frac{225}{\pi}$ b) 150 c) $\frac{150}{\pi}$ d) $\frac{50}{\pi}$

20) A freewheeling diode is placed across inductive load
   a) To prevent reversal of load voltage
   b) Transfer load current away from source
   c) To protect circulation of reactive power
   d) All above

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SLR-EP – 109

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Figure to the ***right*** *indicate* ***full*** *marks.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**

1) Explain turn on mechanism of SCR using two transistor model.
2) What is complementary commutation ? Explain operation of Class C commutation circuit with associated waveforms.
3) Derive an expression for Avg. voltage and RMS load voltage for semiconverter with inductive load. Sketch associated waveforms for $\alpha = 60°$.
4) Draw planner structure of GTO. Explain what are different modifications made in ordinary SCR to improve turn off performance.
5) In single phase fully controlled thyristor bridge converter supplies a load consisting of RLE load. The inductance in the circuit is so large that output current may be considered to virtually constant. Assume SCR to be ideal with following data. RMS supply voltage = 230 V, $R_L = 0.4\,\Omega$, L = 12 mH, I_{dc} = 8A. Determine
   a) Firing angle if E_b = 100 V
   b) Firing angle if E_b = – 100 V
   c) Which source (AC or DC) is supplying power in a and b.

3. Attempt **any two** : **(2×10=20)**

1) Discuss the effect of source inductance on the performance of single phase full controlled rectifier. Derive an expression for its output voltage in terms of i> V_m, α, u and ii> V_m, α, L_s and I_d.
2) Explain following methods of over voltage protections circuits
   i) Snubber circuits for dv/dt suppression
   ii) Non linear surge suppressor
   iii) Electronic crowbar circuit.
3) Explain VI characteristics TRIAC and explain switching action and different triggering mode with suitable structural integrated structure.

SECTION – II

4. Attempt **any four** : **(4×5=20)**

   1) With help of block diagram explain triggering scheme for single phase controlled rectifier.

   2) Explain solid state fan regulator circuit using TRIAC.

   3) Explain principle of dielectric heating. Compare dielectric heating with induction heating.

   4) Explain operation of automatic street lighting system.

   5) With help of circuit diagram and waveforms explain the operation of full bridge SMPS.

5. Attempt **any two** : **(2×10=20)**

   1) Explain equivalent circuit and VI characteristics of UJT. Explain working of an oscillator employing UJT. Derive an expression for frequency of triggering.

   2) With help of block diagram explain working of AC servo controlled voltage stabilizer.

   3) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR. And explain working of optical isolated driver using LASCR to trigger high current SCR's.

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SLR-EP – 109

Seat No.	

Set S

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) The body layer is connected to source terminal in a MOSFET in order to
   a) reduce power dissipation b) increase speed of operation
   c) reduce noise interference d) to avoid latch up in a MOSFET
2) A single phase semiconverter is operated from 230 V, 60 Hz supply, then maximum possible output voltage is
   a) 207 V b) 103.5 V c) 73.21 V d) 270 V
3) The on state drop of IGBT is
   a) Less than MOSFET b) Greater than MOSFET
   c) Equal to MOSFET d) Both b and c
4) In single phase fully controlled converter with freewheeling diode and inductive load with firing angle of 60° and amplitude of input voltage is 150 V, the PIV is
   a) $\frac{225}{\pi}$ b) 150 c) $\frac{150}{\pi}$ d) $\frac{50}{\pi}$
5) A freewheeling diode is placed across inductive load
   a) To prevent reversal of load voltage
   b) Transfer load current away from source
   c) To protect circulation of reactive power
   d) All above
6) In resistance triggering circuit range of firing angle control is
   a) 0 to 180° b) 0 to 90° c) 90 to 180° d) 0 to 360°
7) Which of the following PNPN device has two gate terminal ?
   a) SCS b) SUS c) LASCR d) PUT
8) A UJT is used for triggering SCR then the wave shape of the voltage obtained from the UJT circuit is
   a) Trapezoidal wave b) Sine wave
   c) Swatooth wave d) Square wave
9) An PUT has VBB = 24V and interbase resistance $R_{B1} = 3\ R_{B2}$, then intrinsic stand off ratio is
   a) 1/3 b) 2/3 c) >3/4 d) >4/3

10) In CVT as compared with ordinary transformer
   a) Primary and secondary winding are wound near each other
   b) Primary and secondary winding are wound separately from each other
   c) Some part of winding is common to both primary and secondary winding
   d) None of above
11) An optocoupler is combination
   a) IRED and photo SCR
   b) Infra red light source and light detector
   c) IRED and photo darlingtion
   d) All above
12) In SMPS for operation 20 KHz to 100 KHz range _____ uses as the main control element.
   a) E-MOSFET b) Thyristor c) Triac d) UJT
13) Induction heating can be employed for heating the objects of ____ materials.
   a) only non conducting
   b) only conducting
   c) both a and b
   d) plastic
14) In solid state stabilizer output voltage is controlled by
   a) By varying conduction angle of power device
   b) By changing transformer
   c) By changing supply voltage
   d) All above
15) In _____ the heating is uniform throughout workpiece.
   a) Dielectric heating
   b) Induction heating
   c) Resistance heating
   d) Infrared heating
16) 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
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   d) RC circuit with diode across it
17) Thyristor is a semiconductor switch which is
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   c) >unilateral and latch proof
   d) >bilateral and bistable
18) A conducting thyristor can be opened by reducing _____ to zero.
   a) Supply voltage
   b) Gate current
   c) Gate voltage
   d) Anode current
19) A GTO
   a) > requires special turn off circuitry like thyristors
   b) >can be turned off by removing the gate pulse
   c) >can be turned off by negative current pulse at the gate
   d) >can be turned off by positive current pulse at the gate
20) IGBT
   a) Performance is closer to BJT than MOSFET
   b) Is combination MOSFET and BJT
   c) Performance is closer to MOSFET than BJT
   d) Both a and b

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SLR-EP – 109

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
INDUSTRIAL ELECTRONICS

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Figure to the ***right*** *indicate* ***full*** *marks.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
   1) Explain turn on mechanism of SCR using two transistor model.
   2) What is complementary commutation ? Explain operation of Class C commutation circuit with associated waveforms.
   3) Derive an expression for Avg. voltage and RMS load voltage for semiconverter with inductive load. Sketch associated waveforms for $\alpha = 60°$.
   4) Draw planner structure of GTO. Explain what are different modifications made in ordinary SCR to improve turn off performance.
   5) In single phase fully controlled thyristor bridge converter supplies a load consisting of RLE load. The inductance in the circuit is so large that output current may be considered to virtually constant. Assume SCR to be ideal with following data. RMS supply voltage = 230 V, $R_L = 0.4\,\Omega$, L = 12 mH, I_{dc} = 8A. Determine
      a) Firing angle if E_b = 100 V
      b) Firing angle if E_b = – 100 V
      c) Which source (AC or DC) is supplying power in a and b.

3. Attempt **any two** : **(2×10=20)**
   1) Discuss the effect of source inductance on the performance of single phase full controlled rectifier. Derive an expression for its output voltage in terms of i> V_m, α, u and ii> V_m, α, L_s and I_d.
   2) Explain following methods of over voltage protections circuits
      i) Snubber circuits for dv/dt suppression
      ii) Non linear surge suppressor
      iii) Electronic crowbar circuit.
   3) Explain VI characteristics TRIAC and explain switching action and different triggering mode with suitable structural integrated structure.

SECTION – II

4. Attempt **any four** : **(4×5=20)**

   1) With help of block diagram explain triggering scheme for single phase controlled rectifier.

   2) Explain solid state fan regulator circuit using TRIAC.

   3) Explain principle of dielectric heating. Compare dielectric heating with induction heating.

   4) Explain operation of automatic street lighting system.

   5) With help of circuit diagram and waveforms explain the operation of full bridge SMPS.

5. Attempt **any two** : **(2×10=20)**

   1) Explain equivalent circuit and VI characteristics of UJT. Explain working of an oscillator employing UJT. Derive an expression for frequency of triggering.

   2) With help of block diagram explain working of AC servo controlled voltage stabilizer.

   3) With help of equivalent circuit explain turn on mechanism and V-I characteristics of LASCR. And explain working of optical isolated driver using LASCR to trigger high current SCR's.

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SLR-EP – 110

Seat No.	

Set P

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Total Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct option : **(20×1=20)**

1) The design unit used for storage of common declarations are
a) configuration declarations b) package body
c) package declarations d) none of these

2) Process in VHDL becomes active, when
a) there is a change in the value of signal in sensitivity list
b) change in clock statement
c) change in reset signal
d) none of the signal

3) _____ is not a concurrent statement.
a) Generate b) If c) When else d) With select

4) Assuming the left operand as BIT – vector, "1001010" rol 2 is
a) "0101010" b) "0101000" c) "0101011" d) None of these

5) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is
a) Transport b) Inertial c) Delta d) None of these

6) Which of the following attribute returns the time elapsed since the previous transaction on S ?
a) S'active b) S'event c) S'Last_active d) S'Last_value

7) Which of the following feature can be used to specify the parameters for a component at the time of instantiation ?
a) Geanrate b) Attribute c) Generics d) Signals

8) When the following signal assignment statement executes at 10 ns, the new value will be assigned to signal at what time ?

X <= 5 after 10 ns ;

a) 10 ns; b) 10 ns + Δ c) 20 ns d) 20 ns + Δ

9) Which of the following statement is not used in the behavioral architecture ?
a) Loop b) Exit c) Wait d) Port map

10) The weak 0 is represented in IEEE 1164 9 valued logic is represented by
a) 'W' b) 'L' c) 'X' d) '0'

11) SPLD,CPLD's and FPGA are all which type of device ?
a) PAL b) PLD c) EPROM d) SRAM

12) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis c) Translate d) Filter

13) CPLD contains several PAL type simple programmable logic devices called
a) Macrocells b) Microcells
c) AND-OR Arrays d) Fuse Link Array

14) The Ability to Tolerate noise without affecting the correct operation of circuit is known as
a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of the above

15) Noise margin of CMOS inverter is not function of
a) W/L of MOS b) B_n/B_p c) t_{ox} d) all of the above

16) RTL simulation does
a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of the above

17) Input of synthesis process are
a) RTL VHDL description
b) Circuit constraints and attributes design
c) Technology library
d) All of above

18) Microcells' whose output are usable only internally are called
a) feedback b) internal c) buried d) none of these

19) CMOS logic consists of
a) pull up network b) pull down network
c) both a) and b) d) none of the above

20) Which of the following is capable of driving its output terminal either to a low or high voltage equally well ?
a) PMOS transistor b) NMOS transistor
c) Transmission gate d) All of these

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SLR-EP – 110

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any four** : **(4×6=24)**
   a) Explain in brief different shift operators in VHDL with suitable example.
   b) What are the subprograms in VHDL ? Explain use of function and procedures in VHDL with suitable example.
   c) Write VHDL code for 3 input XOR gate with behavioral Architecture.
   d) Write VHDL test bench for testing 3 input XOR gate.
   e) Write VHDL code for T flip flop with synchronous reset.

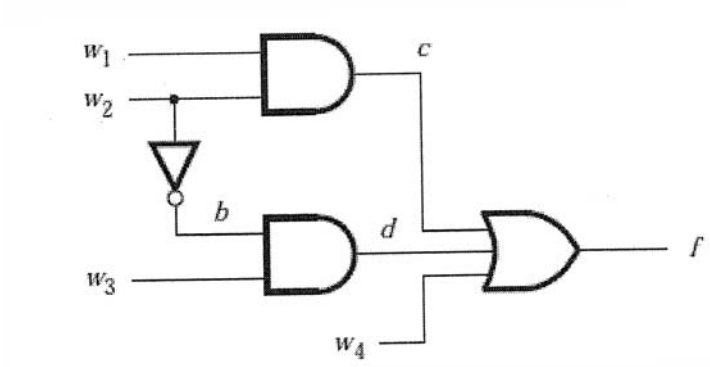
3. Solve **any two** : **(2×8=16)**
   a) Write VHDL code for Serial in Parallel out shift register with asynchronous reset.
   b) Write VHDL code for a Melay FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
   c) Explain following features of VHDL with appropriate example.
      i) Generics and ii) Generate

SECTION – II

4. Solve **any four** : **(4×4=16)**
   a) Explain function block for CPLD.
   b) Explain the steps in synthesis process.

Set P

c) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.



d) Draw and explain CMOS NOR gate.

e) What is transmission gate ? Write its advantages.

f) Write a short note on design for testability.

5. Solve **any three** : **(3×8=24)**

a) Explain Xilinx Spartan 4000 FPGA Architecture.

b) Explain in detail CMOS logic and CMOS fabrication process.

c) Explain the different regions of operation of CMOS Inverter along with equations.

d) Explain Boundary Scan testing in detail.

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SLR-EP – 110

Seat No.	

Set Q

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Total Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Assume suitable data if **necessary**.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct option : **(20×1=20)**

1) RTL simulation does
   a) Preparation of Net lists b) Verifying correctness
   c) Preparing Timing analysis d) None of the above

2) Input of synthesis process are
   a) RTL VHDL description
   b) Circuit constraints and attributes design
   c) Technology library
   d) All of above

3) Microcells' whose output are usable only internally are called
   a) feedback b) internal c) buried d) none of these

4) CMOS logic consists of
   a) pull up network b) pull down network
   c) both a) and b) d) none of the above

5) Which of the following is capable of driving its output terminal either to a low or high voltage equally well ?
   a) PMOS transistor b) NMOS transistor
   c) Transmission gate d) All of these

6) The design unit used for storage of common declarations are
   a) configuration declarations b) package body
   c) package declarations d) none of these

7) Process in VHDL becomes active, when
   a) there is a change in the value of signal in sensitivity list
   b) change in clock statement
   c) change in reset signal
   d) none of the signal

8) _____ is not a concurrent statement.
a) Generate b) If c) When else d) With select

9) Assuming the left operand as BIT – vector, "1001010" rol 2 is
a) "0101010" b) "0101000" c) "0101011" d) None of these

10) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is
a) Transport b) Inertial c) Delta d) None of these

11) Which of the following attribute returns the time elapsed since the previous transaction on S ?
a) S'active b) S'event c) S'Last_active d) S'Last_value

12) Which of the following feature can be used to specify the parameters for a component at the time of instantiation ?
a) Geanrate b) Attribute c) Generics d) Signals

13) When the following signal assignment statement executes at 10 ns, the new value will be assigned to signal at what time ?

X <= 5 after 10 ns ;

a) 10 ns; b) 10 ns + Δ c) 20 ns d) 20 ns + Δ

14) Which of the following statement is not used in the behavioral architecture ?
a) Loop b) Exit c) Wait d) Port map

15) The weak 0 is represented in IEEE 1164 9 valued logic is represented by
a) 'W' b) 'L' c) 'X' d) '0'

16) SPLD,CPLD's and FPGA are all which type of device ?
a) PAL b) PLD c) EPROM d) SRAM

17) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis c) Translate d) Filter

18) CPLD contains several PAL type simple programmable logic devices called
a) Macrocells b) Microcells
c) AND-OR Arrays d) Fuse Link Array

19) The Ability to Tolerate noise without affecting the correct operation of circuit is known as
a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of the above

20) Noise margin of CMOS inverter is not function of
a) W/L of MOS b) B_n/B_p c) t_{ox} d) all of the above

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SLR-EP – 110

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any four** : **(4×6=24)**
   a) Explain in brief different shift operators in VHDL with suitable example.
   b) What are the subprograms in VHDL ? Explain use of function and procedures in VHDL with suitable example.
   c) Write VHDL code for 3 input XOR gate with behavioral Architecture.
   d) Write VHDL test bench for testing 3 input XOR gate.
   e) Write VHDL code for T flip flop with synchronous reset.

3. Solve **any two** : **(2×8=16)**
   a) Write VHDL code for Serial in Parallel out shift register with asynchronous reset.
   b) Write VHDL code for a Melay FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
   c) Explain following features of VHDL with appropriate example.
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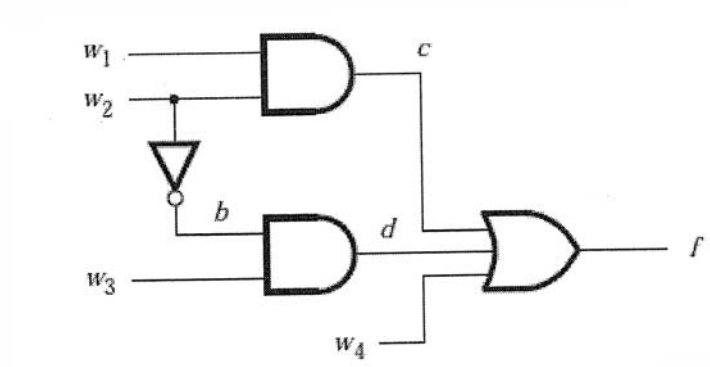
SECTION – II

4. Solve **any four** : **(4×4=16)**
   a) Explain function block for CPLD.
   b) Explain the steps in synthesis process.

Set Q

c) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.



d) Draw and explain CMOS NOR gate.

e) What is transmission gate ? Write its advantages.

f) Write a short note on design for testability.

5. Solve **any three** : **(3×8=24)**

a) Explain Xilinx Spartan 4000 FPGA Architecture.

b) Explain in detail CMOS logic and CMOS fabrication process.

c) Explain the different regions of operation of CMOS Inverter along with equations.

d) Explain Boundary Scan testing in detail.

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SLR-EP – 110

Seat No.	

Set **R**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Total Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct option : **(20×1=20)**

1) SPLD,CPLD's and FPGA are all which type of device ?
a) PAL b) PLD c) EPROM d) SRAM

2) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis c) Translate d) Filter

3) CPLD contains several PAL type simple programmable logic devices called
a) Macrocells b) Microcells
c) AND-OR Arrays d) Fuse Link Array

4) The Ability to Tolerate noise without affecting the correct operation of circuit is known as
a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of the above

5) Noise margin of CMOS inverter is not function of
a) W/L of MOS b) B_n/B_p c) t_{ox} d) all of the above

6) RTL simulation does
a) Preparation of Net lists b) Verifying correctness
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7) Input of synthesis process are
a) RTL VHDL description
b) Circuit constraints and attributes design
c) Technology library
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8) Microcells' whose output are usable only internally are called
   a) feedback b) internal c) buried d) none of these
9) CMOS logic consists of
   a) pull up network b) pull down network
   c) both a) and b) d) none of the above
10) Which of the following is capable of driving its output terminal either to a low or high voltage equally well ?
   a) PMOS transistor b) NMOS transistor
   c) Transmission gate d) All of these
11) The design unit used for storage of common declarations are
   a) configuration declarations b) package body
   c) package declarations d) none of these
12) Process in VHDL becomes active, when
   a) there is a change in the value of signal in sensitivity list
   b) change in clock statement
   c) change in reset signal
   d) none of the signal
13) _____ is not a concurrent statement.
   a) Generate b) If c) When else d) With select
14) Assuming the left operand as BIT – vector, "1001010" rol 2 is
   a) "0101010" b) "0101000" c) "0101011" d) None of these
15) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is
   a) Transport b) Inertial c) Delta d) None of these
16) Which of the following attribute returns the time elapsed since the previous transaction on S ?
   a) S'active b) S'event c) S'Last_active d) S'Last_value
17) Which of the following feature can be used to specify the parameters for a component at the time of instantiation ?
   a) Geanrate b) Attribute c) Generics d) Signals
18) When the following signal assignment statement executes at 10 ns, the new value will be assigned to signal at what time ?

   X <= 5 after 10 ns ;

   a) 10 ns; b) 10 ns + Δ c) 20 ns d) 20 ns + Δ
19) Which of the following statement is not used in the behavioral architecture ?
   a) Loop b) Exit c) Wait d) Port map
20) The weak 0 is represented in IEEE 1164 9 valued logic is represented by
   a) 'W' b) 'L' c) 'X' d) '0'

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SLR-EP – 110

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if ***necessary****.*

SECTION – I

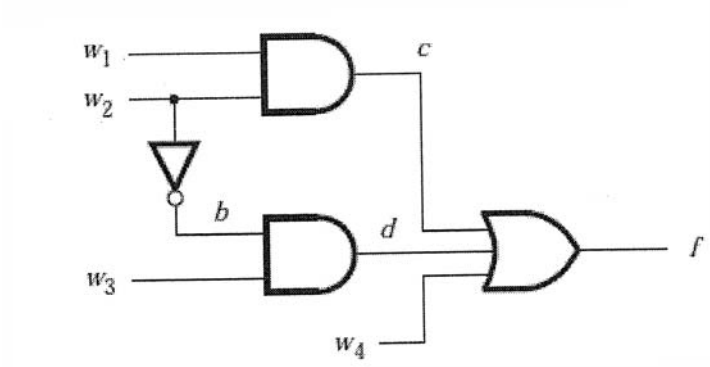
2. Solve **any four** : **(4×6=24)**
   a) Explain in brief different shift operators in VHDL with suitable example.
   b) What are the subprograms in VHDL ? Explain use of function and procedures in VHDL with suitable example.
   c) Write VHDL code for 3 input XOR gate with behavioral Architecture.
   d) Write VHDL test bench for testing 3 input XOR gate.
   e) Write VHDL code for T flip flop with synchronous reset.

3. Solve **any two** : **(2×8=16)**
   a) Write VHDL code for Serial in Parallel out shift register with asynchronous reset.
   b) Write VHDL code for a Melay FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
   c) Explain following features of VHDL with appropriate example.
      i) Generics and ii) Generate

SECTION – II

4. Solve **any four** : **(4×4=16)**
   a) Explain function block for CPLD.
   b) Explain the steps in synthesis process.

c) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.



d) Draw and explain CMOS NOR gate.

e) What is transmission gate ? Write its advantages.

f) Write a short note on design for testability.

5. Solve **any three** : **(3×8=24)**

a) Explain Xilinx Spartan 4000 FPGA Architecture.

b) Explain in detail CMOS logic and CMOS fabrication process.

c) Explain the different regions of operation of CMOS Inverter along with equations.

d) Explain Boundary Scan testing in detail.

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SLR-EP – 110

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Total Marks : 100
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct option : **(20×1=20)**

1) Which of the following attribute returns the time elapsed since the previous transaction on S ?
a) S'active b) S'event c) S'Last_active d) S'Last_value

2) Which of the following feature can be used to specify the parameters for a component at the time of instantiation ?
a) Geanrate b) Attribute c) Generics d) Signals

3) When the following signal assignment statement executes at 10 ns, the new value will be assigned to signal at what time ?
X <= 5 after 10 ns ;
a) 10 ns; b) 10 ns + Δ c) 20 ns d) 20 ns + Δ

4) Which of the following statement is not used in the behavioral architecture ?
a) Loop b) Exit c) Wait d) Port map

5) The weak 0 is represented in IEEE 1164 9 valued logic is represented by
a) 'W' b) 'L' c) 'X' d) '0'

6) SPLD,CPLD's and FPGA are all which type of device ?
a) PAL b) PLD c) EPROM d) SRAM

7) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis c) Translate d) Filter

8) CPLD contains several PAL type simple programmable logic devices called
a) Macro cells b) Microcells
c) AND-OR Arrays d) Fuse Link Array

9) The Ability to Tolerate noise without affecting the correct operation of circuit is known as
   a) Dynamic power Dissipation b) Noise Margin
   c) Static Power Dissipation d) None of the above

10) Noise margin of CMOS inverter is not function of
   a) W/L of MOS b) B_n/B_p c) t_{ox} d) all of the above

11) RTL simulation does
   a) Preparation of Net lists b) Verifying correctness
   c) Preparing Timing analysis d) None of the above

12) Input of synthesis process are
   a) RTL VHDL description
   b) Circuit constraints and attributes design
   c) Technology library
   d) All of above

13) Microcells' whose output are usable only internally are called
   a) feedback b) internal c) buried d) none of these

14) CMOS logic consists of
   a) pull up network b) pull down network
   c) both a) and b) d) none of the above

15) Which of the following is capable of driving its output terminal either to a low or high voltage equally well ?
   a) PMOS transistor b) NMOS transistor
   c) Transmission gate d) All of these

16) The design unit used for storage of common declarations are
   a) configuration declarations b) package body
   c) package declarations d) none of these

17) Process in VHDL becomes active, when
   a) there is a change in the value of signal in sensitivity list
   b) change in clock statement
   c) change in reset signal
   d) none of the signal

18) _____ is not a concurrent statement.
   a) Generate b) If c) When else d) With select

19) Assuming the left operand as BIT – vector, "1001010" rol 2 is
   a) "0101010" b) "0101000" c) "0101011" d) None of these

20) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is
   a) Transport b) Inertial c) Delta d) None of these

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SLR-EP – 110

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
VLSI DESIGN

Day and Date : Friday, 25-11-2016 Marks : 80
Time : 10.00 a.m. to 1.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Assume suitable data if ***necessary****.*

SECTION – I

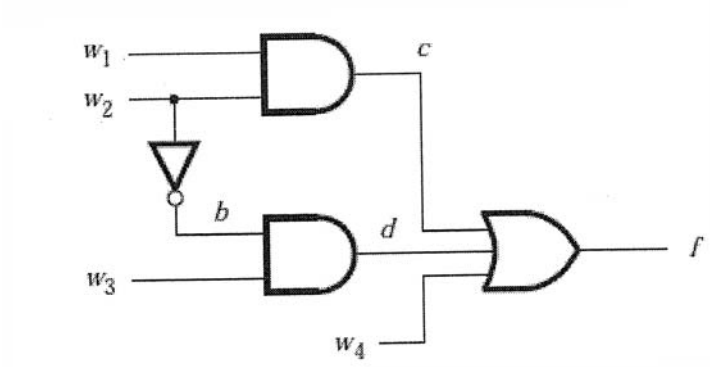
2. Solve **any four** : **(4×6=24)**
   a) Explain in brief different shift operators in VHDL with suitable example.
   b) What are the subprograms in VHDL ? Explain use of function and procedures in VHDL with suitable example.
   c) Write VHDL code for 3 input XOR gate with behavioral Architecture.
   d) Write VHDL test bench for testing 3 input XOR gate.
   e) Write VHDL code for T flip flop with synchronous reset.

3. Solve **any two** : **(2×8=16)**
   a) Write VHDL code for Serial in Parallel out shift register with asynchronous reset.
   b) Write VHDL code for a Melay FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
   c) Explain following features of VHDL with appropriate example.
      i) Generics and ii) Generate

SECTION – II

4. Solve **any four** : **(4×4=16)**
   a) Explain function block for CPLD.
   b) Explain the steps in synthesis process.

c) Explain path sensitizing. Obtain the complete test set for circuit shown below using path sensitizing.



d) Draw and explain CMOS NOR gate.

e) What is transmission gate ? Write its advantages.

f) Write a short note on design for testability.

5. Solve **any three** : **(3×8=24)**

a) Explain Xilinx Spartan 4000 FPGA Architecture.

b) Explain in detail CMOS logic and CMOS fabrication process.

c) Explain the different regions of operation of CMOS Inverter along with equations.

d) Explain Boundary Scan testing in detail.

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SLR-EP – 111 (D)

Seat No.	

Set **P**

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **10**

i) Which of the following converts the expression to long data type in VB.NET ?
A) CDbl (expression) B) CDec (expression)
C) CInt (expression) D) CLng (expression)

ii) Which of the following access modifier specifies that an argument is passed by reference ?
A) ByRef B) ByVal
C) Default D) Friend

iii) Which of the following access modifier specifies that one or more declared programming elements are associated with a class or structure at large and not with a specific instance of the class or structure ?
A) Shadows B) Shared
C) Static D) Unicode

iv) Which of the following statement declares the name of a class and introduces the definition of the variables, properties, events and procedures that the class comprises ?
A) Dim B) Const
C) Enum D) Class

P.T.O.

v) Which of the following directive is used for indicating a mapping between specific lines of source code and text external to the source ?

A) #Const
B) #ExternalSource
C) #If...Then...#Else
D) #Region

vi) Which of the following statement causes the loop to skip the remainder of its body and immediately retest its condition prior to reiterating ?

A) Exit
B) Continue
C) GoTo
D) None of the above

vii) Which of the following property of Array class in VB.NET gets a 32-bit integer, the total number of elements in all the dimensions of the Array ?

A) Rank
B) LongLength
C) Length
D) None of the above

viii) Which of the following keyword of VB.NET is used to throw an exception when a problem shows up ?

A) Try
B) Catch
C) Finally
D) Throw

ix) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the entire assembly ?

A) Ansi
B) Assembly
C) Async
D) Auto

x) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the current assembly module ?

A) In
B) Iterator
C) Key
D) Module

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SLR-EP – 111 (D)

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*

2. What are classes and objects ? Discuss how to add properties, events and methods to a class module. **10**

3. A) Explain procedures. Also describe various ways to pass parameter with program. **10**

OR

B) Draw appropriate diagrams and discuss the various components of the .NET platform and the architecture of .NET framework.

4. Attempt **any four** questions : **20**

A) Explain features of VB.NET technology.

B) Explain the use of events using an appropriate programming example.

C) Explain image control along with its properties, method, events.

D) Explain CLR and its component.

E) Explain string function with example.

Set P

SLR-EP – 111 (D)

Seat No.	

Set **Q**

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **10**

i) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the entire assembly ?

A) Ansi B) Assembly
C) Async D) Auto

ii) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the current assembly module ?

A) In B) Iterator
C) Key D) Module

iii) Which of the following property of Array class in VB.NET gets a 32-bit integer, the total number of elements in all the dimensions of the Array ?

A) Rank B) LongLength
C) Length D) None of the above

iv) Which of the following keyword of VB.NET is used to throw an exception when a problem shows up ?

A) Try B) Catch
C) Finally D) Throw

P.T.O.

v) Which of the following converts the expression to long data type in VB.NET ?

A) CDbl (expression) B) CDec (expression)

C) CInt (expression) D) CLng (expression)

vi) Which of the following access modifier specifies that an argument is passed by reference ?

A) ByRef B) ByVal

C) Default D) Friend

vii) Which of the following access modifier specifies that one or more declared programming elements are associated with a class or structure at large and not with a specific instance of the class or structure ?

A) Shadows B) Shared

C) Static D) Unicode

viii) Which of the following statement declares the name of a class and introduces the definition of the variables, properties, events and procedures that the class comprises ?

A) Dim B) Const

C) Enum D) Class

ix) Which of the following directive is used for indicating a mapping between specific lines of source code and text external to the source ?

A) #Const B) #ExternalSource

C) #If...Then...#Else D) #Region

x) Which of the following statement causes the loop to skip the remainder of its body and immediately retest its condition prior to reiterating ?

A) Exit B) Continue

C) GoTo D) None of the above

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SLR-EP – 111 (D)

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*

2. What are classes and objects ? Discuss how to add properties, events and methods to a class module. **10**

3. A) Explain procedures. Also describe various ways to pass parameter with program. **10**

OR

B) Draw appropriate diagrams and discuss the various components of the .NET platform and the architecture of .NET framework.

4. Attempt **any four** questions : **20**

A) Explain features of VB.NET technology.

B) Explain the use of events using an appropriate programming example.

C) Explain image control along with its properties, method, events.

D) Explain CLR and its component.

E) Explain string function with example.

Set Q

SLR-EP – 111 (D)

Seat No.	

Set **R**

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **10**

i) Which of the following directive is used for indicating a mapping between specific lines of source code and text external to the source ?

A) #Const B) #ExternalSource
C) #If...Then...#Else D) #Region

ii) Which of the following statement causes the loop to skip the remainder of its body and immediately retest its condition prior to reiterating ?

A) Exit B) Continue
C) GoTo D) None of the above

iii) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the entire assembly ?

A) Ansi B) Assembly
C) Async D) Auto

iv) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the current assembly module ?

A) In B) Iterator
C) Key D) Module

v) Which of the following access modifier specifies that one or more declared programming elements are associated with a class or structure at large and not with a specific instance of the class or structure ?

A) Shadows B) Shared

C) Static D) Unicode

vi) Which of the following statement declares the name of a class and introduces the definition of the variables, properties, events and procedures that the class comprises ?

A) Dim B) Const

C) Enum D) Class

vii) Which of the following converts the expression to long data type in VB.NET ?

A) CDbl (expression) B) CDec (expression)

C) CInt (expression) D) CLng (expression)

viii) Which of the following access modifier specifies that an argument is passed by reference ?

A) ByRef B) ByVal

C) Default D) Friend

ix) Which of the following property of Array class in VB.NET gets a 32-bit integer, the total number of elements in all the dimensions of the Array ?

A) Rank B) LongLength

C) Length D) None of the above

x) Which of the following keyword of VB.NET is used to throw an exception when a problem shows up ?

A) Try B) Catch

C) Finally D) Throw

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SLR-EP – 111 (D)

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*

2. What are classes and objects ? Discuss how to add properties, events and methods to a class module. **10**

3. A) Explain procedures. Also describe various ways to pass parameter with program. **10**

OR

B) Draw appropriate diagrams and discuss the various components of the .NET platform and the architecture of .NET framework.

4. Attempt **any four** questions : **20**

A) Explain features of VB.NET technology.

B) Explain the use of events using an appropriate programming example.

C) Explain image control along with its properties, method, events.

D) Explain CLR and its component.

E) Explain string function with example.

Set R

SLR-EP – 111 (D)

Seat No.	

Set **S**

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **10**

i) Which of the following access modifier specifies that one or more declared programming elements are associated with a class or structure at large and not with a specific instance of the class or structure ?

A) Shadows B) Shared
C) Static D) Unicode

ii) Which of the following statement declares the name of a class and introduces the definition of the variables, properties, events and procedures that the class comprises ?

A) Dim B) Const
C) Enum D) Class

iii) Which of the following directive is used for indicating a mapping between specific lines of source code and text external to the source ?

A) #Const B) #ExternalSource
C) #If...Then...#Else D) #Region

iv) Which of the following statement causes the loop to skip the remainder of its body and immediately retest its condition prior to reiterating ?

A) Exit B) Continue
C) GoTo D) None of the above

P.T.O.

v) Which of the following property of Array class in VB.NET gets a 32-bit integer, the total number of elements in all the dimensions of the Array ?

A) Rank B) LongLength

C) Length D) None of the above

vi) Which of the following keyword of VB.NET is used to throw an exception when a problem shows up ?

A) Try B) Catch

C) Finally D) Throw

vii) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the entire assembly ?

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viii) Which of the following access modifier specifies that an attribute at the beginning of a source file applies to the current assembly module ?

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ix) Which of the following converts the expression to long data type in VB.NET ?

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C) CInt (expression) D) CLng (expression)

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A) ByRef B) ByVal

C) Default D) Friend

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SLR-EP – 111 (D)

Seat No.	

T.E. (Electronics) (Part – II) Examination, 2016
Self Learning
PROGRAMMING IN VISUAL BASIC .NET

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 Noon

Instructions *: 1) Attempt* ***all*** *the questions.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*

2. What are classes and objects ? Discuss how to add properties, events and methods to a class module. **10**

3. A) Explain procedures. Also describe various ways to pass parameter with program. **10**

OR

B) Draw appropriate diagrams and discuss the various components of the .NET platform and the architecture of .NET framework.

4. Attempt **any four** questions : **20**

A) Explain features of VB.NET technology.

B) Explain the use of events using an appropriate programming example.

C) Explain image control along with its properties, method, events.

D) Explain CLR and its component.

E) Explain string function with example.

Set S

SLR-EP – 111(A)

Seat No.	

Set **P**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) Figures to the **right** indicate **full** marks.*
*4) Assume suitable data if **necessary**.*

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) The oil pump is driven by the
   A) Camshaft B) Crankshaft via drive belt
   C) Alternator shaft D) Crank-shaft directly

2) The torque available at the contact between driving wheels and road is known as
   A) Brake effort B) Tractive effort
   C) Clutch effort D) None of these

3) An ohmmeter can be used to measure
   A) Plug lead resistance B) Switch supply voltage
   C) Switch output current D) All of the above

4) A 12 volt lead-acid battery has
   A) cells connected in parallel, plates connected in series
   B) cells connected in series, plates connected in parallel
   C) cells connected in series, plates connected in series
   D) cells connected in parallel, plates connected in parallel

5) A lead-acid battery should be topped up with
   A) sulphuric acid
   B) distilled water
   C) sulphuric acid and distilled water
   D) electrolyte at the correct relative density

6) 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

7) Solenoid windings may be checked for resistance with a
   A) resistance tester B) ohmmeter
   C) voltmeter D) ammeter

8) The ignition component that steps up voltage is the
   A) spark plug B) condenser
   C) coil D) king lead

9) The main ECU 'input' parameters for calculating ignition timing and injector duration are
   A) speed and temperature B) speed and load
   C) pressure and temperature D) pressure and load

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

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SLR-EP – 111(A)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any three** : **(4×3=12)**
   1) Explain working principles, characteristics, limitations of pressure sensing system related to automobile.
   2) What are the existing engine forms ? Explain hybrid designs related to automobile engine.
   3) Explain battery charging system briefly in automobile.
   4) What are the topologies used to connect various sensors in automobiles ? Explain them briefly.

3. Attempt **any one** : **(8×1=8)**
   1) Explain anti skid and anti collision system in case of automobiles.
   2) Discuss electronic ignition systems in automobiles.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
   1) What is actuator ? Explain electromagnetic actuators related to automobiles.
   2) Explain digital instrumentation system in automobile.
   3) Explain traction control system in automobile engine.
   4) What are the recent trends in automotive diagnostics system ?

5. Attempt **any one** : **(8×1=8)**
   1) What is Electronic Control Unit (ECU) in automobiles ? How engine faults are diagnosed ?
   2) What CAN protocol used in automobiles ? Draw CAN signal format and explain it neatly.

Set P

Set P

SLR-EP – 111(A)

Seat No.	

Set **Q**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) Figures to the **right** indicate **full** marks.*
*4) Assume suitable data if **necessary**.*

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) The main ECU 'input' parameters for calculating ignition timing and injector duration are
   A) speed and temperature B) speed and load
   C) pressure and temperature D) pressure and load

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) Solenoid windings may be checked for resistance with a
   A) resistance tester B) ohmmeter
   C) voltmeter D) ammeter

4) The ignition component that steps up voltage is the
   A) spark plug B) condenser
   C) coil D) king lead

5) The oil pump is driven by the
   A) Camshaft B) Crankshaft via drive belt
   C) Alternator shaft D) Crank-shaft directly

6) The torque available at the contact between driving wheels and road is known as

A) Brake effort B) Tractive effort

C) Clutch effort D) None of these

7) An ohmmeter can be used to measure

A) Plug lead resistance B) Switch supply voltage

C) Switch output current D) All of the above

8) A 12 volt lead-acid battery has

A) cells connected in parallel, plates connected in series

B) cells connected in series, plates connected in parallel

C) cells connected in series, plates connected in series

D) cells connected in parallel, plates connected in parallel

9) A lead-acid battery should be topped up with

A) sulphuric acid

B) distilled water

C) sulphuric acid and distilled water

D) electrolyte at the correct relative density

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

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SLR-EP – 111(A)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) Assume suitable data if **necessary**.*

SECTION – I

2. Attempt **any three** : **(4×3=12)**
   1) Explain working principles, characteristics, limitations of pressure sensing system related to automobile.
   2) What are the existing engine forms ? Explain hybrid designs related to automobile engine.
   3) Explain battery charging system briefly in automobile.
   4) What are the topologies used to connect various sensors in automobiles ? Explain them briefly.

3. Attempt **any one** : **(8×1=8)**
   1) Explain anti skid and anti collision system in case of automobiles.
   2) Discuss electronic ignition systems in automobiles.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
   1) What is actuator ? Explain electromagnetic actuators related to automobiles.
   2) Explain digital instrumentation system in automobile.
   3) Explain traction control system in automobile engine.
   4) What are the recent trends in automotive diagnostics system ?

5. Attempt **any one** : **(8×1=8)**
   1) What is Electronic Control Unit (ECU) in automobiles ? How engine faults are diagnosed ?
   2) What CAN protocol used in automobiles ? Draw CAN signal format and explain it neatly.

Set Q

Set Q

SLR-EP – 111(A)

Seat No.	

Set **R**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) Figures to the ***right*** *indicate* ***full*** *marks.*
4) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) A lead-acid battery should be topped up with
   A) sulphuric acid
   B) distilled water
   C) sulphuric acid and distilled water
   D) electrolyte at the correct relative density

2) 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

3) The main ECU 'input' parameters for calculating ignition timing and injector duration are
   A) speed and temperature B) speed and load
   C) pressure and temperature D) pressure and load

4) 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

5) An ohmmeter can be used to measure
   A) Plug lead resistance
   B) Switch supply voltage
   C) Switch output current
   D) All of the above

6) A 12 volt lead-acid battery has
   A) cells connected in parallel, plates connected in series
   B) cells connected in series, plates connected in parallel
   C) cells connected in series, plates connected in series
   D) cells connected in parallel, plates connected in parallel

7) The oil pump is driven by the
   A) Camshaft
   B) Crankshaft via drive belt
   C) Alternator shaft
   D) Crank-shaft directly

8) The torque available at the contact between driving wheels and road is known as
   A) Brake effort
   B) Tractive effort
   C) Clutch effort
   D) None of these

9) Solenoid windings may be checked for resistance with a
   A) resistance tester
   B) ohmmeter
   C) voltmeter
   D) ammeter

10) The ignition component that steps up voltage is the
   A) spark plug
   B) condenser
   C) coil
   D) king lead

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SLR-EP – 111(A)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any three** : **(4×3=12)**
   1) Explain working principles, characteristics, limitations of pressure sensing system related to automobile.
   2) What are the existing engine forms ? Explain hybrid designs related to automobile engine.
   3) Explain battery charging system briefly in automobile.
   4) What are the topologies used to connect various sensors in automobiles ? Explain them briefly.

3. Attempt **any one** : **(8×1=8)**
   1) Explain anti skid and anti collision system in case of automobiles.
   2) Discuss electronic ignition systems in automobiles.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
   1) What is actuator ? Explain electromagnetic actuators related to automobiles.
   2) Explain digital instrumentation system in automobile.
   3) Explain traction control system in automobile engine.
   4) What are the recent trends in automotive diagnostics system ?

5. Attempt **any one** : **(8×1=8)**
   1) What is Electronic Control Unit (ECU) in automobiles ? How engine faults are diagnosed ?
   2) What CAN protocol used in automobiles ? Draw CAN signal format and explain it neatly.

Set R

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Set R

SLR-EP – 111(A)

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) Figures to the ***right*** *indicate* ***full*** *marks.*
4) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) An ohmmeter can be used to measure
   A) Plug lead resistance B) Switch supply voltage
   C) Switch output current D) All of the above

2) A 12 volt lead-acid battery has
   A) cells connected in parallel, plates connected in series
   B) cells connected in series, plates connected in parallel
   C) cells connected in series, plates connected in series
   D) cells connected in parallel, plates connected in parallel

3) A lead-acid battery should be topped up with
   A) sulphuric acid
   B) distilled water
   C) sulphuric acid and distilled water
   D) electrolyte at the correct relative density

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) Solenoid windings may be checked for resistance with a
   A) resistance tester B) ohmmeter
   C) voltmeter D) ammeter

6) The ignition component that steps up voltage is the
   A) spark plug B) condenser
   C) coil D) king lead

7) The main ECU 'input' parameters for calculating ignition timing and injector duration are
   A) speed and temperature B) speed and load
   C) pressure and temperature D) pressure and load

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 oil pump is driven by the
   A) Camshaft B) Crankshaft via drive belt
   C) Alternator shaft D) Crank-shaft directly

10) The torque available at the contact between driving wheels and road is known as
   A) Brake effort B) Tractive effort
   C) Clutch effort D) None of these

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SLR-EP – 111(A)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
AUTOMOTIVE ELECTRONICS
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any three** : **(4×3=12)**
   1) Explain working principles, characteristics, limitations of pressure sensing system related to automobile.
   2) What are the existing engine forms ? Explain hybrid designs related to automobile engine.
   3) Explain battery charging system briefly in automobile.
   4) What are the topologies used to connect various sensors in automobiles ? Explain them briefly.

3. Attempt **any one** : **(8×1=8)**
   1) Explain anti skid and anti collision system in case of automobiles.
   2) Discuss electronic ignition systems in automobiles.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
   1) What is actuator ? Explain electromagnetic actuators related to automobiles.
   2) Explain digital instrumentation system in automobile.
   3) Explain traction control system in automobile engine.
   4) What are the recent trends in automotive diagnostics system ?

5. Attempt **any one** : **(8×1=8)**
   1) What is Electronic Control Unit (ECU) in automobiles ? How engine faults are diagnosed ?
   2) What CAN protocol used in automobiles ? Draw CAN signal format and explain it neatly.

Set S

Set S

SLR-EP – 111(b)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ROBOTICS
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

SECTION – I

1. Solve **any four** : **20**
   a) What are different classifications of Robot ?
   b) Explain with neat sketch “Servo Controlled Robot”.
   c) List the problems encountered for robot in arc welding.
   d) What is the function of sensor ? Give its classification.
   e) List the type of grippers.

SECTION – II

2. Solve **any three** : **30**
   a) Explain classification of robot by control methods.
   b) What is segmentation ? Explain these holding techniques in brief.
   c) Compare stationary robot with mobile robot based on application, construction, speed and capacity.
   d) Explain in short principle of power and signal transmission to the end effectors.

SLR-EP – 111(C)

Seat No.	

Set **P**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) Environmental and observational are the types of _____ errors.
a) Systematic b) Gross c) Random d) Statistical

2) Which of below is a dynamic characteristic of an instrument ?
a) Accuracy b) Resolution
c) Fidelity d) Sensitivity

3) Minimum number of flip flops required to realize a decade counter are
a) 2 b) 4 c) 8 d) 10

4) In a typical frequency counter if f = N/T, where f is the unknown frequency and N is pulse count then T is
a) Time to overflow b) Time to reset
c) Duration of gate pulse d) Cycle time

5) Revolution pick up can be found in
a) Tachometer b) pH meter
c) Ratio meter d) Universal counter

P.T.O.

6) Which of below allow us to see signal in frequency domain ?
   a) FFT analyzer
   b) Spectrum analyzer
   c) Vector analyzer
   d) All of these

7) For a single band RF spectrum analyzer, IF is selected which is _____ of _____ the tuning range.
   a) Below, highest
   b) Above, highest
   c) Below, lowest
   d) Above, lowest

8) Which of below can be an application of ultrasonic sensor ?
   a) Blood pressure measurement
   b) Viscosity measurement
   c) Crack detection
   d) All of these

9) AC signal conditioning systems are usually used for _____ transducers.
   a) Common resistance
   b) Variable reactance
   c) Variable resistance
   d) Common reactance

10) Which of below is a feature of smart sensor ?
   a) Self calibration
   b) Multisensing
   c) Communication
   d) All of these

_____

SLR-EP – 111(C)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any one** : **(1×8=8)**
   a) Explain different errors in instruments.
   b) Explain LED and LCD displays.

3. Solve **any three** : **(3×4=12)**
   a) With suitable diagram explain pH meter.
   b) Explain any 4 static characteristics of instrument.
   c) Explain electromagnetic interference. How to prevent it ?
   d) Explain universal counter.

SECTION – II

4. Solve **any one** : **(1×8=8)**
   a) With suitable diagram explain distortion analyzer.
   b) With suitable diagram explain ultrasonic sensors.

5. Solve **any three** : **(3×4=12)**
   a) Explain XY recorders.
   b) Explain single channel DAS.
   c) Explain intermodulation analyzer.
   d) Explain data loggers.

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Set P

Set P

SLR-EP – 111(C)

Seat No.	

Set **Q**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) AC signal conditioning systems are usually used for _____ transducers.
   a) Common resistance b) Variable reactance
   c) Variable resistance d) Common reactance

2) Which of below is a feature of smart sensor ?
   a) Self calibration b) Multisensing
   c) Communication d) All of these

3) For a single band RF spectrum analyzer, IF is selected which is _____ of _____ the tuning range.
   a) Below, highest b) Above, highest
   c) Below, lowest d) Above, lowest

4) Which of below can be an application of ultrasonic sensor ?
   a) Blood pressure measurement b) Viscosity measurement
   c) Crack detection d) All of these

5) Environmental and observational are the types of _____ errors.
   a) Systematic b) Gross c) Random d) Statistical

6) Which of below is a dynamic characteristic of an instrument ?
   a) Accuracy b) Resolution
   c) Fidelity d) Sensitivity

7) Minimum number of flip flops required to realize a decade counter are
   a) 2 b) 4 c) 8 d) 10

8) In a typical frequency counter if f = N/T, where f is the unknown frequency and N is pulse count then T is
   a) Time to overflow b) Time to reset
   c) Duration of gate pulse d) Cycle time

9) Revolution pick up can be found in
   a) Tachometer b) pH meter
   c) Ratio meter d) Universal counter

10) Which of below allow us to see signal in frequency domain ?
   a) FFT analyzer b) Spectrum analyzer
   c) Vector analyzer d) All of these

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SLR-EP – 111(C)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any one** : **(1×8=8)**
   a) Explain different errors in instruments.
   b) Explain LED and LCD displays.

3. Solve **any three** : **(3×4=12)**
   a) With suitable diagram explain pH meter.
   b) Explain any 4 static characteristics of instrument.
   c) Explain electromagnetic interference. How to prevent it ?
   d) Explain universal counter.

SECTION – II

4. Solve **any one** : **(1×8=8)**
   a) With suitable diagram explain distortion analyzer.
   b) With suitable diagram explain ultrasonic sensors.

5. Solve **any three** : **(3×4=12)**
   a) Explain XY recorders.
   b) Explain single channel DAS.
   c) Explain intermodulation analyzer.
   d) Explain data loggers.

Set Q

Set Q

SLR-EP – 111(C)

Seat No.	

Set R

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) Revolution pick up can be found in
   a) Tachometer b) pH meter
   c) Ratio meter d) Universal counter

2) Which of below allow us to see signal in frequency domain ?
   a) FFT analyzer b) Spectrum analyzer
   c) Vector analyzer d) All of these

3) AC signal conditioning systems are usually used for _____ transducers.
   a) Common resistance b) Variable reactance
   c) Variable resistance d) Common reactance

4) Which of below is a feature of smart sensor ?
   a) Self calibration b) Multisensing
   c) Communication d) All of these

P.T.O.

5) Minimum number of flip flops required to realize a decade counter are
   a) 2 b) 4 c) 8 d) 10

6) In a typical frequency counter if f = N/T, where f is the unknown frequency and N is pulse count then T is
   a) Time to overflow b) Time to reset
   c) Duration of gate pulse d) Cycle time

7) Environmental and observational are the types of _____ errors.
   a) Systematic b) Gross c) Random d) Statistical

8) Which of below is a dynamic characteristic of an instrument ?
   a) Accuracy b) Resolution
   c) Fidelity d) Sensitivity

9) For a single band RF spectrum analyzer, IF is selected which is _____ of _____ the tuning range.
   a) Below, highest b) Above, highest
   c) Below, lowest d) Above, lowest

10) Which of below can be an application of ultrasonic sensor ?
   a) Blood pressure measurement b) Viscosity measurement
   c) Crack detection d) All of these

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SLR-EP – 111(C)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any one** : **(1×8=8)**
   a) Explain different errors in instruments.
   b) Explain LED and LCD displays.

3. Solve **any three** : **(3×4=12)**
   a) With suitable diagram explain pH meter.
   b) Explain any 4 static characteristics of instrument.
   c) Explain electromagnetic interference. How to prevent it ?
   d) Explain universal counter.

SECTION – II

4. Solve **any one** : **(1×8=8)**
   a) With suitable diagram explain distortion analyzer.
   b) With suitable diagram explain ultrasonic sensors.

5. Solve **any three** : **(3×4=12)**
   a) Explain XY recorders.
   b) Explain single channel DAS.
   c) Explain intermodulation analyzer.
   d) Explain data loggers.

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Set R

Set R

SLR-EP – 111(C)

Seat No.	

Set **S**

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Max. Marks : 50
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(10×1=10)**

1) Minimum number of flip flops required to realize a decade counter are
a) 2 b) 4 c) 8 d) 10

2) In a typical frequency counter if f = N/T, where f is the unknown frequency and N is pulse count then T is
a) Time to overflow b) Time to reset
c) Duration of gate pulse d) Cycle time

3) Revolution pick up can be found in
a) Tachometer b) pH meter
c) Ratio meter d) Universal counter

4) Which of below allow us to see signal in frequency domain ?
a) FFT analyzer b) Spectrum analyzer
c) Vector analyzer d) All of these

P.T.O.

5) For a single band RF spectrum analyzer, IF is selected which is _____ of _____ the tuning range.
   a) Below, highest
   b) Above, highest
   c) Below, lowest
   d) Above, lowest

6) Which of below can be an application of ultrasonic sensor ?
   a) Blood pressure measurement
   b) Viscosity measurement
   c) Crack detection
   d) All of these

7) AC signal conditioning systems are usually used for _____ transducers.
   a) Common resistance
   b) Variable reactance
   c) Variable resistance
   d) Common reactance

8) Which of below is a feature of smart sensor ?
   a) Self calibration
   b) Multisensing
   c) Communication
   d) All of these

9) Environmental and observational are the types of _____ errors.
   a) Systematic b) Gross c) Random d) Statistical

10) Which of below is a dynamic characteristic of an instrument ?
   a) Accuracy
   b) Resolution
   c) Fidelity
   d) Sensitivity

_____

SLR-EP – 111(C)

Seat No.	

T.E. (Electronics Engineering) (Part – II) Examination, 2016
ELECTRONICS INSTRUMENTATION
Self Learning

Day and Date : Saturday, 26-11-2016 Marks : 40
Time : 10.00 a.m. to 12.00 noon

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any one** : **(1×8=8)**
   a) Explain different errors in instruments.
   b) Explain LED and LCD displays.

3. Solve **any three** : **(3×4=12)**
   a) With suitable diagram explain pH meter.
   b) Explain any 4 static characteristics of instrument.
   c) Explain electromagnetic interference. How to prevent it ?
   d) Explain universal counter.

SECTION – II

4. Solve **any one** : **(1×8=8)**
   a) With suitable diagram explain distortion analyzer.
   b) With suitable diagram explain ultrasonic sensors.

5. Solve **any three** : **(3×4=12)**
   a) Explain XY recorders.
   b) Explain single channel DAS.
   c) Explain intermodulation analyzer.
   d) Explain data loggers.

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Set S

Set S

SLR-EP – 112

Seat No.	

Set **P**

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) ***Assume*** *suitable data if required.*
3) Figures to ***right*** *indicate maximum marks.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) A three phase controlled converter operating with 3 φ 440V, 60Hz supply is feeding a highly inductive load. Then PIV is
   a) 762.10 b) 622.25 c) 254.03 d) 6222.25

2) In three phase half wave controlled converter average maximum output voltage for continuous conduction mode is
   a) $\frac{3\sqrt{3}\,Vm}{\pi}$ b) $\frac{3\sqrt{3}\,Vm}{2\pi}$ c) $\frac{\sqrt{3}\,Vm}{\pi}$ d) $\frac{\sqrt{3}\,Vm}{2\pi}$

3) A six pulse thyristorized controlled rectifier is connected to a balanced 50 Hz three phase ac source. Output ripple frequency will be
   a) 100 Hz b) 150 Hz c) 250 Hz d) 300 Hz

4) In _____ chopper load current is always positive and load voltage is positive or negative.
   a) Class C b) Class D c) Class F d) Both a) & b)

5) In _____ chopper, charged capacitor is switched by an auxiliary SCR to commutate main SCR.
   a) Jones b) Current commutated
   c) Morgans d) Both a) and b)

6) In DC chopper for periodic time T, output voltage can be controlled by frequency modulation by varying
   a) T keeping T_{ON} or T_{OFF} constant b) Frequency keeping T_{ON} or T_{OFF} constant
   c) T_{ON} keeping frequency constant d) Both a) and b)

7) A step up chopper has input voltage of 200 V and output voltage of 600 V, duty cycle of chopper is
   a) 0.0667 b) 0.667 c) 66.7% d) Both b) and c)

8) The number of thyristors required for single phase bridge type cycloconverters and three phase three pulse cycloconverters.
   a) 8, 36 b) 8, 6 c) 4, 18 d) 8, 18

9) The fundamental rms value of per phase output voltage for m phase cycloconverter for $\alpha = 0°$
   a) $V_{01} = V_{ph}\frac{m}{\pi}\sin\left(\frac{\pi}{m}\right)$ b) $V_{01} = V_{ph}\frac{m}{\pi}\cos\left(\frac{\pi}{m}\right)$
   c) $V_{01} = V_{ph}\frac{\pi}{m}\sin\left(\frac{\pi}{m}\right)$ d) $V_{01} = V_{ph}\frac{\pi}{m}\cos\left(\frac{\pi}{m}\right)$

P.T.O.

10) A cycloconverters is a
   a) Frequency changer
   b) Phase angle changer
   c) Amplitude changer
   d) Both b) and c)

11) In multiple PWM when $\delta = \frac{\pi}{p}$ then rms value of output voltage is
   a) $\frac{Vs}{2}$
   b) $\frac{Vs}{4}$
   c) Vs
   d) 2Vs

12) Speed control of three phase AC motor can be obtained from
   a) 3 phase 6 pulse cycloconverter
   b) Controlled rectifier
   c) 3 phase bridge inverter
   d) Both a) and c)

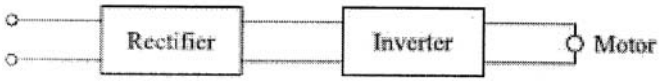
13) In three phase 120° conduction mode
   a) At any instant of time two thyristors are ON
   b) Triplen harmonics are absent
   c) No possibility of short circuit
   d) All above

14) In voltage source inverter amplitude of output voltage _____ and amplitude of current _____.
   a) Depends upon load, does not depends upon load
   b) Does not depends upon load, depends upon load
   c) Independent of load, independent of load
   d) Remains constant, remains constant

15) In sinusoidal pulse width modulation if number of pulses per half cycle is 3 then
   a) All harmonics up to 5^{th} order are eliminated
   b) All harmonics up to 7^{th} order are eliminated
   c) All harmonics up to 3^{rd} order are eliminated
   d) All harmonics up to 9^{th} order are eliminated

16) In variable voltage variable frequency control, to achieve constant torque operation below base speed
   a) Ratio of voltage and frequency has to be kept constant
   b) Flux has to be increased
   c) Flux has to be decreased
   d) Both a) and b)

17) For the large AC motor control shown below, if switching frequency of power device is increased by inverter control circuitry



   a) Motor speed will increase
   b) Motor speed will decrease
   c) The speed will not be effected
   d) Depending upon firing of inverter

18) Armature voltage of DC motor can be controlled from
   a) Inverters
   b) Choppers
   c) Bridge rectifier circuit with fixed input
   d) Cycloconverter

19) In three phase180° conduction mode bridge inverter with fundamental output frequency of 60Hz, then frequencies of other components in the output voltage wave in Hz, would be
   a) 60, 180, 420, 660
   b) 60, 300, 420, 660, 780, high frequencies
   c) 60, 180, 420, 660, 780
   d) 60, 180

20) A good power factor
   a) Helps in stabilizing system voltage
   b) Reduces the load on transformer
   c) Decreases power losses in transformers
   d) All above

_____

SLR-EP – 112

Seat No.	

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***

2) Figures to ***right*** *indicate maximum marks.*

SECTION – I

2. Solve **any four** : **(4×6)**

1) Explain working of Class C chopper with suitable circuit diagram.

2) Explain time ratio control and current limit control strategies used for choppers.

3) Show that fundamental rms value of per phase output voltage for m phase cycloconverter is

$$V_{0r} = V_{ph} \frac{m}{\pi} \sin\left(\frac{\pi}{m}\right).$$

4) A three phase controlled bridge converter is connected to 440 (rms), 3φ, 60Hz mains. The load consists of 280V battery in series with resistor of $15\,\Omega$. The output current of converter is 15A ripple free. Calculate average output voltage of converter, delay angle and ratings of SCRs.

5) Describe design consideration for Chopper circuit.

3. Attempt **any two** : **(2×8)**

1) Describe microcontrolled based firing scheme for three phase fully controlled rectifiers with suitable flow chart.

2) What is necessity of cycloconverter ? Draw the basic circuit and describe the working of three phase to single phase cycloconverter with resistive load. Sketch associated waveforms for frequency

$$\frac{Fo}{Fs} = \frac{1}{5}.$$

3) Explain operation of three phase half controlled rectifier. Derive an expression for average output voltage for discontinuous conduction mode. Sketch associated waveform for $\alpha = 120^{\circ}$.

Set P

SECTION – II

4. Attempt **any four** : **(4×6)**

   1) A three phase inverter is supplied with 200V dc source. If inverter mode is 180° conduction mode. What will be RMS value of AC output voltage across ?
      i) Star connected resistive load
      ii) Delta connected resistive load.

   2) Explain how harmonics can be eliminated using stepped wave inverter. Sketch associated waveforms.

   3) What is the principle of phase locked loop control of DC drive ? Explain its operation using suitable block diagram.

   4) Derive an expression of RMS value of n^{th} harmonic component for single phase half bridge square wave inverter.

   5) Draw the basic circuit and explain the operation of 3 phase dual converter drive for DC motor.

5. Attempt **any two** : **(2×8)**

   1) With neat circuit diagram and appropriate waveforms explain working of series resonant inverter with highly inductive load.

   2) Explain the working of speed control of AC drive using fuzzy logic controller with suitable block diagram.

   3) Explain following method for improvement of power factor.
      a) Overexcited synchronous motor
      b) Capacitive power factor corrector
      c) Static VAR compensator.

_____

SLR-EP – 112

Seat No.	

Set **Q**

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) ***Assume*** *suitable data if required.*
3) Figures to ***right*** *indicate maximum marks.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

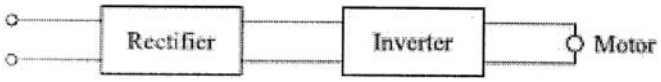
MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In variable voltage variable frequency control, to achieve constant torque operation below base speed
   a) Ratio of voltage and frequency has to be kept constant
   b) Flux has to be increased
   c) Flux has to be decreased
   d) Both a) and b)

2) For the large AC motor control shown below, if switching frequency of power device is increased by inverter control circuitry



   a) Motor speed will increase
   b) Motor speed will decrease
   c) The speed will not be effected
   d) Depending upon firing of inverter

3) Armature voltage of DC motor can be controlled from
   a) Inverters
   b) Choppers
   c) Bridge rectifier circuit with fixed input
   d) Cycloconverter

4) In three phase180° conduction mode bridge inverter with fundamental output frequency of 60Hz, then frequencies of other components in the output voltage wave in Hz, would be
   a) 60, 180, 420, 660
   b) 60, 300, 420, 660, 780, high frequencies
   c) 60, 180, 420, 660, 780
   d) 60, 180

5) A good power factor
   a) Helps in stabilizing system voltage
   b) Reduces the load on transformer
   c) Decreases power losses in transformers
   d) All above

6) A three phase controlled converter operating with 3 φ 440V, 60Hz supply is feeding a highly inductive load. Then PIV is
   a) 762.10 b) 622.25 c) 254.03 d) 6222.25

7) In three phase half wave controlled converter average maximum output voltage for continuous conduction mode is

   a) $\frac{3\sqrt{3}\,Vm}{\pi}$ b) $\frac{3\sqrt{3}\,Vm}{2\pi}$ c) $\frac{\sqrt{3}\,Vm}{\pi}$ d) $\frac{\sqrt{3}\,Vm}{2\pi}$

P.T.O.

8) A six pulse thyristorized controlled rectifier is connected to a balanced 50 Hz three phase ac source. Output ripple frequency will be
   a) 100 Hz b) 150 Hz c) 250 Hz d) 300 Hz

9) In _____ chopper load current is always positive and load voltage is positive or negative.
   a) Class C b) Class D c) Class F d) Both a) & b)

10) In _____ chopper, charged capacitor is switched by an auxiliary SCR to commutate main SCR.
   a) Jones b) Current commutated
   c) Morgans d) Both a) and b)

11) In DC chopper for periodic time T, output voltage can be controlled by frequency modulation by varying
   a) T keeping T_{ON} or T_{OFF} constant b) Frequency keeping T_{ON} or T_{OFF} constant
   c) T_{ON} keeping frequency constant d) Both a) and b)

12) A step up chopper has input voltage of 200 V and output voltage of 600 V, duty cycle of chopper is
   a) 0.0667 b) 0.667 c) 66.7% d) Both b) and c)

13) The number of thyristors required for single phase bridge type cycloconverters and three phase three pulse cycloconverters.
   a) 8, 36 b) 8, 6 c) 4, 18 d) 8, 18

14) The fundamental rms value of per phase output voltage for m phase cycloconverter for $\alpha = 0°$

   a) $V_{01} = V_{ph}\frac{m}{\pi}\sin\left(\frac{\pi}{m}\right)$ b) $V_{01} = V_{ph}\frac{m}{\pi}\cos\left(\frac{\pi}{m}\right)$

   c) $V_{01} = V_{ph}\frac{\pi}{m}\sin\left(\frac{\pi}{m}\right)$ d) $V_{01} = V_{ph}\frac{\pi}{m}\cos\left(\frac{\pi}{m}\right)$

15) A cycloconverters is a
   a) Frequency changer b) Phase angle changer
   c) Amplitude changer d) Both b) and c)

16) In multiple PWM when $\delta = \frac{\pi}{p}$ then rms value of output voltage is

   a) $\frac{Vs}{2}$ b) $\frac{Vs}{4}$
   c) Vs d) 2Vs

17) Speed control of three phase AC motor can be obtained from
   a) 3 phase 6 pulse cycloconverter b) Controlled rectifier
   c) 3 phase bridge inverter d) Both a) and c)

18) In three phase 120° conduction mode
   a) At any instant of time two thyristors are ON b) Triplen harmonics are absent
   c) No possibility of short circuit d) All above

19) In voltage source inverter amplitude of output voltage _____ and amplitude of current _____.
   a) Depends upon load, does not depends upon load
   b) Does not depends upon load, depends upon load
   c) Independent of load, independent of load
   d) Remains constant, remains constant

20) In sinusoidal pulse width modulation if number of pulses per half cycle is 3 then
   a) All harmonics up to 5^{th} order are eliminated b) All harmonics up to 7^{th} order are eliminated
   c) All harmonics up to 3^{rd} order are eliminated d) All harmonics up to 9^{th} order are eliminated

SLR-EP – 112

Seat No.	

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***

2) Figures to ***right*** *indicate maximum marks.*

SECTION – I

2. Solve **any four** : **(4×6)**

1) Explain working of Class C chopper with suitable circuit diagram.

2) Explain time ratio control and current limit control strategies used for choppers.

3) Show that fundamental rms value of per phase output voltage for m phase cycloconverter is

$$V_{0r} = V_{ph} \frac{m}{\pi} \sin\left(\frac{\pi}{m}\right).$$

4) A three phase controlled bridge converter is connected to 440 (rms), 3φ, 60Hz mains. The load consists of 280V battery in series with resistor of $15\,\Omega$. The output current of converter is 15A ripple free. Calculate average output voltage of converter, delay angle and ratings of SCRs.

5) Describe design consideration for Chopper circuit.

3. Attempt **any two** : **(2×8)**

1) Describe microcontrolled based firing scheme for three phase fully controlled rectifiers with suitable flow chart.

2) What is necessity of cycloconverter ? Draw the basic circuit and describe the working of three phase to single phase cycloconverter with resistive load. Sketch associated waveforms for frequency

$$\frac{Fo}{Fs} = \frac{1}{5}.$$

3) Explain operation of three phase half controlled rectifier. Derive an expression for average output voltage for discontinuous conduction mode. Sketch associated waveform for $\alpha = 120^{\circ}$.

Set Q

SECTION – II

4. Attempt **any four** : **(4×6)**

   1) A three phase inverter is supplied with 200V dc source. If inverter mode is 180° conduction mode. What will be RMS value of AC output voltage across ?
      i) Star connected resistive load
      ii) Delta connected resistive load.

   2) Explain how harmonics can be eliminated using stepped wave inverter. Sketch associated waveforms.

   3) What is the principle of phase locked loop control of DC drive ? Explain its operation using suitable block diagram.

   4) Derive an expression of RMS value of n^{th} harmonic component for single phase half bridge square wave inverter.

   5) Draw the basic circuit and explain the operation of 3 phase dual converter drive for DC motor.

5. Attempt **any two** : **(2×8)**

   1) With neat circuit diagram and appropriate waveforms explain working of series resonant inverter with highly inductive load.

   2) Explain the working of speed control of AC drive using fuzzy logic controller with suitable block diagram.

   3) Explain following method for improvement of power factor.
      a) Overexcited synchronous motor
      b) Capacitive power factor corrector
      c) Static VAR compensator.

SLR-EP – 112

Seat No.	

Set **R**

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) ***All*** *questions are* ***compulsory.***
2) ***Assume*** *suitable data if required.*
3) *Figures to* ***right*** *indicate maximum marks.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In multiple PWM when $\delta = \frac{\pi}{p}$ then rms value of output voltage is

a) $\frac{Vs}{2}$ b) $\frac{Vs}{4}$
c) Vs d) 2Vs

2) Speed control of three phase AC motor can be obtained from
a) 3 phase 6 pulse cycloconverter b) Controlled rectifier
c) 3 phase bridge inverter d) Both a) and c)

3) In three phase 120° conduction mode
a) At any instant of time two thyristors are ON b) Triplen harmonics are absent
c) No possibility of short circuit d) All above

4) In voltage source inverter amplitude of output voltage _____ and amplitude of current _____.
a) Depends upon load, does not depends upon load
b) Does not depends upon load, depends upon load
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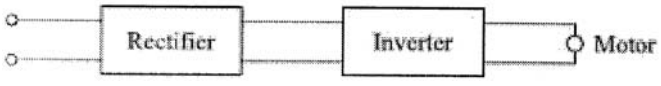
d) Remains constant, remains constant

5) In sinusoidal pulse width modulation if number of pulses per half cycle is 3 then
a) All harmonics up to 5^{th} order are eliminated b) All harmonics up to 7^{th} order are eliminated
c) All harmonics up to 3^{rd} order are eliminated d) All harmonics up to 9^{th} order are eliminated

6) In variable voltage variable frequency control, to achieve constant torque operation below base speed
a) Ratio of voltage and frequency has to be kept constant
b) Flux has to be increased
c) Flux has to be decreased
d) Both a) and b)

7) For the large AC motor control shown below, if switching frequency of power device is increased by inverter control circuitry



a) Motor speed will increase b) Motor speed will decrease
c) The speed will not be effected d) Depending upon firing of inverter

P.T.O.

8) Armature voltage of DC motor can be controlled from
   a) Inverters b) Choppers
   c) Bridge rectifier circuit with fixed input d) Cycloconverter

9) In three phase180° conduction mode bridge inverter with fundamental output frequency of 60Hz, then frequencies of other components in the output voltage wave in Hz, would be
   a) 60, 180, 420, 660 b) 60, 300, 420, 660, 780, high frequencies
   c) 60, 180, 420, 660, 780 d) 60, 180

10) A good power factor
   a) Helps in stabilizing system voltage b) Reduces the load on transformer
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11) A three phase controlled converter operating with 3 φ 440V, 60Hz supply is feeding a highly inductive load. Then PIV is
   a) 762.10 b) 622.25 c) 254.03 d) 6222.25

12) In three phase half wave controlled converter average maximum output voltage for continuous conduction mode is
   a) $\frac{3\sqrt{3}\,Vm}{\pi}$ b) $\frac{3\sqrt{3}\,Vm}{2\pi}$ c) $\frac{\sqrt{3}\,Vm}{\pi}$ d) $\frac{\sqrt{3}\,Vm}{2\pi}$

13) A six pulse thyristorized controlled rectifier is connected to a balanced 50 Hz three phase ac source. Output ripple frequency will be
   a) 100 Hz b) 150 Hz c) 250 Hz d) 300 Hz

14) In _____ chopper load current is always positive and load voltage is positive or negative.
   a) Class C b) Class D c) Class F d) Both a) & b)

15) In _____ chopper, charged capacitor is switched by an auxiliary SCR to commutate main SCR.
   a) Jones b) Current commutated
   c) Morgans d) Both a) and b)

16) In DC chopper for periodic time T, output voltage can be controlled by frequency modulation by varying
   a) T keeping T_{ON} or T_{OFF} constant b) Frequency keeping T_{ON} or T_{OFF} constant
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17) A step up chopper has input voltage of 200 V and output voltage of 600 V, duty cycle of chopper is
   a) 0.0667 b) 0.667 c) 66.7% d) Both b) and c)

18) The number of thyristors required for single phase bridge type cycloconverters and three phase three pulse cycloconverters.
   a) 8, 36 b) 8, 6 c) 4, 18 d) 8, 18

19) The fundamental rms value of per phase output voltage for m phase cycloconverter for $\alpha = 0°$
   a) $V_{01} = V_{ph}\frac{m}{\pi}\sin\left(\frac{\pi}{m}\right)$ b) $V_{01} = V_{ph}\frac{m}{\pi}\cos\left(\frac{\pi}{m}\right)$
   c) $V_{01} = V_{ph}\frac{\pi}{m}\sin\left(\frac{\pi}{m}\right)$ d) $V_{01} = V_{ph}\frac{\pi}{m}\cos\left(\frac{\pi}{m}\right)$

20) A cycloconverters is a
   a) Frequency changer b) Phase angle changer
   c) Amplitude changer d) Both b) and c)

SLR-EP – 112

Seat No.	

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***

2) Figures to ***right*** *indicate maximum marks.*

SECTION – I

2. Solve **any four** : **(4×6)**

1) Explain working of Class C chopper with suitable circuit diagram.

2) Explain time ratio control and current limit control strategies used for choppers.

3) Show that fundamental rms value of per phase output voltage for m phase cycloconverter is

$$V_{0r} = V_{ph} \frac{m}{\pi} \sin\left(\frac{\pi}{m}\right).$$

4) A three phase controlled bridge converter is connected to 440 (rms), 3φ, 60Hz mains. The load consists of 280V battery in series with resistor of $15\,\Omega$. The output current of converter is 15A ripple free. Calculate average output voltage of converter, delay angle and ratings of SCRs.

5) Describe design consideration for Chopper circuit.

3. Attempt **any two** : **(2×8)**

1) Describe microcontrolled based firing scheme for three phase fully controlled rectifiers with suitable flow chart.

2) What is necessity of cycloconverter ? Draw the basic circuit and describe the working of three phase to single phase cycloconverter with resistive load. Sketch associated waveforms for frequency

$$\frac{Fo}{Fs} = \frac{1}{5}.$$

3) Explain operation of three phase half controlled rectifier. Derive an expression for average output voltage for discontinuous conduction mode. Sketch associated waveform for $\alpha = 120^{\circ}$.

SECTION – II

4. Attempt **any four** : **(4×6)**

   1) A three phase inverter is supplied with 200V dc source. If inverter mode is 180° conduction mode. What will be RMS value of AC output voltage across ?
      i) Star connected resistive load
      ii) Delta connected resistive load.

   2) Explain how harmonics can be eliminated using stepped wave inverter. Sketch associated waveforms.

   3) What is the principle of phase locked loop control of DC drive ? Explain its operation using suitable block diagram.

   4) Derive an expression of RMS value of n^{th} harmonic component for single phase half bridge square wave inverter.

   5) Draw the basic circuit and explain the operation of 3 phase dual converter drive for DC motor.

5. Attempt **any two** : **(2×8)**

   1) With neat circuit diagram and appropriate waveforms explain working of series resonant inverter with highly inductive load.

   2) Explain the working of speed control of AC drive using fuzzy logic controller with suitable block diagram.

   3) Explain following method for improvement of power factor.
      a) Overexcited synchronous motor
      b) Capacitive power factor corrector
      c) Static VAR compensator.

SLR-EP – 112

Seat No.	

Set **S**

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) ***Assume*** *suitable data if required.*
3) Figures to ***right*** *indicate maximum marks.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In DC chopper for periodic time T, output voltage can be controlled by frequency modulation by varying
   a) T keeping T_{ON} or T_{OFF} constant
   b) Frequency keeping T_{ON} or T_{OFF} constant
   c) T_{ON} keeping frequency constant
   d) Both a) and b)

2) A step up chopper has input voltage of 200 V and output voltage of 600 V, duty cycle of chopper is
   a) 0.0667 b) 0.667 c) 66.7% d) Both b) and c)

3) The number of thyristors required for single phase bridge type cycloconverters and three phase three pulse cycloconverters.
   a) 8, 36 b) 8, 6 c) 4, 18 d) 8, 18

4) The fundamental rms value of per phase output voltage for m phase cycloconverter for $\alpha = 0°$
   a) $V_{01} = V_{ph}\frac{m}{\pi}\sin\left(\frac{\pi}{m}\right)$
   b) $V_{01} = V_{ph}\frac{m}{\pi}\cos\left(\frac{\pi}{m}\right)$
   c) $V_{01} = V_{ph}\frac{\pi}{m}\sin\left(\frac{\pi}{m}\right)$
   d) $V_{01} = V_{ph}\frac{\pi}{m}\cos\left(\frac{\pi}{m}\right)$

5) A cycloconverters is a
   a) Frequency changer
   b) Phase angle changer
   c) Amplitude changer
   d) Both b) and c)

6) In multiple PWM when $\delta = \frac{\pi}{p}$ then rms value of output voltage is
   a) $\frac{Vs}{2}$
   b) $\frac{Vs}{4}$
   c) Vs
   d) 2Vs

7) Speed control of three phase AC motor can be obtained from
   a) 3 phase 6 pulse cycloconverter
   b) Controlled rectifier
   c) 3 phase bridge inverter
   d) Both a) and c)

8) In three phase 120° conduction mode
   a) At any instant of time two thyristors are ON
   b) Triplen harmonics are absent
   c) No possibility of short circuit
   d) All above

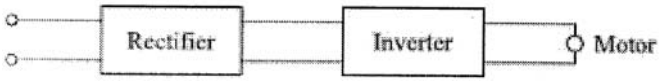
P.T.O.

9) In voltage source inverter amplitude of output voltage _____ and amplitude of current _____.
   a) Depends upon load, does not depends upon load
   b) Does not depends upon load, depends upon load
   c) Independent of load, independent of load
   d) Remains constant, remains constant

10) In sinusoidal pulse width modulation if number of pulses per half cycle is 3 then
   a) All harmonics up to 5^{th} order are eliminated
   b) All harmonics up to 7^{th} order are eliminated
   c) All harmonics up to 3^{rd} order are eliminated
   d) All harmonics up to 9^{th} order are eliminated

11) In variable voltage variable frequency control, to achieve constant torque operation below base speed
   a) Ratio of voltage and frequency has to be kept constant
   b) Flux has to be increased
   c) Flux has to be decreased
   d) Both a) and b)

12) For the large AC motor control shown below, if switching frequency of power device is increased by inverter control circuitry



   a) Motor speed will increase
   b) Motor speed will decrease
   c) The speed will not be effected
   d) Depending upon firing of inverter

13) Armature voltage of DC motor can be controlled from
   a) Inverters
   b) Choppers
   c) Bridge rectifier circuit with fixed input
   d) Cycloconverter

14) In three phase180° conduction mode bridge inverter with fundamental output frequency of 60Hz, then frequencies of other components in the output voltage wave in Hz, would be
   a) 60, 180, 420, 660
   b) 60, 300, 420, 660, 780, high frequencies
   c) 60, 180, 420, 660, 780
   d) 60, 180

15) A good power factor
   a) Helps in stabilizing system voltage
   b) Reduces the load on transformer
   c) Decreases power losses in transformers
   d) All above

16) A three phase controlled converter operating with 3 φ 440V, 60Hz supply is feeding a highly inductive load. Then PIV is
   a) 762.10 b) 622.25 c) 254.03 d) 6222.25

17) In three phase half wave controlled converter average maximum output voltage for continuous conduction mode is

   a) $\frac{3\sqrt{3}\,Vm}{\pi}$ b) $\frac{3\sqrt{3}\,Vm}{2\pi}$ c) $\frac{\sqrt{3}\,Vm}{\pi}$ d) $\frac{\sqrt{3}\,Vm}{2\pi}$

18) A six pulse thyristorized controlled rectifier is connected to a balanced 50 Hz three phase ac source. Output ripple frequency will be
   a) 100 Hz b) 150 Hz c) 250 Hz d) 300 Hz

19) In _____ chopper load current is always positive and load voltage is positive or negative.
   a) Class C b) Class D c) Class F d) Both a) & b)

20) In _____ chopper, charged capacitor is switched by an auxiliary SCR to commutate main SCR.
   a) Jones
   b) Current commutated
   c) Morgans
   d) Both a) and b)

_____

SLR-EP – 112

Seat No.	

B.E. (Electronics) (Part – I) Examination, 2016
POWER ELECTRONICS

Day and Date : Tuesday, 29-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory.***

2) Figures to ***right*** *indicate maximum marks.*

SECTION – I

2. Solve **any four** : **(4×6)**

1) Explain working of Class C chopper with suitable circuit diagram.

2) Explain time ratio control and current limit control strategies used for choppers.

3) Show that fundamental rms value of per phase output voltage for m phase cycloconverter is

$$V_{0r} = V_{ph} \frac{m}{\pi} \sin\left(\frac{\pi}{m}\right).$$

4) A three phase controlled bridge converter is connected to 440 (rms), 3φ, 60Hz mains. The load consists of 280V battery in series with resistor of $15\,\Omega$. The output current of converter is 15A ripple free. Calculate average output voltage of converter, delay angle and ratings of SCRs.

5) Describe design consideration for Chopper circuit.

3. Attempt **any two** : **(2×8)**

1) Describe microcontrolled based firing scheme for three phase fully controlled rectifiers with suitable flow chart.

2) What is necessity of cycloconverter ? Draw the basic circuit and describe the working of three phase to single phase cycloconverter with resistive load. Sketch associated waveforms for frequency

$$\frac{Fo}{Fs} = \frac{1}{5}.$$

3) Explain operation of three phase half controlled rectifier. Derive an expression for average output voltage for discontinuous conduction mode. Sketch associated waveform for $\alpha = 120^{\circ}$.

SECTION – II

4. Attempt **any four** : **(4×6)**

   1) A three phase inverter is supplied with 200V dc source. If inverter mode is 180° conduction mode. What will be RMS value of AC output voltage across ?
      i) Star connected resistive load
      ii) Delta connected resistive load.

   2) Explain how harmonics can be eliminated using stepped wave inverter. Sketch associated waveforms.

   3) What is the principle of phase locked loop control of DC drive ? Explain its operation using suitable block diagram.

   4) Derive an expression of RMS value of n^{th} harmonic component for single phase half bridge square wave inverter.

   5) Draw the basic circuit and explain the operation of 3 phase dual converter drive for DC motor.

5. Attempt **any two** : **(2×8)**

   1) With neat circuit diagram and appropriate waveforms explain working of series resonant inverter with highly inductive load.

   2) Explain the working of speed control of AC drive using fuzzy logic controller with suitable block diagram.

   3) Explain following method for improvement of power factor.
      a) Overexcited synchronous motor
      b) Capacitive power factor corrector
      c) Static VAR compensator.

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SLR-EP – 113

Seat No.	

Set **P**

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume ***suitable*** *data if necessary .*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) In _____ transmission, bits are transmitted simultaneously, each across its own wire.
A) Asynchronous serial B) Synchronous serial
C) Parallel D) Both option A) and B)

2) In cyclic redundancy checking, what is the CRC ?
A) The divisor B) The quotient C) The dividend D) The remainder

3) In _____ error control, the receiver corrects errors without requesting retransmission.
A) Backward B) Retransmission
C) Forward D) None of the above

4) How many Hamming bits are required for 7 bit message ?
A) 2 B) 3 C) 4 D) 5

5) An unauthorized user is a network _____ issue.
A) Performance B) Reliability C) Security D) All of the above

6) The IEEE 802.3 standard defines _____ CSMA/CD as the access method for 10-Mbps.
A) 1-persistent B) p-persistent
C) non persistent D) none of the above

7) In _____ topology, if a computer's network cable is broken, whole network goes down.
A) Bus B) Star
C) Mesh D) None of the above

P.T.O.

8) Each station on an Ethernet network has a unique _____ bits address imprinted on its Network Interface Card (NIC).
A) 5 B) 32 C) 48 D) 64

9) A _____ regenerates a signal, connects segments of a LAN, and has no filtering capability.
A) Repeater B) Bridge C) Router D) Gateway

10) The scrambler and descrambler are parts of
A) Router B) MODEM C) Repeater D) None of the above

11) The connector used in LAN connection is
A) RJ 11 B) RJ 45 C) RJ 69 D) RJ 100

12) In IPv4 header, an HLEN value of decimal 10 means
A) 10 bytes in option field B) 40 bytes in option field
C) 10 bytes in header field D) 40 bytes in header field

13) The TCP header length is
A) 20 bytes B) 60 bytes
C) 20 to 60 bytes D) Depend on data in packet

14) The logical addresses in the internet are called _____ addresses.
A) Socket B) Port
C) IP D) None of the above

15) An ARP request is normally
A) Unicast B) Multicast
C) Broadcast D) None of the above

16) ICMP is _____ layer protocol.
A) Physical B) Network
C) Application D) Transport

17) Distance vector routing is an example of _____ routing.
A) Static B) Dynamic
C) Linear D) None of the above

18) In software defined networking control plane and data planes are
A) Mixed B) Decoupled
C) Overlapped D) None of the above

19) IP address 192.168.1.5 is a Class _____ IP address.
A) A B) C C) D D) B

20) Separating network address from IP address is called
A) Filtering B) Masking
C) XORing D) None of the above

_____

SLR-EP – 113

Seat No.	

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) ***Assume*** *suitable data* ***if*** *necessary.*

SECTION – I

2. Answer **any four** : **(4×5=20)**
   1) What is EIA 232 standard for serial communication ? Explain neatly.
      A signal carries three bits in each signal element. If 1200 signal elements are sent per second, find the baud rate and bit rate.
   2) What is the principal difference between connectionless communication and connection-oriented communication ? Compare between virtual circuit and datagram communication.
   3) What is the difference between a packet and a frame ? What are the different methods of frame making ?
   4) Explain different types of MODEMS.
      Find CRC and transmitted bit string for a message 1101011011. Assume generator bit string 10011 for transmitter.
   5) Why flow control is essential ? Discuss stop_and_wait flow control protocol in detail.

3. Answer **any two** : **(2×10=20)**
   1) What are the advantages of layered reference model for data communication ? Draw ISO-OSI reference model and discuss various issues handled in these layers.
   2) Draw frame format of IEEE 802.3 LAN and explain each field in detail. Is efficiency of IEEE 802.3 LAN is function of frame size ?
      What is minimum the frame size for 802.3 LAN of a length 1 km and operating at 1Gbps ? Assume propagation speed of 200,000 km/sec for signals over LAN medium.
   3) What are the different modes of data transfer in HDLC ? Draw and explain different HDLC frame formats. List limitations of normal modes of operation in case of HDLC.

SECTION – II

4. Answer **any four** : **(4×5=20)**

   1) Draw TCP/IP reference model and describe each layer's function in detail. What is encapsulation and de-capsulation in TCP/IP ?

   2) What are class full IP addresses and dotted decimal notation ? Give address ranges of various IP class addresses.

   3) What is software defined networking ? Discuss it in detail.

   4) List different network devices used in computer communication. Explain switch and bridges in detail.

   5) Draw ARP header format and explain importance of each field.

5. Answer **any two** : **(2×10=20)**

   1) Draw the TCP header format and explain each field in detail. List various features of TCP.

   2) What is principle of optimality and fairness in routing protocols ? Discuss shortest path algorithm in detail.

   3) Why IP is called best effort networks ? What are different types of ICMP messages and their meaning ?

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SLR-EP – 113

Seat No.	

Set Q

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume ***suitable*** *data if necessary .*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) ICMP is _____ layer protocol.
A) Physical B) Network C) Application D) Transport

2) Distance vector routing is an example of _____ routing.
A) Static B) Dynamic
C) Linear D) None of the above

3) In software defined networking control plane and data planes are
A) Mixed B) Decoupled
C) Overlapped D) None of the above

4) IP address 192.168.1.5 is a Class _____ IP address.
A) A B) C C) D D) B

5) Separating network address from IP address is called
A) Filtering B) Masking
C) XORing D) None of the above

6) In _____ transmission, bits are transmitted simultaneously, each across its own wire.
A) Asynchronous serial B) Synchronous serial
C) Parallel D) Both option A) and B)

7) In cyclic redundancy checking, what is the CRC ?
A) The divisor B) The quotient
C) The dividend D) The remainder

8) In _____ error control, the receiver corrects errors without requesting retransmission.
A) Backward B) Retransmission
C) Forward D) None of the above

9) How many Hamming bits are required for 7 bit message ?
A) 2 B) 3 C) 4 D) 5

10) An unauthorized user is a network _____ issue.
A) Performance B) Reliability C) Security D) All of the above

11) The IEEE 802.3 standard defines _____ CSMA/CD as the access method for 10-Mbps.
A) 1-persistent B) p-persistent
C) non persistent D) none of the above

12) In _____ topology, if a computer's network cable is broken, whole network goes down.
A) Bus B) Star C) Mesh D) None of the above

13) Each station on an Ethernet network has a unique _____ bits address imprinted on its Network Interface Card (NIC).
A) 5 B) 32 C) 48 D) 64

14) A _____ regenerates a signal, connects segments of a LAN, and has no filtering capability.
A) Repeater B) Bridge C) Router D) Gateway

15) The scrambler and descrambler are parts of
A) Router B) MODEM C) Repeater D) None of the above

16) The connector used in LAN connection is
A) RJ 11 B) RJ 45 C) RJ 69 D) RJ 100

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A) 10 bytes in option field B) 40 bytes in option field
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A) 20 bytes B) 60 bytes
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A) Unicast B) Multicast
C) Broadcast D) None of the above

_____

SLR-EP – 113

Seat No.	

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) ***Assume*** *suitable data* ***if*** *necessary.*

SECTION – I

2. Answer **any four** : **(4×5=20)**
   1) What is EIA 232 standard for serial communication ? Explain neatly.
      A signal carries three bits in each signal element. If 1200 signal elements are sent per second, find the baud rate and bit rate.
   2) What is the principal difference between connectionless communication and connection-oriented communication ? Compare between virtual circuit and datagram communication.
   3) What is the difference between a packet and a frame ? What are the different methods of frame making ?
   4) Explain different types of MODEMS.
      Find CRC and transmitted bit string for a message 1101011011. Assume generator bit string 10011 for transmitter.
   5) Why flow control is essential ? Discuss stop_and_wait flow control protocol in detail.

3. Answer **any two** : **(2×10=20)**
   1) What are the advantages of layered reference model for data communication ? Draw ISO-OSI reference model and discuss various issues handled in these layers.
   2) Draw frame format of IEEE 802.3 LAN and explain each field in detail. Is efficiency of IEEE 802.3 LAN is function of frame size ?
      What is minimum the frame size for 802.3 LAN of a length 1 km and operating at 1Gbps ? Assume propagation speed of 200,000 km/sec for signals over LAN medium.
   3) What are the different modes of data transfer in HDLC ? Draw and explain different HDLC frame formats. List limitations of normal modes of operation in case of HDLC.

SECTION – II

4. Answer **any four** : **(4×5=20)**

   1) Draw TCP/IP reference model and describe each layer's function in detail. What is encapsulation and de-capsulation in TCP/IP ?

   2) What are class full IP addresses and dotted decimal notation ? Give address ranges of various IP class addresses.

   3) What is software defined networking ? Discuss it in detail.

   4) List different network devices used in computer communication. Explain switch and bridges in detail.

   5) Draw ARP header format and explain importance of each field.

5. Answer **any two** : **(2×10=20)**

   1) Draw the TCP header format and explain each field in detail. List various features of TCP.

   2) What is principle of optimality and fairness in routing protocols ? Discuss shortest path algorithm in detail.

   3) Why IP is called best effort networks ? What are different types of ICMP messages and their meaning ?

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SLR-EP – 113

Seat No.	

Set **R**

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume ***suitable*** *data if necessary .*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) The connector used in LAN connection is
A) RJ 11 B) RJ 45 C) RJ 69 D) RJ 100

2) In IPv4 header, an HLEN value of decimal 10 means
A) 10 bytes in option field B) 40 bytes in option field
C) 10 bytes in header field D) 40 bytes in header field

3) The TCP header length is
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C) 20 to 60 bytes D) Depend on data in packet

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A) Socket B) Port
C) IP D) None of the above

5) An ARP request is normally
A) Unicast B) Multicast
C) Broadcast D) None of the above

6) ICMP is _____ layer protocol.
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7) Distance vector routing is an example of _____ routing.
A) Static B) Dynamic C) Linear D) None of the above

8) In software defined networking control plane and data planes are
A) Mixed B) Decoupled
C) Overlapped D) None of the above

P.T.O.

9) IP address 192.168.1.5 is a Class _____ IP address.
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A) Filtering B) Masking
C) XORing D) None of the above

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13) In _____ error control, the receiver corrects errors without requesting retransmission.
A) Backward B) Retransmission
C) Forward D) None of the above

14) How many Hamming bits are required for 7 bit message ?
A) 2 B) 3 C) 4 D) 5

15) An unauthorized user is a network _____ issue.
A) Performance B) Reliability C) Security D) All of the above

16) The IEEE 802.3 standard defines _____ CSMA/CD as the access method for 10-Mbps.
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17) In _____ topology, if a computer's network cable is broken, whole network goes down.
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18) Each station on an Ethernet network has a unique _____ bits address imprinted on its Network Interface Card (NIC).
A) 5 B) 32 C) 48 D) 64

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A) Repeater B) Bridge C) Router D) Gateway

20) The scrambler and descrambler are parts of
A) Router B) MODEM C) Repeater D) None of the above

_____

SLR-EP – 113

Seat No.	

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) ***Assume*** *suitable data* ***if*** *necessary.*

SECTION – I

2. Answer **any four** : **(4×5=20)**
   1) What is EIA 232 standard for serial communication ? Explain neatly.
      A signal carries three bits in each signal element. If 1200 signal elements are sent per second, find the baud rate and bit rate.
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   3) What is the difference between a packet and a frame ? What are the different methods of frame making ?
   4) Explain different types of MODEMS.
      Find CRC and transmitted bit string for a message 1101011011. Assume generator bit string 10011 for transmitter.
   5) Why flow control is essential ? Discuss stop_and_wait flow control protocol in detail.

3. Answer **any two** : **(2×10=20)**
   1) What are the advantages of layered reference model for data communication ? Draw ISO-OSI reference model and discuss various issues handled in these layers.
   2) Draw frame format of IEEE 802.3 LAN and explain each field in detail. Is efficiency of IEEE 802.3 LAN is function of frame size ?
      What is minimum the frame size for 802.3 LAN of a length 1 km and operating at 1Gbps ? Assume propagation speed of 200,000 km/sec for signals over LAN medium.
   3) What are the different modes of data transfer in HDLC ? Draw and explain different HDLC frame formats. List limitations of normal modes of operation in case of HDLC.

SECTION – II

4. Answer **any four** : **(4×5=20)**

   1) Draw TCP/IP reference model and describe each layer's function in detail. What is encapsulation and de-capsulation in TCP/IP ?

   2) What are class full IP addresses and dotted decimal notation ? Give address ranges of various IP class addresses.

   3) What is software defined networking ? Discuss it in detail.

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   5) Draw ARP header format and explain importance of each field.

5. Answer **any two** : **(2×10=20)**

   1) Draw the TCP header format and explain each field in detail. List various features of TCP.

   2) What is principle of optimality and fairness in routing protocols ? Discuss shortest path algorithm in detail.

   3) Why IP is called best effort networks ? What are different types of ICMP messages and their meaning ?

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SLR-EP – 113

Seat No.	

Set S

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume ***suitable*** *data if necessary .*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

1) The IEEE 802.3 standard defines _____ CSMA/CD as the access method for 10-Mbps.
A) 1-persistent B) p-persistent
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2) In _____ topology, if a computer's network cable is broken, whole network goes down.
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C) Mesh D) None of the above

3) Each station on an Ethernet network has a unique _____ bits address imprinted on its Network Interface Card (NIC).
A) 5 B) 32 C) 48 D) 64

4) A _____ regenerates a signal, connects segments of a LAN, and has no filtering capability.
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A) Router B) MODEM C) Repeater D) None of the above

6) The connector used in LAN connection is
A) RJ 11 B) RJ 45 C) RJ 69 D) RJ 100

7) In IPv4 header, an HLEN value of decimal 10 means
A) 10 bytes in option field B) 40 bytes in option field
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   C) IP D) None of the above

10) An ARP request is normally
   A) Unicast B) Multicast
   C) Broadcast D) None of the above

11) ICMP is _____ layer protocol.
   A) Physical B) Network
   C) Application D) Transport

12) Distance vector routing is an example of _____ routing.
   A) Static B) Dynamic
   C) Linear D) None of the above

13) In software defined networking control plane and data planes are
   A) Mixed B) Decoupled
   C) Overlapped D) None of the above

14) IP address 192.168.1.5 is a Class _____ IP address.
   A) A B) C C) D D) B

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   A) Filtering B) Masking
   C) XORing D) None of the above

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19) How many Hamming bits are required for 7 bit message ?
   A) 2 B) 3 C) 4 D) 5

20) An unauthorized user is a network _____ issue.
   A) Performance B) Reliability C) Security D) All of the above

_____

SLR-EP – 113

Seat No.	

B.E. (Electronics Engg.) (Part – I) Examination, 2016
COMPUTER NETWORKS

Day and Date : Thursday, 1-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicates* ***full*** *marks.*
2) ***Assume*** *suitable data* ***if*** *necessary.*

SECTION – I

2. Answer **any four** : **(4×5=20)**
   1) What is EIA 232 standard for serial communication ? Explain neatly.
      A signal carries three bits in each signal element. If 1200 signal elements are sent per second, find the baud rate and bit rate.
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   3) What is the difference between a packet and a frame ? What are the different methods of frame making ?
   4) Explain different types of MODEMS.
      Find CRC and transmitted bit string for a message 1101011011. Assume generator bit string 10011 for transmitter.
   5) Why flow control is essential ? Discuss stop_and_wait flow control protocol in detail.

3. Answer **any two** : **(2×10=20)**
   1) What are the advantages of layered reference model for data communication ? Draw ISO-OSI reference model and discuss various issues handled in these layers.
   2) Draw frame format of IEEE 802.3 LAN and explain each field in detail. Is efficiency of IEEE 802.3 LAN is function of frame size ?
      What is minimum the frame size for 802.3 LAN of a length 1 km and operating at 1Gbps ? Assume propagation speed of 200,000 km/sec for signals over LAN medium.
   3) What are the different modes of data transfer in HDLC ? Draw and explain different HDLC frame formats. List limitations of normal modes of operation in case of HDLC.

SECTION – II

4. Answer **any four** : **(4×5=20)**

   1) Draw TCP/IP reference model and describe each layer's function in detail. What is encapsulation and de-capsulation in TCP/IP ?

   2) What are class full IP addresses and dotted decimal notation ? Give address ranges of various IP class addresses.

   3) What is software defined networking ? Discuss it in detail.

   4) List different network devices used in computer communication. Explain switch and bridges in detail.

   5) Draw ARP header format and explain importance of each field.

5. Answer **any two** : **(2×10=20)**

   1) Draw the TCP header format and explain each field in detail. List various features of TCP.

   2) What is principle of optimality and fairness in routing protocols ? Discuss shortest path algorithm in detail.

   3) Why IP is called best effort networks ? What are different types of ICMP messages and their meaning ?

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SLR-EP – 114

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In IEEE 802.11 network, different BSS are connected by
a) AP b) STA c) DSS d) all of above

2) In 802.11 network protocol stack, PMD and PLCP are the sublayers of
a) PHY b) DLC c) MAC d) LLC

3) In GSM 900 out of 124 available channels, _____ channels are available to user.
a) 124 b) 122 c) 90 d) 32

4) A GSM frame is of
a) 577 μ sec b) 4.615 msec c) 577 msec d) 4.615 μ sec

5) In which of below case, all address fields in MAC frames are used in WiFi ?
a) MS to MS in adhoc architecture
b) MS to AP in infrastructure architecture
c) AP to MS in infrastructure architecture
d) AP to AP in infrastructure architecture

6) In India, which of below is true about 2.4 GHz band ?
a) license free b) called ISM
c) used for Bluetooth d) all of these

7) Find the odd man out : IP×4, IP×6, mobile IP, IP×2
a) IP×4 b) IP×6 c) mobile IP d) IP×2

8) Training Sequence and equalization are solutions for _____ interference.
   a) inter symbol b) co channel
   c) adjacent channel d) noise

9) In GSM when transmitted as half rate, user data is mapped at same slot but in _____ frame.
   a) duplicate b) half c) alternate d) double

10) 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

11) If the size of the obstacle is of the order of the wavelength or less, the incident wave undergoes
   a) reflection b) scattering c) fading d) multipath

12) Process of subdividing a congested cell into smaller cells each with its own BS is
   a) zoning b) sectoring c) cell splitting d) all of these

13) Which of below is not a forward CDAMA channel ?
   a) paging b) sync c) pilot d) control

14) A3 & A5 are _____ used in GSM.
   a) decimators b) interfaces
   c) ciphering algorithms d) interleaving tables

15) Dwell time in a GSM handoff depends upon
   a) propagation b) interference c) distance d) all of above

16) A Bluetooth operates at _____ band.
   a) 2.4 GHz b) 2 GHz c) 620 MHz d) 56 MHz

17) A collection of Bluetooth devices which are synchronized to the same hopping sequence is called
   a) piconet b) scatternet
   c) parked net d) no such network exists

18) Low frequency band is used for _____ communication.
   a) GSM & CDMA b) RADAR
   c) submarine d) commercial radio

19) Take odd man out : WiFi, WiMax, Bluetooth, CDMA
   a) WiFi b) WiMax c) Bluetooth d) CDMA

20) HLR & VLR data bases are maintained by
   a) NSS b) RSS c) AUC d) all of above

_____

SLR-EP – 114

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) What is microcell zone concept ? With suitable example show how it improves capacity in a cellular system.

b) For a situation of a person crossing a cell boundary with an on going call – give details how his call can be maintained with a handoff procedure. What are the issues/constraints associated ?

c) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.

3. Solve **any four** : **(4×5=20)**

a) Describe different Dedicated Control Channels in GSM.

b) Sketch and discuss FHSS transmitter.

c) Why cellular communication suffers with co channel interference ? How to combat it ?

d) With suitable example explain spreading of a signal. What are its advantages ?

e) With suitable diagram explain a typical sequence of events that take place for a mobile originated call.

SECTION – II

4. Solve **any two** : **(10×2=20)**

   a) With suitable diagram explain optimization using binding in a mobile network layer.

   b) With suitable diagram explain basic DFWMAC-DCF using CSMA/CA.

   c) Draw and explain how Bluetooth Piconet and Scatternet are formed.

5. Solve **any four** : **(4×5=20)**

   a) Propose the requirements for a Mobile IP.

   b) Assess agent discovery. Why it is required ?

   c) Organize different constituents of a typical WiMax deployment architecture.

   d) Describe ad-hoc architecture for WLAN.

   e) What is Bluetooth ? What are its salient features ?

SLR-EP – 114

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) A Bluetooth operates at _____ band.
a) 2.4 GHz b) 2 GHz c) 620 MHz d) 56 MHz

2) A collection of Bluetooth devices which are synchronized to the same hopping sequence is called
a) piconet b) scatternet
c) parked net d) no such network exists

3) Low frequency band is used for _____ communication.
a) GSM & CDMA b) RADAR
c) submarine d) commercial radio

4) Take odd man out : WiFi, WiMax, Bluetooth, CDMA
a) WiFi b) WiMax c) Bluetooth d) CDMA

5) HLR & VLR data bases are maintained by
a) NSS b) RSS c) AUC d) all of above

6) In IEEE 802.11 network, different BSS are connected by
a) AP b) STA c) DSS d) all of above

7) In 802.11 network protocol stack, PMD and PLCP are the sublayers of
a) PHY b) DLC c) MAC d) LLC

8) In GSM 900 out of 124 available channels, _____ channels are available to user.
a) 124 b) 122 c) 90 d) 32

9) A GSM frame is of
   a) 577 μ sec b) 4.615 msec c) 577 msec d) 4.615 μ sec
10) In which of below case, all address fields in MAC frames are used in WiFi ?
   a) MS to MS in adhoc architecture
   b) MS to AP in infrastructure architecture
   c) AP to MS in infrastructure architecture
   d) AP to AP in infrastructure architecture
11) In India, which of below is true about 2.4 GHz band ?
   a) license free b) called ISM
   c) used for Bluetooth d) all of these
12) Find the odd man out : IP×4, IP×6, mobile IP, IP×2
   a) IP×4 b) IP×6 c) mobile IP d) IP×2
13) Training Sequence and equalization are solutions for _____ interference.
   a) inter symbol b) co channel
   c) adjacent channel d) noise
14) In GSM when transmitted as half rate, user data is mapped at same slot but in _____ frame.
   a) duplicate b) half c) alternate d) double
15) 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
16) If the size of the obstacle is of the order of the wavelength or less, the incident wave undergoes
   a) reflection b) scattering c) fading d) multipath
17) Process of subdividing a congested cell into smaller cells each with its own BS is
   a) zoning b) sectoring c) cell splitting d) all of these
18) Which of below is not a forward CDAMA channel ?
   a) paging b) sync c) pilot d) control
19) A3 & A5 are _____ used in GSM.
   a) decimators b) interfaces
   c) ciphering algorithms d) interleaving tables
20) Dwell time in a GSM handoff depends upon
   a) propagation b) interference c) distance d) all of above

_____

SLR-EP – 114

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) What is microcell zone concept ? With suitable example show how it improves capacity in a cellular system.

b) For a situation of a person crossing a cell boundary with an on going call – give details how his call can be maintained with a handoff procedure. What are the issues/constraints associated ?

c) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.

3. Solve **any four** : **(4×5=20)**

a) Describe different Dedicated Control Channels in GSM.

b) Sketch and discuss FHSS transmitter.

c) Why cellular communication suffers with co channel interference ? How to combat it ?

d) With suitable example explain spreading of a signal. What are its advantages ?

e) With suitable diagram explain a typical sequence of events that take place for a mobile originated call.

SECTION – II

4. Solve **any two** : **(10×2=20)**

   a) With suitable diagram explain optimization using binding in a mobile network layer.

   b) With suitable diagram explain basic DFWMAC-DCF using CSMA/CA.

   c) Draw and explain how Bluetooth Piconet and Scatternet are formed.

5. Solve **any four** : **(4×5=20)**

   a) Propose the requirements for a Mobile IP.

   b) Assess agent discovery. Why it is required ?

   c) Organize different constituents of a typical WiMax deployment architecture.

   d) Describe ad-hoc architecture for WLAN.

   e) What is Bluetooth ? What are its salient features ?

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Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) If the size of the obstacle is of the order of the wavelength or less, the incident wave undergoes
a) reflection b) scattering c) fading d) multipath

2) Process of subdividing a congested cell into smaller cells each with its own BS is
a) zoning b) sectoring c) cell splitting d) all of these

3) Which of below is not a forward CDAMA channel ?
a) paging b) sync c) pilot d) control

4) A3 & A5 are _____ used in GSM.
a) decimators b) interfaces
c) ciphering algorithms d) interleaving tables

5) Dwell time in a GSM handoff depends upon
a) propagation b) interference c) distance d) all of above

6) A Bluetooth operates at _____ band.
a) 2.4 GHz b) 2 GHz c) 620 MHz d) 56 MHz

7) A collection of Bluetooth devices which are synchronized to the same hopping sequence is called
a) piconet b) scatternet
c) parked net d) no such network exists

8) Low frequency band is used for _____ communication.
   a) GSM & CDMA b) RADAR
   c) submarine d) commercial radio

9) Take odd man out : WiFi, WiMax, Bluetooth, CDMA
   a) WiFi b) WiMax c) Bluetooth d) CDMA

10) HLR & VLR data bases are maintained by
   a) NSS b) RSS c) AUC d) all of above

11) In IEEE 802.11 network, different BSS are connected by
   a) AP b) STA c) DSS d) all of above

12) In 802.11 network protocol stack, PMD and PLCP are the sublayers of
   a) PHY b) DLC c) MAC d) LLC

13) In GSM 900 out of 124 available channels, _____ channels are available to user.
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14) A GSM frame is of
   a) 577 μ sec b) 4.615 msec c) 577 msec d) 4.615 μ sec

15) In which of below case, all address fields in MAC frames are used in WiFi ?
   a) MS to MS in adhoc architecture
   b) MS to AP in infrastructure architecture
   c) AP to MS in infrastructure architecture
   d) AP to AP in infrastructure architecture

16) In India, which of below is true about 2.4 GHz band ?
   a) license free b) called ISM
   c) used for Bluetooth d) all of these

17) Find the odd man out : IP×4, IP×6, mobile IP, IP×2
   a) IP×4 b) IP×6 c) mobile IP d) IP×2

18) Training Sequence and equalization are solutions for _____ interference.
   a) inter symbol b) co channel
   c) adjacent channel d) noise

19) In GSM when transmitted as half rate, user data is mapped at same slot but in _____ frame.
   a) duplicate b) half c) alternate d) double

20) 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

_____

SLR-EP – 114

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) What is microcell zone concept ? With suitable example show how it improves capacity in a cellular system.

b) For a situation of a person crossing a cell boundary with an on going call – give details how his call can be maintained with a handoff procedure. What are the issues/constraints associated ?

c) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.

3. Solve **any four** : **(4×5=20)**

a) Describe different Dedicated Control Channels in GSM.

b) Sketch and discuss FHSS transmitter.

c) Why cellular communication suffers with co channel interference ? How to combat it ?

d) With suitable example explain spreading of a signal. What are its advantages ?

e) With suitable diagram explain a typical sequence of events that take place for a mobile originated call.

SECTION – II

4. Solve **any two** : **(10×2=20)**

   a) With suitable diagram explain optimization using binding in a mobile network layer.

   b) With suitable diagram explain basic DFWMAC-DCF using CSMA/CA.

   c) Draw and explain how Bluetooth Piconet and Scatternet are formed.

5. Solve **any four** : **(4×5=20)**

   a) Propose the requirements for a Mobile IP.

   b) Assess agent discovery. Why it is required ?

   c) Organize different constituents of a typical WiMax deployment architecture.

   d) Describe ad-hoc architecture for WLAN.

   e) What is Bluetooth ? What are its salient features ?

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Seat No.	

Set S

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) ***All*** *questions are* ***compulsory****.*
4) Figures to the ***right*** *indicates* ***full*** *marks.*
5) Assume suitable data if ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In India, which of below is true about 2.4 GHz band ?
   a) license free b) called ISM
   c) used for Bluetooth d) all of these

2) Find the odd man out : IP×4, IP×6, mobile IP, IP×2
   a) IP×4 b) IP×6 c) mobile IP d) IP×2

3) Training Sequence and equalization are solutions for _____ interference.
   a) inter symbol b) co channel
   c) adjacent channel d) noise

4) In GSM when transmitted as half rate, user data is mapped at same slot but in _____ frame.
   a) duplicate b) half c) alternate d) double

5) 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

6) If the size of the obstacle is of the order of the wavelength or less, the incident wave undergoes
   a) reflection b) scattering c) fading d) multipath

7) Process of subdividing a congested cell into smaller cells each with its own BS is
   a) zoning b) sectoring c) cell splitting d) all of these
8) Which of below is not a forward CDAMA channel ?
   a) paging b) sync c) pilot d) control
9) A3 & A5 are _____ used in GSM.
   a) decimators b) interfaces
   c) ciphering algorithms d) interleaving tables
10) Dwell time in a GSM handoff depends upon
   a) propagation b) interference c) distance d) all of above
11) A Bluetooth operates at _____ band.
   a) 2.4 GHz b) 2 GHz c) 620 MHz d) 56 MHz
12) A collection of Bluetooth devices which are synchronized to the same hopping sequence is called
   a) piconet b) scatternet
   c) parked net d) no such network exists
13) Low frequency band is used for _____ communication.
   a) GSM & CDMA b) RADAR
   c) submarine d) commercial radio
14) Take odd man out : WiFi, WiMax, Bluetooth, CDMA
   a) WiFi b) WiMax c) Bluetooth d) CDMA
15) HLR & VLR data bases are maintained by
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16) In IEEE 802.11 network, different BSS are connected by
   a) AP b) STA c) DSS d) all of above
17) In 802.11 network protocol stack, PMD and PLCP are the sublayers of
   a) PHY b) DLC c) MAC d) LLC
18) In GSM 900 out of 124 available channels, _____ channels are available to user.
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19) A GSM frame is of
   a) 577 μ sec b) 4.615 msec c) 577 msec d) 4.615 μ sec
20) In which of below case, all address fields in MAC frames are used in WiFi ?
   a) MS to MS in adhoc architecture
   b) MS to AP in infrastructure architecture
   c) AP to MS in infrastructure architecture
   d) AP to AP in infrastructure architecture

_____

SLR-EP – 114

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MOBILE TECHNOLOGY

Day and Date : Saturday, 3-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data if ***necessary****.*

SECTION – I

2. Solve **any two** : **(10×2=20)**

a) What is microcell zone concept ? With suitable example show how it improves capacity in a cellular system.

b) For a situation of a person crossing a cell boundary with an on going call – give details how his call can be maintained with a handoff procedure. What are the issues/constraints associated ?

c) With suitable diagram explain GSM time frame of 4.615 ms and a time slot of 577 μ S.

3. Solve **any four** : **(4×5=20)**

a) Describe different Dedicated Control Channels in GSM.

b) Sketch and discuss FHSS transmitter.

c) Why cellular communication suffers with co channel interference ? How to combat it ?

d) With suitable example explain spreading of a signal. What are its advantages ?

e) With suitable diagram explain a typical sequence of events that take place for a mobile originated call.

SECTION – II

4. Solve **any two** : **(10×2=20)**

   a) With suitable diagram explain optimization using binding in a mobile network layer.

   b) With suitable diagram explain basic DFWMAC-DCF using CSMA/CA.

   c) Draw and explain how Bluetooth Piconet and Scatternet are formed.

5. Solve **any four** : **(4×5=20)**

   a) Propose the requirements for a Mobile IP.

   b) Assess agent discovery. Why it is required ?

   c) Organize different constituents of a typical WiMax deployment architecture.

   d) Describe ad-hoc architecture for WLAN.

   e) What is Bluetooth ? What are its salient features ?

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Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **two** marks*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Assume suitable data **if required**.*
*5) Figures of **right** hand side indicates maximum marks for that question.*

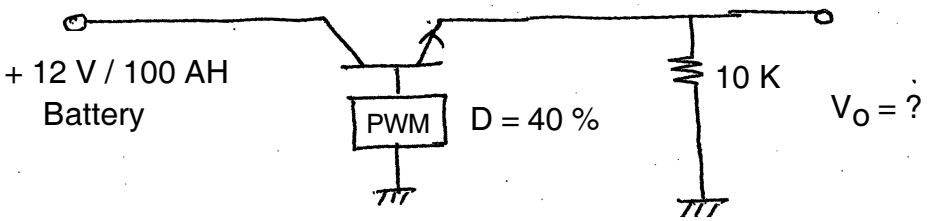
MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

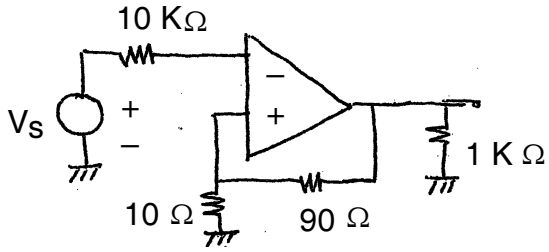
1) Fuses are divided into three categories such as fast blow, slow blow and time delay depending on
   a) Current rating b) Voltage rating
   c) Response time to over current d) Voltage and current rating

2) What is the output of following circuit ?



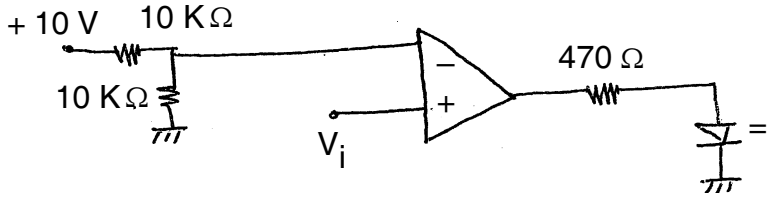
   a) 58 V b) 5.8 V c) .58 V d) None of these

3) What is the Feedback factor of following circuit ?



   a) 9/100 b) 9/10 c) 1/9 d) 1/100

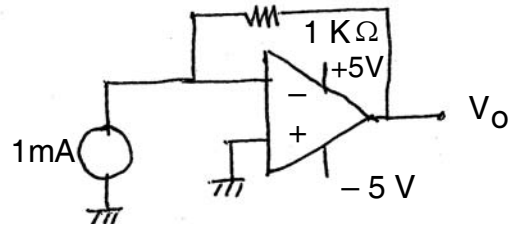
4) In the circuit shown in the Fig. LED will be ON if V_i is



a) > 10 V b) < 10 V c) > 5 V d) < 5V

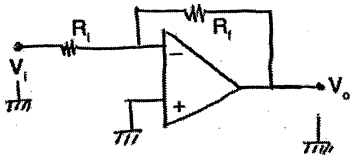
5) Which of the following is self generating transducer ?
a) RTD b) PT100 c) Thermocouple d) LM335

6) In the circuit shown in the figure, uses an ideal OPAMP working with + 5V and – 5V power supplies. The output voltage V_o is



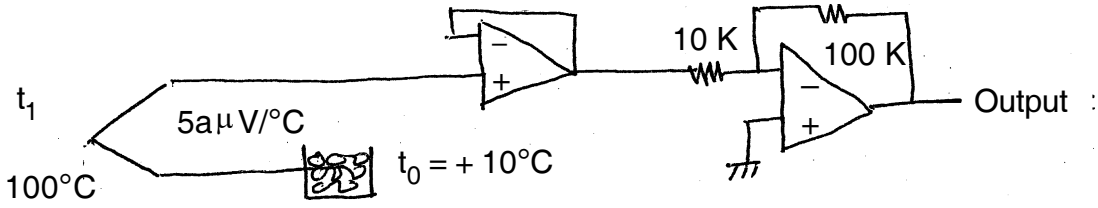
a) + 5 V b) – 5 V c) + 1 V d) – 1 V

7) The circuit shown below uses



a) Voltage series feedback b) Voltage shunt feedback
c) Current shunt feedback d) Current series feedback

8) What is the output of following circuit ?



a) 4.5 V b) 4.5 m V c) 4.5 μ V d) None of these

9) The main features of MOV is
a) Low cost device b) High current capacity
c) No precise control of voltage d) All of these

10) TO3 package species
a) Transistor outline package b) Small outline package
c) Optical package d) J-lead package

Set P

SLR-EP – 115

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016

Time : 3.00 p.m. to 6.00 p.m. Marks : 80

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Assume suitable data ***if*** *required.*

3) Figures of ***right*** *hand side indicates maximum marks for that question.*

SECTION – I

2. Solve **any four** : **20**

a) What is distributed power architecture ? Explain merits and demerits with example.

b) Compare SMPS and Linear Power Supply.

c) What is Logic Analyzer ? Explain how its useful for product testing ?

d) Draw the circuit diagram of four channel switching and multiplexing logic.

e) What is instrumentation amplifier ? Draw the circuit diagram of it.

3. Design the following electronic product along with all component values. **20**

The Output voltage of the power supply is 12 V and rated current is 2A. This power supply is activated from variable input supply of 8 V to 10 V. (Input).

Design the SMPS will all components values and Indication for Input On, Out ON, Lover Load, Input reverse along with protection circuit.

Assume suitable values of Input/Output variation for protection circuit design. Draw final circuit and BOM.

SECTION – II

4. Solve **any four** : **20**

   a) What are different types of standards ? Give listing of standard developing organizations.

   b) Draw the circuit diagram of SMPS to get 12 V from 18 V and prepare the bill of material for the same.

   c) Write short note proposal document for any hardware product.

   d) What is software testing ? What is the different method of software testing ?

   e) What are PCB design rules ? Explain the specific care to be taken for Noise while PCB designs.

5. Answer the following : **20**

   a) What design stages of hardware product ? Explain design states of any electronic product.

   b) Give detail algorithm for software product development process. Explain with any suitable example.

SLR-EP – 115

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **two** marks.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Assume suitable data **if required**.*
*5) Figures of **right** hand side indicates maximum marks for that question.*

MCQ/Objective Type Questions

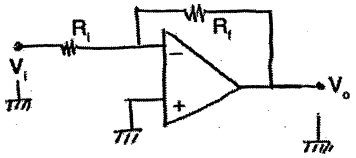
Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) The main features of MOV is
   a) Low cost device
   b) High current capacity
   c) No precise control of voltage
   d) All of these

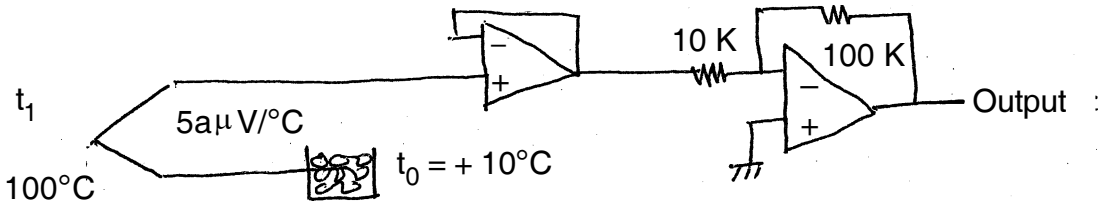
2) TO3 package species
   a) Transistor outline package
   b) Small outline package
   c) Optical package
   d) J-lead package

3) The circuit shown below uses



   a) Voltage series feedback
   b) Voltage shunt feedback
   c) Current shunt feedback
   d) Current series feedback

4) What is the output of following circuit ?

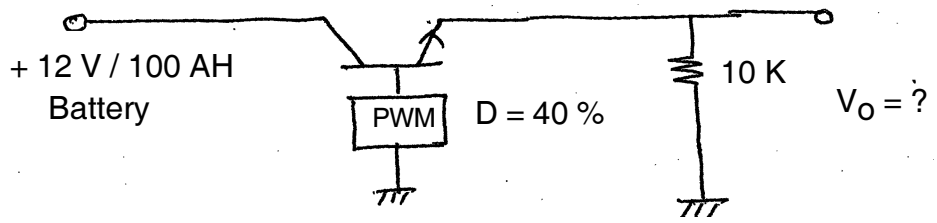


   a) 4.5 V
   b) 4.5 m V
   c) 4.5 μ V
   d) None of these

P.T.O.

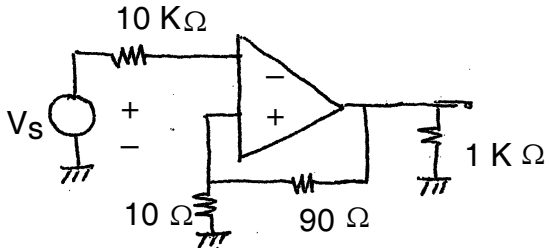
5) Fuses are divided into three categories such as fast blow, slow blow and time delay depending on
   a) Current rating b) Voltage rating
   c) Response time to over current d) Voltage and current rating

6) What is the output of following circuit ?



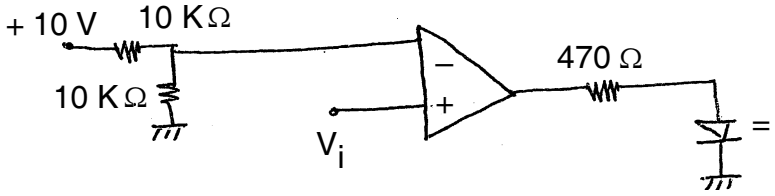
a) 58 V b) 5.8 V c) .58 V d) None of these

7) What is the Feedback factor of following circuit ?



a) 9/100 b) 9/10 c) 1/9 d) 1/100

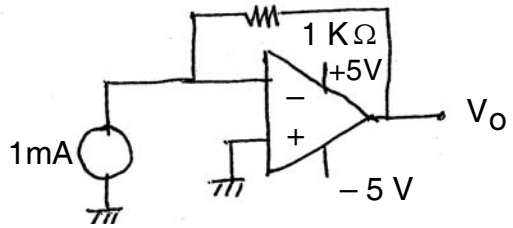
8) In the circuit shown in the Fig. LED will be ON if V_i is



a) > 10 V b) < 10 V c) > 5 V d) < 5V

9) Which of the following is self generating transducer ?
   a) RTD b) PT100 c) Thermocouple d) LM335

10) In the circuit shown in the figure, uses an ideal OPAMP working with + 5V and – 5V power supplies. The output voltage V_o is



a) + 5 V b) – 5 V c) + 1 V d) – 1 V

Set Q

SLR-EP – 115

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016

Time : 3.00 p.m. to 6.00 p.m. Marks : 80

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Assume suitable data ***if*** *required.*

3) Figures of ***right*** *hand side indicates maximum marks for that question.*

SECTION – I

2. Solve **any four** : **20**

a) What is distributed power architecture ? Explain merits and demerits with example.

b) Compare SMPS and Linear Power Supply.

c) What is Logic Analyzer ? Explain how its useful for product testing ?

d) Draw the circuit diagram of four channel switching and multiplexing logic.

e) What is instrumentation amplifier ? Draw the circuit diagram of it.

3. Design the following electronic product along with all component values. **20**

The Output voltage of the power supply is 12 V and rated current is 2A. This power supply is activated from variable input supply of 8 V to 10 V. (Input).

Design the SMPS will all components values and Indication for Input On, Out ON, Lover Load, Input reverse along with protection circuit.

Assume suitable values of Input/Output variation for protection circuit design. Draw final circuit and BOM.

SECTION – II

4. Solve **any four** : **20**

   a) What are different types of standards ? Give listing of standard developing organizations.

   b) Draw the circuit diagram of SMPS to get 12 V from 18 V and prepare the bill of material for the same.

   c) Write short note proposal document for any hardware product.

   d) What is software testing ? What is the different method of software testing ?

   e) What are PCB design rules ? Explain the specific care to be taken for Noise while PCB designs.

5. Answer the following : **20**

   a) What design stages of hardware product ? Explain design states of any electronic product.

   b) Give detail algorithm for software product development process. Explain with any suitable example.

———————————

SLR-EP – 115

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **two** marks.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Assume suitable data **if required**.*
*5) Figures of **right** hand side indicates maximum marks for that question.*

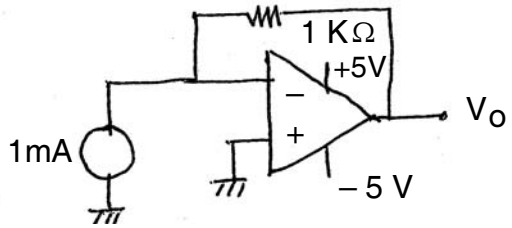
MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) Which of the following is self generating transducer ?
a) RTD b) PT100 c) Thermocouple d) LM335

2) In the circuit shown in the figure, uses an ideal OPAMP working with + 5V and –5V power supplies. The output voltage V_o is



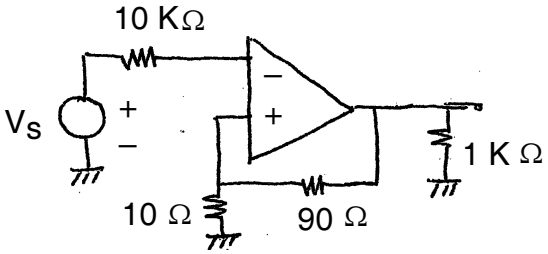
a) + 5 V b) – 5 V c) + 1 V d) – 1 V

3) The main features of MOV is
a) Low cost device
b) High current capacity
c) No precise control of voltage
d) All of these

4) TO3 package species
a) Transistor outline package
b) Small outline package
c) Optical package
d) J-lead package

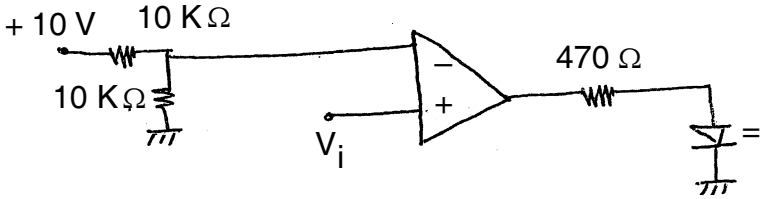
P.T.O.

5) What is the Feedback factor of following circuit ?



a) 9/100 b) 9/10 c) 1/9 d) 1/100

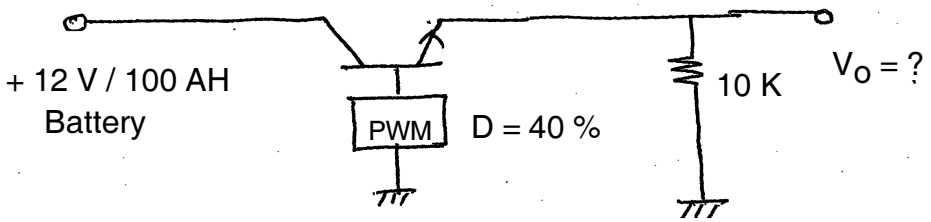
6) In the circuit shown in the Fig. LED will be ON if V_i is



a) > 10 V b) < 10 V c) > 5 V d) < 5V

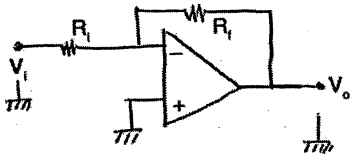
7) Fuses are divided into three categories such as fast blow, slow blow and time delay depending on
   a) Current rating b) Voltage rating
   c) Response time to over current d) Voltage and current rating

8) What is the output of following circuit ?



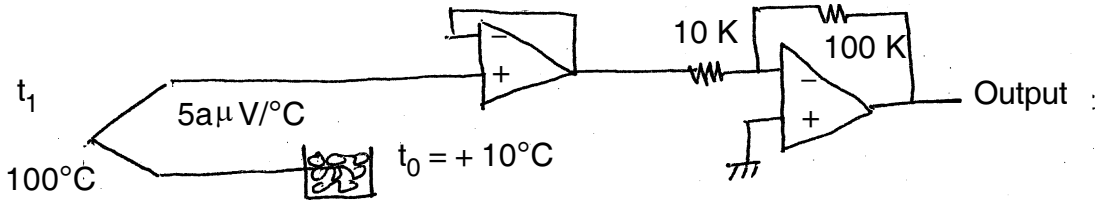
a) 58 V b) 5.8 V c) .58 V d) None of these

9) The circuit shown below uses



a) Voltage series feedback b) Voltage shunt feedback
c) Current shunt feedback d) Current series feedback

10) What is the output of following circuit ?



a) 4.5 V b) 4.5 m V c) 4.5 μ V d) None of these

Set R

SLR-EP – 115

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016

Time : 3.00 p.m. to 6.00 p.m. Marks : 80

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Assume suitable data ***if*** *required.*

3) Figures of ***right*** *hand side indicates maximum marks for that question.*

SECTION – I

2. Solve **any four** : **20**

a) What is distributed power architecture ? Explain merits and demerits with example.

b) Compare SMPS and Linear Power Supply.

c) What is Logic Analyzer ? Explain how its useful for product testing ?

d) Draw the circuit diagram of four channel switching and multiplexing logic.

e) What is instrumentation amplifier ? Draw the circuit diagram of it.

3. Design the following electronic product along with all component values. **20**

The Output voltage of the power supply is 12 V and rated current is 2A. This power supply is activated from variable input supply of 8 V to 10 V. (Input).

Design the SMPS will all components values and Indication for Input On, Out ON, Lover Load, Input reverse along with protection circuit.

Assume suitable values of Input/Output variation for protection circuit design. Draw final circuit and BOM.

SECTION – II

4. Solve **any four** : **20**

   a) What are different types of standards ? Give listing of standard developing organizations.

   b) Draw the circuit diagram of SMPS to get 12 V from 18 V and prepare the bill of material for the same.

   c) Write short note proposal document for any hardware product.

   d) What is software testing ? What is the different method of software testing ?

   e) What are PCB design rules ? Explain the specific care to be taken for Noise while PCB designs.

5. Answer the following : **20**

   a) What design stages of hardware product ? Explain design states of any electronic product.

   b) Give detail algorithm for software product development process. Explain with any suitable example.

SLR-EP – 115

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

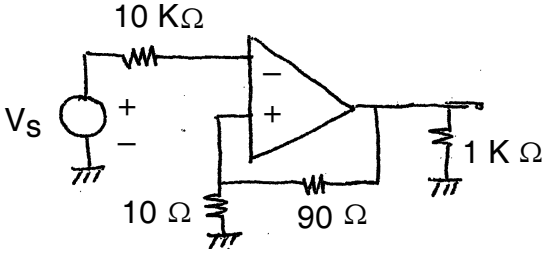
Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **two** marks.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) **All** questions are **compulsory**.*
*4) Assume suitable data **if required**.*
*5) Figures of **right** hand side indicates maximum marks for that question.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

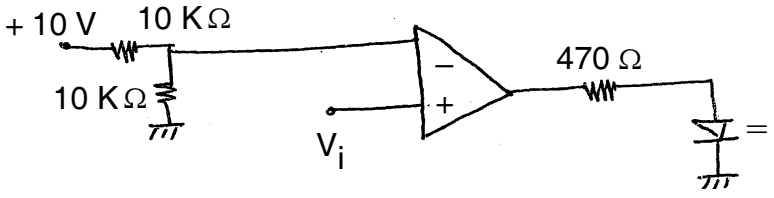
1. Choose the correct answer : **20**

1) What is the Feedback factor of following circuit ?



a) 9/100 b) 9/10 c) 1/9 d) 1/100

2) In the circuit shown in the Fig. LED will be ON if V_i is

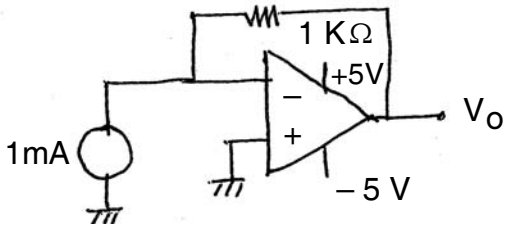


a) > 10 V b) < 10 V c) > 5 V d) < 5V

3) Which of the following is self generating transducer ?

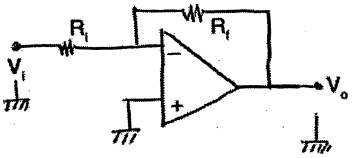
a) RTD b) PT100 c) Thermocouple d) LM335

4) In the circuit shown in the figure, uses an ideal OPAMP working with + 5V and – 5V power supplies. The output voltage V_o is



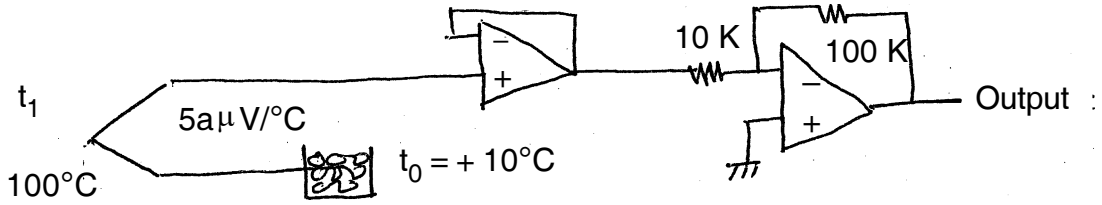
a) + 5 V b) – 5 V c) + 1 V d) – 1 V

5) The circuit shown below uses



a) Voltage series feedback b) Voltage shunt feedback
c) Current shunt feedback d) Current series feedback

6) What is the output of following circuit ?



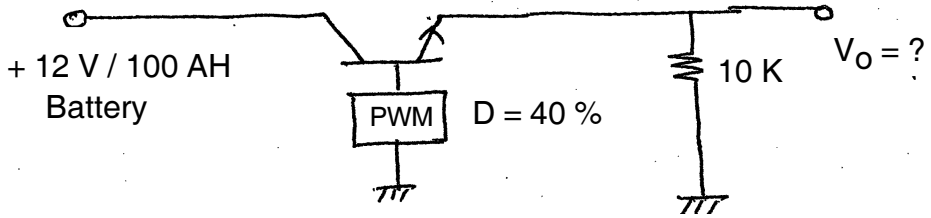
a) 4.5 V b) 4.5 m V c) 4.5 μ V d) None of these

7) The main features of MOV is
a) Low cost device b) High current capacity
c) No precise control of voltage d) All of these

8) TO3 package species
a) Transistor outline package b) Small outline package
c) Optical package d) J-lead package

9) Fuses are divided into three categories such as fast blow, slow blow and time delay depending on
a) Current rating b) Voltage rating
c) Response time to over current d) Voltage and current rating

10) What is the output of following circuit ?



a) 58 V b) 5.8 V c) .58 V d) None of these

Set S

SLR-EP – 115

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
ELECTRONIC SYSTEM DESIGN

Day and Date : Tuesday, 6-12-2016

Time : 3.00 p.m. to 6.00 p.m. Marks : 80

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Assume suitable data ***if*** *required.*

3) Figures of ***right*** *hand side indicates maximum marks for that question.*

SECTION – I

2. Solve **any four** : **20**

a) What is distributed power architecture ? Explain merits and demerits with example.

b) Compare SMPS and Linear Power Supply.

c) What is Logic Analyzer ? Explain how its useful for product testing ?

d) Draw the circuit diagram of four channel switching and multiplexing logic.

e) What is instrumentation amplifier ? Draw the circuit diagram of it.

3. Design the following electronic product along with all component values. **20**

The Output voltage of the power supply is 12 V and rated current is 2A. This power supply is activated from variable input supply of 8 V to 10 V. (Input).

Design the SMPS will all components values and Indication for Input On, Out ON, Lover Load, Input reverse along with protection circuit.

Assume suitable values of Input/Output variation for protection circuit design. Draw final circuit and BOM.

SECTION – II

4. Solve **any four** : **20**

   a) What are different types of standards ? Give listing of standard developing organizations.

   b) Draw the circuit diagram of SMPS to get 12 V from 18 V and prepare the bill of material for the same.

   c) Write short note proposal document for any hardware product.

   d) What is software testing ? What is the different method of software testing ?

   e) What are PCB design rules ? Explain the specific care to be taken for Noise while PCB designs.

5. Answer the following : **20**

   a) What design stages of hardware product ? Explain design states of any electronic product.

   b) Give detail algorithm for software product development process. Explain with any suitable example.

SLR-EP – 117

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) An isolator makes use of _____ twisted.
a) 45° b) 90° c) Both a) and b) d) None

2) The attenuation constant (α), phase constant (β), propagation constant (γ) are called
a) Line parameters b) Voltage parameters
c) Current parameters d) None

3) A microwave junction is supposed to be matched at all ports if in the S matrix
a) All the diagonal elements are zero
b) All the diagonal elements are equal but not zero
c) All the diagonal elements are complex
d) Is Hermitian

4) Circulator is used in
a) Parametric amplifier b) Duplexer
c) Tunnel diode d) All

5) A Duplexer is used to
a) Couple two antennas to a transmitter without interference
b) Isolate the antenna from the local oscillator
c) Prevent interference between two antennas connected to a receiver
d) Use an antenna for reception or transmission without interference

6) At the cut off frequency, the dominant mode characteristic impedance of rectangular waveguide is
a) Zero b) Infinity c) 120 d) None

7) The TEM wave are propagated equally in all the direction if the source is a
a) Line source b) Point source c) Plane source d) None

8) For a rectangular guide of 2.5 cm × 1.0 cm, the cut off wavelength of the dominant mode is
a) 1.25 cm b) 2.0 cm c) 1.0 cm d) 5.0 cm

9) In a rectangular waveguide, which of the following modes are known as degenerate modes ?
   a) TM_{01} and TM_{10} b) TE_{11} and TM_{11}
   c) TE_{01} and TM_{01} d) None of the above

10) Pulse radar systems contain
   a) Trigger source b) Duplexer c) Pulse modulator d) All the above

11) The efficiency of Reflex Klystron is _____ than two cavity klystron.
   a) More b) Equal c) Less d) None

12) Which of the following is not the factor affecting range of radar ?
   a) Transmitter power b) Temperature
   c) Frequency d) Target cross-sectional area

13) The time it takes for satellite to complete one orbit is called
   a) Orbital period b) Sidereal period c) Both d) None

14) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

15) The method of minimizing bending losses is
   a) By including compressible jacket over fiber
   b) By excluding compressible jacket over fiber
   c) Both a) and b)
   d) None of these

16) The maximum distance between earth satellite in an elliptical orbit is
   a) Posigrade b) Retrograde c) Perigee d) Apogee

17) Which system is used in tracking ?
   a) Rectangular system b) Triangular system
   c) Elliptical system d) None

18) Solar radiation falling on geo-stationary satellite has intensity of
   a) 4.21 kW/m^2 b) 4.21 kW/m c) 1.39 kW/m^2 d) 1.39 kW/m

19) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

20) The technology of combining a number of wavelengths on to the same fiber is known as
   a) EDFA b) ATM c) ISDN d) WDM

_____

SLR-EP – 117

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**

a) Explain construction and working of Magnetron. State its performance parameters.

b) Draw block diagram of Pulse radar system and explain its working principle.

c) Explain the structure and principle of operation of IMPATT diode and TRAPATT diode.

d) Derive the S matrix for EH plane tee and compare it.

3. Attempt **any four** : **(4×4=16)**

a) With suitable diagram explain working of circulator.

b) Explain Doppler frequency related to radar.

c) Explain operation principle of Gunn diode.

d) Derive radar range equation.

e) Write a note on microwave transistors.

SECTION – II

4. Attempt **any three** : **(3×8=24)**

a) With suitable block diagrams explain communication subsystem of satellite.

b) What are transponders ? Explain single and double conversion transponders.

c) Explain construction and working of edge emitting double heterojunction LED.

d) Explain working of DBS-TV receiver.

Set P

5. Attempt **any four** : **(4×4=16)**

   a) Compare between TDMA and FDMA.

   b) Write advantages of optical fiber communication.

   c) What are the factors that affect the link design of a satellite ?

   d) Explain the terms angle of inclination and angle of elevation with neat diagram.

   e) Derive numerical aperture for step index fiber.

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SLR-EP – 117

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) The maximum distance between earth satellite in an elliptical orbit is
   a) Posigrade b) Retrograde c) Perigee d) Apogee

2) Which system is used in tracking ?
   a) Rectangular system b) Triangular system
   c) Elliptical system d) None

3) Solar radiation falling on geo-stationary satellite has intensity of
   a) 4.21 kW/m^2 b) 4.21 kW/m c) 1.39 kW/m^2 d) 1.39 kW/m

4) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

5) The technology of combining a number of wavelengths on to the same fiber is known as
   a) EDFA b) ATM c) ISDN d) WDM

6) An isolator makes use of _____ twisted.
   a) 45° b) 90° c) Both a) and b) d) None

7) The attenuation constant (α), phase constant (β), propagation constant (γ) are called
   a) Line parameters b) Voltage parameters
   c) Current parameters d) None

8) A microwave junction is supposed to be matched at all ports if in the S matrix
   a) All the diagonal elements are zero
   b) All the diagonal elements are equal but not zero
   c) All the diagonal elements are complex
   d) Is Hermitian

P.T.O.

9) Circulator is used in
   a) Parametric amplifier b) Duplexer
   c) Tunnel diode d) All

10) A Duplexer is used to
   a) Couple two antennas to a transmitter without interference
   b) Isolate the antenna from the local oscillator
   c) Prevent interference between two antennas connected to a receiver
   d) Use an antenna for reception or transmission without interference

11) At the cut off frequency, the dominant mode characteristic impedance of rectangular waveguide is
   a) Zero b) Infinity c) 120 d) None

12) The TEM wave are propagated equally in all the direction if the source is a
   a) Line source b) Point source c) Plane source d) None

13) For a rectangular guide of 2.5 cm × 1.0 cm, the cut off wavelength of the dominant mode is
   a) 1.25 cm b) 2.0 cm c) 1.0 cm d) 5.0 cm

14) In a rectangular waveguide, which of the following modes are known as degenerate modes ?
   a) TM_{01} and TM_{10} b) TE_{11} and TM_{11}
   c) TE_{01} and TM_{01} d) None of the above

15) Pulse radar systems contain
   a) Trigger source b) Duplexer c) Pulse modulator d) All the above

16) The efficiency of Reflex Klystron is _____ than two cavity klystron.
   a) More b) Equal c) Less d) None

17) Which of the following is not the factor affecting range of radar ?
   a) Transmitter power b) Temperature
   c) Frequency d) Target cross-sectional area

18) The time it takes for satellite to complete one orbit is called
   a) Orbital period b) Sidereal period c) Both d) None

19) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

20) The method of minimizing bending losses is
   a) By including compressible jacket over fiber
   b) By excluding compressible jacket over fiber
   c) Both a) and b)
   d) None of these

_____

SLR-EP – 117

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**

a) Explain construction and working of Magnetron. State its performance parameters.

b) Draw block diagram of Pulse radar system and explain its working principle.

c) Explain the structure and principle of operation of IMPATT diode and TRAPATT diode.

d) Derive the S matrix for EH plane tee and compare it.

3. Attempt **any four** : **(4×4=16)**

a) With suitable diagram explain working of circulator.

b) Explain Doppler frequency related to radar.

c) Explain operation principle of Gunn diode.

d) Derive radar range equation.

e) Write a note on microwave transistors.

SECTION – II

4. Attempt **any three** : **(3×8=24)**

a) With suitable block diagrams explain communication subsystem of satellite.

b) What are transponders ? Explain single and double conversion transponders.

c) Explain construction and working of edge emitting double heterojunction LED.

d) Explain working of DBS-TV receiver.

Set Q

5. Attempt **any four** : **(4×4=16)**

   a) Compare between TDMA and FDMA.

   b) Write advantages of optical fiber communication.

   c) What are the factors that affect the link design of a satellite ?

   d) Explain the terms angle of inclination and angle of elevation with neat diagram.

   e) Derive numerical aperture for step index fiber.

SLR-EP – 117

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) The efficiency of Reflex Klystron is _____ than two cavity klystron.
a) More b) Equal c) Less d) None

2) Which of the following is not the factor affecting range of radar ?
a) Transmitter power b) Temperature
c) Frequency d) Target cross-sectional area

3) The time it takes for satellite to complete one orbit is called
a) Orbital period b) Sidereal period c) Both d) None

4) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
a) Transmission b) Communication c) Attenuation d) Amplification

5) The method of minimizing bending losses is
a) By including compressible jacket over fiber
b) By excluding compressible jacket over fiber
c) Both a) and b)
d) None of these

6) The maximum distance between earth satellite in an elliptical orbit is
a) Posigrade b) Retrograde c) Perigee d) Apogee

7) Which system is used in tracking ?
a) Rectangular system b) Triangular system
c) Elliptical system d) None

P.T.O.

8) Solar radiation falling on geo-stationary satellite has intensity of
   a) 4.21 kW/m^2 b) 4.21 kW/m c) 1.39 kW/m^2 d) 1.39 kW/m

9) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

10) The technology of combining a number of wavelengths on to the same fiber is known as
   a) EDFA b) ATM c) ISDN d) WDM

11) An isolator makes use of _____ twisted.
   a) 45° b) 90° c) Both a) and b) d) None

12) The attenuation constant (α), phase constant (β), propagation constant (γ) are called
   a) Line parameters b) Voltage parameters
   c) Current parameters d) None

13) A microwave junction is supposed to be matched at all ports if in the S matrix
   a) All the diagonal elements are zero
   b) All the diagonal elements are equal but not zero
   c) All the diagonal elements are complex
   d) Is Hermitian

14) Circulator is used in
   a) Parametric amplifier b) Duplexer
   c) Tunnel diode d) All

15) A Duplexer is used to
   a) Couple two antennas to a transmitter without interference
   b) Isolate the antenna from the local oscillator
   c) Prevent interference between two antennas connected to a receiver
   d) Use an antenna for reception or transmission without interference

16) At the cut off frequency, the dominant mode characteristic impedance of rectangular waveguide is
   a) Zero b) Infinity c) 120 d) None

17) The TEM wave are propagated equally in all the direction if the source is a
   a) Line source b) Point source c) Plane source d) None

18) For a rectangular guide of 2.5 cm × 1.0 cm, the cut off wavelength of the dominant mode is
   a) 1.25 cm b) 2.0 cm c) 1.0 cm d) 5.0 cm

19) In a rectangular waveguide, which of the following modes are known as degenerate modes ?
   a) TM_{01} and TM_{10} b) TE_{11} and TM_{11}
   c) TE_{01} and TM_{01} d) None of the above

20) Pulse radar systems contain
   a) Trigger source b) Duplexer c) Pulse modulator d) All the above

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Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**

a) Explain construction and working of Magnetron. State its performance parameters.

b) Draw block diagram of Pulse radar system and explain its working principle.

c) Explain the structure and principle of operation of IMPATT diode and TRAPATT diode.

d) Derive the S matrix for EH plane tee and compare it.

3. Attempt **any four** : **(4×4=16)**

a) With suitable diagram explain working of circulator.

b) Explain Doppler frequency related to radar.

c) Explain operation principle of Gunn diode.

d) Derive radar range equation.

e) Write a note on microwave transistors.

SECTION – II

4. Attempt **any three** : **(3×8=24)**

a) With suitable block diagrams explain communication subsystem of satellite.

b) What are transponders ? Explain single and double conversion transponders.

c) Explain construction and working of edge emitting double heterojunction LED.

d) Explain working of DBS-TV receiver.

Set R

5. Attempt **any four** : **(4×4=16)**

   a) Compare between TDMA and FDMA.

   b) Write advantages of optical fiber communication.

   c) What are the factors that affect the link design of a satellite ?

   d) Explain the terms angle of inclination and angle of elevation with neat diagram.

   e) Derive numerical aperture for step index fiber.

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Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) At the cut off frequency, the dominant mode characteristic impedance of rectangular waveguide is
   a) Zero b) Infinity c) 120 d) None

2) The TEM wave are propagated equally in all the direction if the source is a
   a) Line source b) Point source c) Plane source d) None

3) For a rectangular guide of 2.5 cm × 1.0 cm, the cut off wavelength of the dominant mode is
   a) 1.25 cm b) 2.0 cm c) 1.0 cm d) 5.0 cm

4) In a rectangular waveguide, which of the following modes are known as degenerate modes ?
   a) TM_{01} and TM_{10} b) TE_{11} and TM_{11}
   c) TE_{01} and TM_{01} d) None of the above

5) Pulse radar systems contain
   a) Trigger source b) Duplexer c) Pulse modulator d) All the above

6) The efficiency of Reflex Klystron is _____ than two cavity klystron.
   a) More b) Equal c) Less d) None

7) Which of the following is not the factor affecting range of radar ?
   a) Transmitter power b) Temperature
   c) Frequency d) Target cross-sectional area

8) The time it takes for satellite to complete one orbit is called
   a) Orbital period b) Sidereal period c) Both d) None

P.T.O.

9) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

10) The method of minimizing bending losses is
   a) By including compressible jacket over fiber
   b) By excluding compressible jacket over fiber
   c) Both a) and b)
   d) None of these

11) The maximum distance between earth satellite in an elliptical orbit is
   a) Posigrade b) Retrograde c) Perigee d) Apogee

12) Which system is used in tracking ?
   a) Rectangular system b) Triangular system
   c) Elliptical system d) None

13) Solar radiation falling on geo-stationary satellite has intensity of
   a) 4.21 kW/m^2 b) 4.21 kW/m c) 1.39 kW/m^2 d) 1.39 kW/m

14) One of the principle characteristics of an optical fiber is _____ as a function of wavelength.
   a) Transmission b) Communication c) Attenuation d) Amplification

15) The technology of combining a number of wavelengths on to the same fiber is known as
   a) EDFA b) ATM c) ISDN d) WDM

16) An isolator makes use of _____ twisted.
   a) 45° b) 90° c) Both a) and b) d) None

17) The attenuation constant (α), phase constant (β), propagation constant (γ) are called
   a) Line parameters b) Voltage parameters
   c) Current parameters d) None

18) A microwave junction is supposed to be matched at all ports if in the S matrix
   a) All the diagonal elements are zero
   b) All the diagonal elements are equal but not zero
   c) All the diagonal elements are complex
   d) Is Hermitian

19) Circulator is used in
   a) Parametric amplifier b) Duplexer
   c) Tunnel diode d) All

20) A Duplexer is used to
   a) Couple two antennas to a transmitter without interference
   b) Isolate the antenna from the local oscillator
   c) Prevent interference between two antennas connected to a receiver
   d) Use an antenna for reception or transmission without interference

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SLR-EP – 117

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**

a) Explain construction and working of Magnetron. State its performance parameters.

b) Draw block diagram of Pulse radar system and explain its working principle.

c) Explain the structure and principle of operation of IMPATT diode and TRAPATT diode.

d) Derive the S matrix for EH plane tee and compare it.

3. Attempt **any four** : **(4×4=16)**

a) With suitable diagram explain working of circulator.

b) Explain Doppler frequency related to radar.

c) Explain operation principle of Gunn diode.

d) Derive radar range equation.

e) Write a note on microwave transistors.

SECTION – II

4. Attempt **any three** : **(3×8=24)**

a) With suitable block diagrams explain communication subsystem of satellite.

b) What are transponders ? Explain single and double conversion transponders.

c) Explain construction and working of edge emitting double heterojunction LED.

d) Explain working of DBS-TV receiver.

Set S

5. Attempt **any four** : **(4×4=16)**

   a) Compare between TDMA and FDMA.

   b) Write advantages of optical fiber communication.

   c) What are the factors that affect the link design of a satellite ?

   d) Explain the terms angle of inclination and angle of elevation with neat diagram.

   e) Derive numerical aperture for step index fiber.

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SLR-EP – 118

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100

Time : 3.00 p.m. to 6.00 p.m.

Instructions :
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **20**

1) 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)

2) VSB modulation is preferred for TV transmission because
   a) It is less critical than SSB modulation
   b) It avoids phase distortion problems at low frequencies
   c) It reduces bandwidth required to half
   d) b) and c)

3) Which of the following relation is correct ?

   a) $S = \frac{F}{2G}$ b) $F = \frac{S}{2G}$ c) $F = \frac{G}{2S}$ d) $S = \frac{G}{2F}$

4) Wow and flutter pertains to variation in _____
   a) Head b) a.c. bias c) Tape speed d) None

5) 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

P.T.O.

6) Automatic Frequency Control (AFC) is required in _____ section.
   a) Vertical b) Horizontal c) Both a) and b) d) None
7) Colour burst is used in PAL to
   a) Synchronize subcarrier phase
   b) To identify the phase alternation line
   c) Detect presence or absence of colour in the transmission
   d) All of above
8) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC
9) Hue complementary to magenta is
   a) Yellow b) Blue c) Cyan d) Green
10) The colour subcarrier oscillator frequency of NTSC receiver is
   a) 5.579545 MHz b) 4.579545 MHz c) 3.579545 MHz d) 2.579545 MHz
11) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation
12) The phase of the colour subcarrier burst signal in PAL system is along the axis at
   a) $\pm 180^0$ b) $\pm 45^0$ c) 180 ± 45^0 d) None
13) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity c) Degaussing d) Pincushion
14) In a tape recorder, greater the gap size, lower will be the _____ to give optimum output.
   a) Magnetism b) Wavelength c) Tape length d) Head gap
15) The luminance signal is given as
   a) Y = 0.3 R + 0.6 G + 0.11 B b) Y = 0.3 R + 0.6 G + 0.12 B
   c) Y = 0.3 R + 0.59 G + 0.12 B d) Y = 0.3 R + 0.59 G + 0.11 B
16) 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)
17) The equation of I-signal for NTSC colour system is _____
   a) 0.60R – 0.28G – 0.32B b) 0.60R + 0.28G + 0.32B
   c) 0.60R – 0.32G – 0.28B d) 0.60R + 0.32G + 0.28B
18) Which of the following technique is used for modulating video signal ?
   a) Amplitude modulation b) Pulse code modulation
   c) Picture modulation d) Frequency modulation
19) Photo-conductive principal is used in _____ camera tube.
   a) Vidicon b) PIL
   c) Orthicon d) None
20) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33° b) 57° c) 90° d) 147°

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* *1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Explain standards used for audio compression.

b) What is compatibility ? What are the requirements of compatibility ?

c) Why the colour difference signal (G-Y) is not suitable for transmission ?

d) Compare coarse-grooves and micro grooves.

e) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?

3. Attempt **any three** : **(3×8=24)**

a) What are the different types of cartridges used in disc system ? Explain any two of them with suitable diagram.

b) What is real time video ? How coding of real time video is carried out ?

c) With block diagram explain working of high level transmitter used for television transmission. What are its major drawbacks ?

d) Explain the terms :

i) Primary and complementary colours

ii) Hue

iii) Saturation

iv) Luminance.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) How chrominance signal is derived from RGB signal in PAL TV system ?

   b) Show that interlaced scanning reduces flicker and conserves bandwidth.

   c) Compare SECAM and PAL TV standards.

   d) List out significant features of HDTV over standard TV.

   e) Explain working of colour killer circuit.

5. Attempt **any three** : **(3×8=24)**

   a) Explain with neat diagram each block of NTSC coder.

   b) Explain trintron picture tube. How is purity and convergence related to colour receiver ?

   c) What are the requirements of RF tuner ? Draw block diagram of RF tuner.

   d) With block diagram, explain in detail satellite TV system.

_____

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Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100

Time : 3.00 p.m. to 6.00 p.m.

Instructions :
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **20**

1) 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)

2) The equation of I-signal for NTSC colour system is _____
   a) 0.60R – 0.28G – 0.32B
   b) 0.60R + 0.28G + 0.32B
   c) 0.60R – 0.32G – 0.28B
   d) 0.60R + 0.32G + 0.28B

3) Which of the following technique is used for modulating video signal ?
   a) Amplitude modulation
   b) Pulse code modulation
   c) Picture modulation
   d) Frequency modulation

4) Photo-conductive principal is used in _____ camera tube.
   a) Vidicon
   b) PIL
   c) Orthicon
   d) None

5) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33° b) 57° c) 90° d) 147°

6) 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)

P.T.O.

7) VSB modulation is preferred for TV transmission because
   a) It is less critical than SSB modulation
   b) It avoids phase distortion problems at low frequencies
   c) It reduces bandwidth required to half
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8) Which of the following relation is correct ?

   a) $S = \frac{F}{2G}$ b) $F = \frac{S}{2G}$ c) $F = \frac{G}{2S}$ d) $S = \frac{G}{2F}$

9) Wow and flutter pertains to variation in _____
   a) Head b) a.c. bias c) Tape speed d) None

10) 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

11) Automatic Frequency Control (AFC) is required in _____ section.
   a) Vertical b) Horizontal c) Both a) and b) d) None

12) Colour burst is used in PAL to
   a) Synchronize subcarrier phase
   b) To identify the phase alternation line
   c) Detect presence or absence of colour in the transmission
   d) All of above

13) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC

14) Hue complementary to magenta is
   a) Yellow b) Blue c) Cyan d) Green

15) The colour subcarrier oscillator frequency of NTSC receiver is
   a) 5.579545 MHz b) 4.579545 MHz c) 3.579545 MHz d) 2.579545 MHz

16) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation

17) The phase of the colour subcarrier burst signal in PAL system is along the axis at

   a) $\pm 180^0$ b) $\pm 45^0$ c) 180 ± 45^0 d) None

18) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity c) Degaussing d) Pincushion

19) In a tape recorder, greater the gap size, lower will be the _____ to give optimum output.
   a) Magnetism b) Wavelength c) Tape length d) Head gap

20) The luminance signal is given as
   a) Y = 0.3 R + 0.6 G + 0.11 B b) Y = 0.3 R + 0.6 G + 0.12 B
   c) Y = 0.3 R + 0.59 G + 0.12 B d) Y = 0.3 R + 0.59 G + 0.11 B

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Set Q

SLR-EP – 118

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* *1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Explain standards used for audio compression.

b) What is compatibility ? What are the requirements of compatibility ?

c) Why the colour difference signal (G-Y) is not suitable for transmission ?

d) Compare coarse-grooves and micro grooves.

e) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?

3. Attempt **any three** : **(3×8=24)**

a) What are the different types of cartridges used in disc system ? Explain any two of them with suitable diagram.

b) What is real time video ? How coding of real time video is carried out ?

c) With block diagram explain working of high level transmitter used for television transmission. What are its major drawbacks ?

d) Explain the terms :

i) Primary and complementary colours

ii) Hue

iii) Saturation

iv) Luminance.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) How chrominance signal is derived from RGB signal in PAL TV system ?

   b) Show that interlaced scanning reduces flicker and conserves bandwidth.

   c) Compare SECAM and PAL TV standards.

   d) List out significant features of HDTV over standard TV.

   e) Explain working of colour killer circuit.

5. Attempt **any three** : **(3×8=24)**

   a) Explain with neat diagram each block of NTSC coder.

   b) Explain trintron picture tube. How is purity and convergence related to colour receiver ?

   c) What are the requirements of RF tuner ? Draw block diagram of RF tuner.

   d) With block diagram, explain in detail satellite TV system.

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SLR-EP – 118

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100

Time : 3.00 p.m. to 6.00 p.m.

Instructions :
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **20**

1) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation

2) The phase of the colour subcarrier burst signal in PAL system is along the axis at
   a) $\pm 180^0$ b) $\pm 45^0$ c) 180 ± 45^0 d) None

3) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity c) Degaussing d) Pincushion

4) In a tape recorder, greater the gap size, lower will be the _____ to give optimum output.
   a) Magnetism b) Wavelength c) Tape length d) Head gap

5) The luminance signal is given as
   a) Y = 0.3 R + 0.6 G + 0.11 B
   b) Y = 0.3 R + 0.6 G + 0.12 B
   c) Y = 0.3 R + 0.59 G + 0.12 B
   d) Y = 0.3 R + 0.59 G + 0.11 B

6) 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)

7) The equation of I-signal for NTSC colour system is _____
   a) 0.60R – 0.28G – 0.32B
   b) 0.60R + 0.28G + 0.32B
   c) 0.60R – 0.32G – 0.28B
   d) 0.60R + 0.32G + 0.28B

8) Which of the following technique is used for modulating video signal ?
   a) Amplitude modulation
   b) Pulse code modulation
   c) Picture modulation
   d) Frequency modulation

P.T.O.

9) Photo-conductive principal is used in _____ camera tube.
   a) Vidicon b) PIL
   c) Orthicon d) None

10) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33° b) 57° c) 90° d) 147°

11) 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)

12) VSB modulation is preferred for TV transmission because
   a) It is less critical than SSB modulation
   b) It avoids phase distortion problems at low frequencies
   c) It reduces bandwidth required to half
   d) b) and c)

13) Which of the following relation is correct ?
   a) $S = \frac{F}{2G}$ b) $F = \frac{S}{2G}$ c) $F = \frac{G}{2S}$ d) $S = \frac{G}{2F}$

14) Wow and flutter pertains to variation in _____
   a) Head b) a.c. bias c) Tape speed d) None

15) 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

16) Automatic Frequency Control (AFC) is required in _____ section.
   a) Vertical b) Horizontal c) Both a) and b) d) None

17) Colour burst is used in PAL to
   a) Synchronize subcarrier phase
   b) To identify the phase alternation line
   c) Detect presence or absence of colour in the transmission
   d) All of above

18) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC

19) Hue complementary to magenta is
   a) Yellow b) Blue c) Cyan d) Green

20) The colour subcarrier oscillator frequency of NTSC receiver is
   a) 5.579545 MHz b) 4.579545 MHz c) 3.579545 MHz d) 2.579545 MHz

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SLR-EP – 118

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* *1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Explain standards used for audio compression.

b) What is compatibility ? What are the requirements of compatibility ?

c) Why the colour difference signal (G-Y) is not suitable for transmission ?

d) Compare coarse-grooves and micro grooves.

e) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?

3. Attempt **any three** : **(3×8=24)**

a) What are the different types of cartridges used in disc system ? Explain any two of them with suitable diagram.

b) What is real time video ? How coding of real time video is carried out ?

c) With block diagram explain working of high level transmitter used for television transmission. What are its major drawbacks ?

d) Explain the terms :

i) Primary and complementary colours

ii) Hue

iii) Saturation

iv) Luminance.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) How chrominance signal is derived from RGB signal in PAL TV system ?

   b) Show that interlaced scanning reduces flicker and conserves bandwidth.

   c) Compare SECAM and PAL TV standards.

   d) List out significant features of HDTV over standard TV.

   e) Explain working of colour killer circuit.

5. Attempt **any three** : **(3×8=24)**

   a) Explain with neat diagram each block of NTSC coder.

   b) Explain trintron picture tube. How is purity and convergence related to colour receiver ?

   c) What are the requirements of RF tuner ? Draw block diagram of RF tuner.

   d) With block diagram, explain in detail satellite TV system.

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SLR-EP – 118

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions :
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if* ***necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **20**

1) Automatic Frequency Control (AFC) is required in _____ section.
   a) Vertical b) Horizontal c) Both a) and b) d) None
2) Colour burst is used in PAL to
   a) Synchronize subcarrier phase
   b) To identify the phase alternation line
   c) Detect presence or absence of colour in the transmission
   d) All of above
3) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC
4) Hue complementary to magenta is
   a) Yellow b) Blue c) Cyan d) Green
5) The colour subcarrier oscillator frequency of NTSC receiver is
   a) 5.579545 MHz b) 4.579545 MHz c) 3.579545 MHz d) 2.579545 MHz
6) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation
7) The phase of the colour subcarrier burst signal in PAL system is along the axis at
   a) $\pm 180^0$ b) $\pm 45^0$ c) 180 ± 45^0 d) None
8) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity c) Degaussing d) Pincushion
9) In a tape recorder, greater the gap size, lower will be the _____ to give optimum output.
   a) Magnetism b) Wavelength c) Tape length d) Head gap

P.T.O.

10) The luminance signal is given as
   a) Y = 0.3 R + 0.6 G + 0.11 B
   b) Y = 0.3 R + 0.6 G + 0.12 B
   c) Y = 0.3 R + 0.59 G + 0.12 B
   d) Y = 0.3 R + 0.59 G + 0.11 B

11) 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)

12) The equation of I-signal for NTSC colour system is _____
   a) 0.60R – 0.28G – 0.32B
   b) 0.60R + 0.28G + 0.32B
   c) 0.60R – 0.32G – 0.28B
   d) 0.60R + 0.32G + 0.28B

13) Which of the following technique is used for modulating video signal ?
   a) Amplitude modulation
   b) Pulse code modulation
   c) Picture modulation
   d) Frequency modulation

14) Photo-conductive principal is used in _____ camera tube.
   a) Vidicon
   b) PIL
   c) Orthicon
   d) None

15) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33°
   b) 57°
   c) 90°
   d) 147°

16) 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)

17) VSB modulation is preferred for TV transmission because
   a) It is less critical than SSB modulation
   b) It avoids phase distortion problems at low frequencies
   c) It reduces bandwidth required to half
   d) b) and c)

18) Which of the following relation is correct ?
   a) $S = \frac{F}{2G}$
   b) $F = \frac{S}{2G}$
   c) $F = \frac{G}{2S}$
   d) $S = \frac{G}{2F}$

19) Wow and flutter pertains to variation in _____
   a) Head
   b) a.c. bias
   c) Tape speed
   d) None

20) 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

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SLR-EP – 118

Seat No.	

B.E. (Electronics Engineering) (Part – II) (Old) Examination, 2016
AUDIO VIDEO ENGINEERING

Day and Date : Tuesday, 22-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* *1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) ***Assume*** *suitable data if* ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

a) Explain standards used for audio compression.

b) What is compatibility ? What are the requirements of compatibility ?

c) Why the colour difference signal (G-Y) is not suitable for transmission ?

d) Compare coarse-grooves and micro grooves.

e) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?

3. Attempt **any three** : **(3×8=24)**

a) What are the different types of cartridges used in disc system ? Explain any two of them with suitable diagram.

b) What is real time video ? How coding of real time video is carried out ?

c) With block diagram explain working of high level transmitter used for television transmission. What are its major drawbacks ?

d) Explain the terms :

i) Primary and complementary colours

ii) Hue

iii) Saturation

iv) Luminance.

SECTION – II

4. Attempt **any four** : **(4×4=16)**

   a) How chrominance signal is derived from RGB signal in PAL TV system ?

   b) Show that interlaced scanning reduces flicker and conserves bandwidth.

   c) Compare SECAM and PAL TV standards.

   d) List out significant features of HDTV over standard TV.

   e) Explain working of colour killer circuit.

5. Attempt **any three** : **(3×8=24)**

   a) Explain with neat diagram each block of NTSC coder.

   b) Explain trintron picture tube. How is purity and convergence related to colour receiver ?

   c) What are the requirements of RF tuner ? Draw block diagram of RF tuner.

   d) With block diagram, explain in detail satellite TV system.

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SLR-EP – 119

Seat No.	

Set **P**

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **(20×1=20)**

1) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

2) LPC2148's maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

3) The _____ directive aligns the current location to a specified boundary by padding with zeros.
a) ALIGN b) AREA c) END d) DCD

4) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4" ?
a) 0×00009000 b) 0×02020202
c) 0×00009004 d) 0×00008ffb

5) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

6) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0 c) PINSEL2 d) IODIR1

7) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

P.T.O.

8) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System c) Undefined d) Abort

9) In ARM7TDMI-S M stands for
a) Multiplier b) Multiplication c) Maximum d) None of the above

10) To force logic '0' on port pin P0.14, _____ register is used in LPC2148.
a) IOSET0 b) IOCLR0 c) IODIR0 d) IODIR3

11) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
a) Single, one b) Single, one or more
c) Two, single d) Two, Two

12) Information about a task is maintained in a _____
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

13) CAN stands for _____
a) Controller Area Network b) Cascaded Area Network
c) Control Area Network d) Communication Area Network

14) A _____ is software for controlling, receiving and sending a byte or steam of bytes from or to device.
a) Kernel b) Shell c) Processor d) Device Driver

15) Binary, Mutual exclusion, Counting are the types of _____
a) Queues b) Pipes c) Semaphores d) Mailboxes

16) Inter task communication can be done through _____
a) Mailboxes b) Queues c) Pipes d) All of above

17) In 12C _____ device/s exchange data during one 'conversation'.
a) Only one b) Only two c) More than two d) All of above

18) MODBUS devices communicate using a master-slave technique in which _____ device/s can initiate transactions.
a) Only one b) Only two c) More than two d) All

19) SDA and SCL signal lines are used in _____ communication.
a) SPI b) CAN c) MODBUS d) 12C

20) Using USB up to _____ devices may be connected to a single host controller.
a) 2 b) 64 c) 127 d) 256

_____

SLR-EP – 119

Seat No.	

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume suitable data **wherever** necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) Write an ARM assembly program to subtract two 64 bit numbers.
   b) Write a short note on Device drivers.
   c) Explain nomenclature used for ARM processors.
   d) Explain processor selection for an embedded system.
   e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

3. Solve **any two** : **(8×2=16)**
   a) Discuss different design metrics used in development of an embedded system.
   b) Draw and explain ARM core data flow model.
   c) Explain hardware and software architecture of embedded system.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Draw and explain block diagram of Digital camera.
   b) Explain multiple tasks scheduling in real time operating system.
   c) Write a note on USB.
   d) Explain some of the complications that have to deal with in most RTOS.
   e) Explain mailbox and pipe in RTOS.

5. Solve **any two** : **(8×2=16)**

   a) Interface seven LEDs with LPC2148. Draw a neat schematic diagram and write an embedded C Program to turn ON and OFF the LEDs one by one. (Use port pins P0.10 to P0.17.)

   b) Explain embedded system used in Smart Cards.

   c) Explain three alternatives for RTOS to respond the interrupt.

_____

SLR-EP – 119

Seat No.	

Set **Q**

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **(20×1=20)**

1) Inter task communication can be done through _____
a) Mailboxes b) Queues c) Pipes d) All of above

2) In 12C _____ device/s exchange data during one 'conversation'.
a) Only one b) Only two c) More than two d) All of above

3) MODBUS devices communicate using a master-slave technique in which _____ device/s can initiate transactions.
a) Only one b) Only two c) More than two d) All

4) SDA and SCL signal lines are used in _____ communication.
a) SPI b) CAN c) MODBUS d) 12C

5) Using USB up to _____ devices may be connected to a single host controller.
a) 2 b) 64 c) 127 d) 256

6) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

7) LPC2148's maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

8) The _____ directive aligns the current location to a specified boundary by padding with zeros.
a) ALIGN b) AREA c) END d) DCD

9) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4" ?
   a) 0×00009000 b) 0×02020202
   c) 0×00009004 d) 0×00008ffb

10) The ARM register _____ is called link register.
   a) R12 b) R13 c) R14 d) R15

11) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
   a) IOCLR1 b) IODIR0 c) PINSEL2 d) IODIR1

12) In ARM _____ exception is having the highest priority.
   a) Reset b) Supervisor
   c) System d) Interrupt request

13) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
   a) Supervisor b) System c) Undefined d) Abort

14) In ARM7TDMI-S M stands for
   a) Multiplier b) Multiplication c) Maximum d) None of the above

15) To force logic '0' on port pin P0.14, _____ register is used in LPC2148.
   a) IOSET0 b) IOCLR0 c) IODIR0 d) IODIR3

16) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
   a) Single, one b) Single, one or more
   c) Two, single d) Two, Two

17) Information about a task is maintained in a _____
   a) Stack b) Translation look aside buffer
   c) Task control block d) Task condition block

18) CAN stands for _____
   a) Controller Area Network b) Cascaded Area Network
   c) Control Area Network d) Communication Area Network

19) A _____ is software for controlling, receiving and sending a byte or steam of bytes from or to device.
   a) Kernel b) Shell c) Processor d) Device Driver

20) Binary, Mutual exclusion, Counting are the types of _____
   a) Queues b) Pipes c) Semaphores d) Mailboxes

_____

SLR-EP – 119

Seat No.	

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume suitable data **wherever** necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) Write an ARM assembly program to subtract two 64 bit numbers.
   b) Write a short note on Device drivers.
   c) Explain nomenclature used for ARM processors.
   d) Explain processor selection for an embedded system.
   e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

3. Solve **any two** : **(8×2=16)**
   a) Discuss different design metrics used in development of an embedded system.
   b) Draw and explain ARM core data flow model.
   c) Explain hardware and software architecture of embedded system.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Draw and explain block diagram of Digital camera.
   b) Explain multiple tasks scheduling in real time operating system.
   c) Write a note on USB.
   d) Explain some of the complications that have to deal with in most RTOS.
   e) Explain mailbox and pipe in RTOS.

5. Solve **any two** : **(8×2=16)**

   a) Interface seven LEDs with LPC2148. Draw a neat schematic diagram and write an embedded C Program to turn ON and OFF the LEDs one by one. (Use port pins P0.10 to P0.17.)

   b) Explain embedded system used in Smart Cards.

   c) Explain three alternatives for RTOS to respond the interrupt.

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Seat No.	

Set **R**

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **(20×1=20)**

1) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
   a) Single, one b) Single, one or more
   c) Two, single d) Two, Two

2) Information about a task is maintained in a _____
   a) Stack b) Translation look aside buffer
   c) Task control block d) Task condition block

3) CAN stands for _____
   a) Controller Area Network b) Cascaded Area Network
   c) Control Area Network d) Communication Area Network

4) A _____ is software for controlling, receiving and sending a byte or steam of bytes from or to device.
   a) Kernel b) Shell c) Processor d) Device Driver

5) Binary, Mutual exclusion, Counting are the types of _____
   a) Queues b) Pipes c) Semaphores d) Mailboxes

6) Inter task communication can be done through _____
   a) Mailboxes b) Queues c) Pipes d) All of above

7) In 12C _____ device/s exchange data during one 'conversation'.
   a) Only one b) Only two c) More than two d) All of above

P.T.O.

8) MODBUS devices communicate using a master-slave technique in which _____ device/s can initiate transactions.
a) Only one b) Only two c) More than two d) All

9) SDA and SCL signal lines are used in _____ communication.
a) SPI b) CAN c) MODBUS d) 12C

10) Using USB up to _____ devices may be connected to a single host controller.
a) 2 b) 64 c) 127 d) 256

11) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

12) LPC2148's maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

13) The _____ directive aligns the current location to a specified boundary by padding with zeros.
a) ALIGN b) AREA c) END d) DCD

14) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4" ?
a) 0×00009000 b) 0×02020202
c) 0×00009004 d) 0×00008ffb

15) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

16) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0 c) PINSEL2 d) IODIR1

17) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

18) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System c) Undefined d) Abort

19) In ARM7TDMI-S M stands for
a) Multiplier b) Multiplication c) Maximum d) None of the above

20) To force logic '0' on port pin P0.14, _____ register is used in LPC2148.
a) IOSET0 b) IOCLR0 c) IODIR0 d) IODIR3

_____

SLR-EP – 119

Seat No.	

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume suitable data **wherever** necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) Write an ARM assembly program to subtract two 64 bit numbers.
   b) Write a short note on Device drivers.
   c) Explain nomenclature used for ARM processors.
   d) Explain processor selection for an embedded system.
   e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

3. Solve **any two** : **(8×2=16)**
   a) Discuss different design metrics used in development of an embedded system.
   b) Draw and explain ARM core data flow model.
   c) Explain hardware and software architecture of embedded system.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Draw and explain block diagram of Digital camera.
   b) Explain multiple tasks scheduling in real time operating system.
   c) Write a note on USB.
   d) Explain some of the complications that have to deal with in most RTOS.
   e) Explain mailbox and pipe in RTOS.

5. Solve **any two** : **(8×2=16)**

   a) Interface seven LEDs with LPC2148. Draw a neat schematic diagram and write an embedded C Program to turn ON and OFF the LEDs one by one. (Use port pins P0.10 to P0.17.)

   b) Explain embedded system used in Smart Cards.

   c) Explain three alternatives for RTOS to respond the interrupt.

_____

SLR-EP – 119

Seat No.	

Set **S**

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***wherever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answers : **(20×1=20)**

1) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0 c) PINSEL2 d) IODIR1

2) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
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3) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System c) Undefined d) Abort

4) In ARM7TDMI-S M stands for
a) Multiplier b) Multiplication c) Maximum d) None of the above

5) To force logic '0' on port pin P0.14, _____ register is used in LPC2148.
a) IOSET0 b) IOCLR0 c) IODIR0 d) IODIR3

6) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
a) Single, one b) Single, one or more
c) Two, single d) Two, Two

7) Information about a task is maintained in a _____
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

P.T.O.

8) CAN stands for _____
   a) Controller Area Network b) Cascaded Area Network
   c) Control Area Network d) Communication Area Network

9) A _____ is software for controlling, receiving and sending a byte or steam of bytes from or to device.
   a) Kernel b) Shell c) Processor d) Device Driver

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11) Inter task communication can be done through _____
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12) In 12C _____ device/s exchange data during one 'conversation'.
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   a) SPI b) CAN c) MODBUS d) 12C

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18) The _____ directive aligns the current location to a specified boundary by padding with zeros.
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19) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4" ?
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   c) 0×00009004 d) 0×00008ffb

20) The ARM register _____ is called link register.
   a) R12 b) R13 c) R14 d) R15

_____

SLR-EP – 119

Seat No.	

B.E. (Electronics) (Part – II) (Old) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the **right** indicate **full** marks.*
*2) Assume suitable data **wherever** necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) Write an ARM assembly program to subtract two 64 bit numbers.
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   c) Explain nomenclature used for ARM processors.
   d) Explain processor selection for an embedded system.
   e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

3. Solve **any two** : **(8×2=16)**
   a) Discuss different design metrics used in development of an embedded system.
   b) Draw and explain ARM core data flow model.
   c) Explain hardware and software architecture of embedded system.

SECTION – II

4. Solve **any four** : **(6×4=24)**
   a) Draw and explain block diagram of Digital camera.
   b) Explain multiple tasks scheduling in real time operating system.
   c) Write a note on USB.
   d) Explain some of the complications that have to deal with in most RTOS.
   e) Explain mailbox and pipe in RTOS.

5. Solve **any two** : **(8×2=16)**

   a) Interface seven LEDs with LPC2148. Draw a neat schematic diagram and write an embedded C Program to turn ON and OFF the LEDs one by one. (Use port pins P0.10 to P0.17.)

   b) Explain embedded system used in Smart Cards.

   c) Explain three alternatives for RTOS to respond the interrupt.

_____

SLR-EP – 121

Seat No.	

Set **P**

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicate* ***full*** *marks.*
3) *Assume suitable data* ***if necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **(20×1=20)**

1) The diagram to show distance time history of electrons in klystron amplifier is called
   A) Apple gate diagram B) Asynchronous diagram
   C) Bunching diagram D) Velocity modulation diagram

2) 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
   C) Both by varying the beam current and by light varying the voltage which controls beam velocity
   D) Changing the rate of thermionic emission

3) 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

4) Which one of the following is not a negative resistance device ?
   A) Gunn diode B) Tunnel diode C) Impatt diode D) Varactor diode

5) 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

6) The two terms used to describe performance of a directional coupler are
   A) Coupling and directivity B) Gain and coupling
   C) Gain and directivity D) Gain and isolation

7) The duty cycle of a radar transmitter is equal to
   A) (PRF) (pulse width) B) (PRF)/(pulse width)
   C) (Pulse width)/(PRF) D) (Pulse width) + (PRF)

8) In a radar when the return echo arrives after the allocated pulse interval, then
   A) The receiver will get overloaded
   B) It may interfere with the operation of the transmitter
   C) The target will appear closer than it really is
   D) It will not be received

P.T.O.

9) _____ is unlikely to be used as a pulsed device.
A) BWO B) TWT
C) CFA D) Multi-cavity klystron

10) Which of the following diode is used as a detector in a radar ?
A) Gunn diode B) Schottky diode
C) Impatt diode D) None of the above

11) 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

12) For global communication, the minimum number of satellite needed is
A) One B) Three
C) Seven D) Eleven

13) 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

14) 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

15) 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

16) 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

17) 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

18) The core of an optical fiber has a
A) Lower refracted index than air B) Lower refractive index than the cladding
C) Higher refractive index than the cladding D) Similar refractive index with the cladding

19) What is a specific path the light takes in an optical fiber corresponding to a certain angle and number of reflection ?
A) Mode B) Grade
C) Numerical Aperture D) Dispersion

20) _____ is the width of the range of wavelengths emitted by the light source.
A) Bandwidth B) Chromatic Dispersion
C) Spectral width D) Beamwidth

_____

SLR-EP – 121

Seat No.	

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Assume **suitable** data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**
   a) Realize construction and working of two cavity Klystron. State its performance parameters.
   b) Draw block diagram of pulse radar system and explain its working principle.
   c) Dramatize construction and working of two hole directional coupler. Derive its S-matrix.
   d) Derive the Hull's cut off voltage equation for magnetron.

3. Attempt **any four** : **(4×4=16)**
   a) With suitable diagram explain working of circulator.
   b) Explain radar system. State its advantages and disadvantages.
   c) Discuss FM-CW radar.
   d) Explain construction and working of TRAPATT diode.
   e) Explain factors affecting range of radar.

SECTION – II

4. Attempt **any three** : **(3×8=24)**
   a) Realize block diagrams, explain attitude and orbital control system.
   b) What is system noise temperature ? How does it affect the C/N and G/T ratio ?
   c) Explain construction and working of LASER diode.
   d) Explain working of GPS system.

5. Attempt **any four** : **(4×4=16)**
   a) Draw the block diagram of optical fiber communication.
   b) State range and application of LEO, MEO and GEO satellites.
   c) Summarize basic antenna types used for satellite.
   d) Discuss on multiple accesses in satellite.
   e) Outline different losses in optical fiber.

Set P

Set P

SLR-EP – 121

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions:
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicate* ***full*** *marks.*
3) *Assume suitable data* ***if necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **(20×1=20)**

1) What does a link budget for satellite communication include ?
   A) Total cost of satellite
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   C) Signal and noise levels in dB
   D) Margins of error permitted

2) 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

3) The core of an optical fiber has a
   A) Lower refracted index than air
   B) Lower refractive index than the cladding
   C) Higher refractive index than the cladding
   D) Similar refractive index with the cladding

4) What is a specific path the light takes in an optical fiber corresponding to a certain angle and number of reflection ?
   A) Mode
   B) Grade
   C) Numerical Aperture
   D) Dispersion

5) _____ is the width of the range of wavelengths emitted by the light source.
   A) Bandwidth
   B) Chromatic Dispersion
   C) Spectral width
   D) Beamwidth

6) The diagram to show distance time history of electrons in klystron amplifier is called
   A) Apple gate diagram
   B) Asynchronous diagram
   C) Bunching diagram
   D) Velocity modulation diagram

7) 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
   C) Both by varying the beam current and by light varying the voltage which controls beam velocity
   D) Changing the rate of thermionic emission

P.T.O.

8) 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

9) Which one of the following is not a negative resistance device ?
A) Gunn diode B) Tunnel diode C) Impatt diode D) Varactor diode

10) 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

11) The two terms used to describe performance of a directional coupler are
A) Coupling and directivity B) Gain and coupling
C) Gain and directivity D) Gain and isolation

12) The duty cycle of a radar transmitter is equal to
A) (PRF) (pulse width) B) (PRF)/(pulse width)
C) (Pulse width)/(PRF) D) (Pulse width) + (PRF)

13) In a radar when the return echo arrives after the allocated pulse interval, then
A) The receiver will get overloaded
B) It may interfere with the operation of the transmitter
C) The target will appear closer than it really is
D) It will not be received

14) _____ is unlikely to be used as a pulsed device.
A) BWO B) TWT
C) CFA D) Multi-cavity klystron

15) Which of the following diode is used as a detector in a radar ?
A) Gunn diode B) Schottky diode
C) Impatt diode D) None of the above

16) 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

17) For global communication, the minimum number of satellite needed is
A) One B) Three
C) Seven D) Eleven

18) 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

19) 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

20) 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

SLR-EP – 121

Seat No.	

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
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SECTION – I

2. Attempt **any three** : **(3×8=24)**
   a) Realize construction and working of two cavity Klystron. State its performance parameters.
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3. Attempt **any four** : **(4×4=16)**
   a) With suitable diagram explain working of circulator.
   b) Explain radar system. State its advantages and disadvantages.
   c) Discuss FM-CW radar.
   d) Explain construction and working of TRAPATT diode.
   e) Explain factors affecting range of radar.

SECTION – II

4. Attempt **any three** : **(3×8=24)**
   a) Realize block diagrams, explain attitude and orbital control system.
   b) What is system noise temperature ? How does it affect the C/N and G/T ratio ?
   c) Explain construction and working of LASER diode.
   d) Explain working of GPS system.

5. Attempt **any four** : **(4×4=16)**
   a) Draw the block diagram of optical fiber communication.
   b) State range and application of LEO, MEO and GEO satellites.
   c) Summarize basic antenna types used for satellite.
   d) Discuss on multiple accesses in satellite.
   e) Outline different losses in optical fiber.

Set Q

Set Q

SLR-EP – 121

Seat No.	

Set **R**

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
1) ***All*** *questions are* ***compulsory****.*
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5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **(20×1=20)**

1) Antenna elevation angle at the ground station for satellite communication is always kept above 5° to
   A) Minimize the sky noise temperature
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   A) Conserve the available limited battery power
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P.T.O.

8) The core of an optical fiber has a
   A) Lower refracted index than air
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9) What is a specific path the light takes in an optical fiber corresponding to a certain angle and number of reflection ?
   A) Mode
   B) Grade
   C) Numerical Aperture
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   A) (PRF) (pulse width)
   B) (PRF)/(pulse width)
   C) (Pulse width)/(PRF)
   D) (Pulse width) + (PRF)

18) In a radar when the return echo arrives after the allocated pulse interval, then
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20) Which of the following diode is used as a detector in a radar ?
   A) Gunn diode
   B) Schottky diode
   C) Impatt diode
   D) None of the above

_____

SLR-EP – 121

Seat No.	

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Assume **suitable** data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**
   a) Realize construction and working of two cavity Klystron. State its performance parameters.
   b) Draw block diagram of pulse radar system and explain its working principle.
   c) Dramatize construction and working of two hole directional coupler. Derive its S-matrix.
   d) Derive the Hull's cut off voltage equation for magnetron.

3. Attempt **any four** : **(4×4=16)**
   a) With suitable diagram explain working of circulator.
   b) Explain radar system. State its advantages and disadvantages.
   c) Discuss FM-CW radar.
   d) Explain construction and working of TRAPATT diode.
   e) Explain factors affecting range of radar.

SECTION – II

4. Attempt **any three** : **(3×8=24)**
   a) Realize block diagrams, explain attitude and orbital control system.
   b) What is system noise temperature ? How does it affect the C/N and G/T ratio ?
   c) Explain construction and working of LASER diode.
   d) Explain working of GPS system.

5. Attempt **any four** : **(4×4=16)**
   a) Draw the block diagram of optical fiber communication.
   b) State range and application of LEO, MEO and GEO satellites.
   c) Summarize basic antenna types used for satellite.
   d) Discuss on multiple accesses in satellite.
   e) Outline different losses in optical fiber.

Set R

Set R

SLR-EP – 121

Seat No.	

Set **S**

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicate* ***full*** *marks.*
3) *Assume suitable data* ***if necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select suitable option : **(20×1=20)**

1) The two terms used to describe performance of a directional coupler are
   A) Coupling and directivity B) Gain and coupling
   C) Gain and directivity D) Gain and isolation

2) The duty cycle of a radar transmitter is equal to
   A) (PRF) (pulse width) B) (PRF)/(pulse width)
   C) (Pulse width)/(PRF) D) (Pulse width) + (PRF)

3) In a radar when the return echo arrives after the allocated pulse interval, then
   A) The receiver will get overloaded
   B) It may interfere with the operation of the transmitter
   C) The target will appear closer than it really is
   D) It will not be received

4) _____ is unlikely to be used as a pulsed device.
   A) BWO B) TWT C) CFA D) Multi-cavity klystron

5) Which of the following diode is used as a detector in a radar ?
   A) Gunn diode B) Schottky diode
   C) Impatt diode D) None of the above

6) 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

7) For global communication, the minimum number of satellite needed is
   A) One B) Three C) Seven D) Eleven

8) 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

P.T.O.

9) 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

10) 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

11) 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

12) 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

13) The core of an optical fiber has a
   A) Lower refracted index than air
   B) Lower refractive index than the cladding
   C) Higher refractive index than the cladding
   D) Similar refractive index with the cladding

14) What is a specific path the light takes in an optical fiber corresponding to a certain angle and number of reflection ?
   A) Mode
   B) Grade
   C) Numerical Aperture
   D) Dispersion

15) _____ is the width of the range of wavelengths emitted by the light source.
   A) Bandwidth
   B) Chromatic Dispersion
   C) Spectral width
   D) Beamwidth

16) The diagram to show distance time history of electrons in klystron amplifier is called
   A) Apple gate diagram
   B) Asynchronous diagram
   C) Bunching diagram
   D) Velocity modulation diagram

17) 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
   C) Both by varying the beam current and by light varying the voltage which controls beam velocity
   D) Changing the rate of thermionic emission

18) 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

19) Which one of the following is not a negative resistance device ?
   A) Gunn diode B) Tunnel diode C) Impatt diode D) Varactor diode

20) 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

_____

SLR-EP – 121

Seat No.	

B.E. (Electronics Engineering) (New) (Part – II) Examination, 2016
ADVANCED COMMUNICATION ENGINEERING

Day and Date : Monday, 21-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Assume **suitable** data if necessary.*

SECTION – I

2. Attempt **any three** : **(3×8=24)**
   a) Realize construction and working of two cavity Klystron. State its performance parameters.
   b) Draw block diagram of pulse radar system and explain its working principle.
   c) Dramatize construction and working of two hole directional coupler. Derive its S-matrix.
   d) Derive the Hull's cut off voltage equation for magnetron.

3. Attempt **any four** : **(4×4=16)**
   a) With suitable diagram explain working of circulator.
   b) Explain radar system. State its advantages and disadvantages.
   c) Discuss FM-CW radar.
   d) Explain construction and working of TRAPATT diode.
   e) Explain factors affecting range of radar.

SECTION – II

4. Attempt **any three** : **(3×8=24)**
   a) Realize block diagrams, explain attitude and orbital control system.
   b) What is system noise temperature ? How does it affect the C/N and G/T ratio ?
   c) Explain construction and working of LASER diode.
   d) Explain working of GPS system.

5. Attempt **any four** : **(4×4=16)**
   a) Draw the block diagram of optical fiber communication.
   b) State range and application of LEO, MEO and GEO satellites.
   c) Summarize basic antenna types used for satellite.
   d) Discuss on multiple accesses in satellite.
   e) Outline different losses in optical fiber.

Set S

Set S

SLR-EP – 122

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative : **(20×1=20)**

1) Moving Picture Experts Group (MPEG) is used to compress
a) Frames b) Images c) Audio d) Video

2) A video consists of a sequence of
a) Frames b) Signals c) Packets d) Slots

3) Paint programs and image editors are used for creating and editing
a) Bitmap images b) Vector images c) Text d) HTML codes

4) If the frames are displayed on the screen fast enough, we get an impression of
a) Signals b) Motions c) Packets d) Bits

5) Joint Photographic Experts Group (JPEG) is used to compress
a) Music b) Pictures c) Images d) Frames

6) In Video Compression, an independent frame that is not related to any other frame is called
a) B-Frame b) C-Frame c) I-Frame d) P-Frame

7) For Music, we need to compress the digitize signals at
a) 1.41 I-MHz b) 1.42 I-MHz c) 1.45 I-MHz d) 1.48 I-MHz

8) Audio compression can be used for
a) Voice and Data b) Speech and Music
c) Picture and Colors d) Video and Voice

P.T.O.

9) In Real Time Interactive Audio Video, conferencing requires two way communication between
   a) Receivers and senders b) Packet to Frames
   c) Pixels to Packets d) Frames to Pixels

10) A compressed audio/video file can be downloaded as a
   a) Image b) Video c) Frame d) Text file

11) Photo-conductive principle is used in _____ camera tube.
   a) Vidicon b) PIL c) Orthicon d) None

12) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33° b) 57° c) 90° d) 147°

13) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity
   c) Degaussing d) Pincushion

14) The luminance signal is given as
   a) Y = 0.3R + 0.6G + 0.11B b) Y = 0.3R + 0.6G + 0.12B
   c) Y = 0.3R + 0.59G + 0.12B d) Y = 0.3R + 0.59G + 0.11B

15) Positive polar modulation is used in _____ system.
   a) PAL b) NTSC
   c) SECAM d) None of the above

16) _____ is the distance between the pedestal level and the average of value of the video signal.
   a) DC level b) Pedestal height
   c) Blanking level d) Dark level

17) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC

18) The two new signals generated in PAL system are
   a) U and V b) R and B
   c) D_B and D_R d) (B – Y) and (R – Y)

19) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation

20) In delta gun picture tube, the guns are separated by an angle of
   a) 0° b) 45° c) 60° d) 120°

_____

SLR-EP – 122

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

1) Define multimedia. What are its elements?

2) What are the benefits offered by compression schemes in designing multimedia systems ?

3) Explain reverberation time and its need.

4) Compare headphones and headsets.

5) Explain MPEG audio encoder with suitable block diagram.

3. Attempt **any three** : **(3×8=24)**

1) How sound is optically recorded on photographic film using variable area method ?

2) State acoustical design parameters of auditorium.

3) State the features of the following video compression techniques :
   a) MPEG-2
   b) MPEG-4

4) Explain the working principle of facsimile machine.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?
   2) Define and compare luminance and chrominance signal of TV transmitter.
   3) Explain block converter used in cable TV.
   4) Explain additive and subtractive colour mixing.
   5) Describe PIL picture tube with neat diagram.

5. Attempt **any three** : **(3×8=24)**
   1) Explain with neat diagram SECAM encoder and decoder.
   2) With block diagram explain working of satellite TV receiver.
   3) Explain with neat diagram working principle of Image Orthicon camera tube. List the characteristics of camera tube.
   4) How does a mono-chrome TV receiver works? Draw detail block diagram of mono-chrome TV receiver.

SLR-EP – 122

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative : **(20×1=20)**

1) _____ is the distance between the pedestal level and the average of value of the video signal.
a) DC level b) Pedestal height
c) Blanking level d) Dark level

2) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
a) AFT b) RF c) IF d) AGC

3) The two new signals generated in PAL system are
a) U and V b) R and B
c) D_B and D_R d) (B – Y) and (R – Y)

4) _____ is the spectral purity of colour light.
a) Luminance b) Brightness c) Hue d) Saturation

5) In delta gun picture tube, the guns are separated by an angle of
a) 0° b) 45° c) 60° d) 120°

6) Moving Picture Experts Group (MPEG) is used to compress
a) Frames b) Images c) Audio d) Video

7) A video consists of a sequence of
a) Frames b) Signals c) Packets d) Slots

P.T.O.

8) Paint programs and image editors are used for creating and editing
a) Bitmap images b) Vector images c) Text d) HTML codes

9) If the frames are displayed on the screen fast enough, we get an impression of
a) Signals b) Motions c) Packets d) Bits

10) Joint Photographic Experts Group (JPEG) is used to compress
a) Music b) Pictures c) Images d) Frames

11) In Video Compression, an independent frame that is not related to any other frame is called
a) B-Frame b) C-Frame c) I-Frame d) P-Frame

12) For Music, we need to compress the digitize signals at
a) 1.41 I-MHz b) 1.42 I-MHz c) 1.45 I-MHz d) 1.48 I-MHz

13) Audio compression can be used for
a) Voice and Data b) Speech and Music
c) Picture and Colors d) Video and Voice

14) In Real Time Interactive Audio Video, conferencing requires two way communication between
a) Receivers and senders b) Packet to Frames
c) Pixels to Packets d) Frames to Pixels

15) A compressed audio/video file can be downloaded as a
a) Image b) Video c) Frame d) Text file

16) Photo-conductive principle is used in _____ camera tube.
a) Vidicon b) PIL c) Orthicon d) None

17) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
a) 33° b) 57° c) 90° d) 147°

18) The process of bringing beam together in picture tube is known as
a) Convergence b) Purity
c) Degaussing d) Pincushion

19) The luminance signal is given as
a) Y = 0.3R + 0.6G + 0.11B b) Y = 0.3R + 0.6G + 0.12B
c) Y = 0.3R + 0.59G + 0.12B d) Y = 0.3R + 0.59G + 0.11B

20) Positive polar modulation is used in _____ system.
a) PAL b) NTSC
c) SECAM d) None of the above

_____

SLR-EP – 122

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

1) Define multimedia. What are its elements?

2) What are the benefits offered by compression schemes in designing multimedia systems ?

3) Explain reverberation time and its need.

4) Compare headphones and headsets.

5) Explain MPEG audio encoder with suitable block diagram.

3. Attempt **any three** : **(3×8=24)**

1) How sound is optically recorded on photographic film using variable area method ?

2) State acoustical design parameters of auditorium.

3) State the features of the following video compression techniques :
   a) MPEG-2
   b) MPEG-4

4) Explain the working principle of facsimile machine.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?
   2) Define and compare luminance and chrominance signal of TV transmitter.
   3) Explain block converter used in cable TV.
   4) Explain additive and subtractive colour mixing.
   5) Describe PIL picture tube with neat diagram.

5. Attempt **any three** : **(3×8=24)**
   1) Explain with neat diagram SECAM encoder and decoder.
   2) With block diagram explain working of satellite TV receiver.
   3) Explain with neat diagram working principle of Image Orthicon camera tube. List the characteristics of camera tube.
   4) How does a mono-chrome TV receiver works? Draw detail block diagram of mono-chrome TV receiver.

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SLR-EP – 122

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
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3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative : **(20×1=20)**

1) Photo-conductive principle is used in _____ camera tube.
a) Vidicon b) PIL c) Orthicon d) None

2) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
a) 33° b) 57° c) 90° d) 147°

3) The process of bringing beam together in picture tube is known as
a) Convergence b) Purity
c) Degaussing d) Pincushion

4) The luminance signal is given as
a) Y = 0.3R + 0.6G + 0.11B b) Y = 0.3R + 0.6G + 0.12B
c) Y = 0.3R + 0.59G + 0.12B d) Y = 0.3R + 0.59G + 0.11B

5) Positive polar modulation is used in _____ system.
a) PAL b) NTSC
c) SECAM d) None of the above

6) _____ is the distance between the pedestal level and the average of value of the video signal.
a) DC level b) Pedestal height
c) Blanking level d) Dark level

7) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
a) AFT b) RF c) IF d) AGC

8) The two new signals generated in PAL system are
a) U and V b) R and B
c) D_B and D_R d) (B – Y) and (R – Y)

9) _____ is the spectral purity of colour light.
a) Luminance b) Brightness c) Hue d) Saturation

10) In delta gun picture tube, the guns are separated by an angle of
a) 0° b) 45° c) 60° d) 120°

11) Moving Picture Experts Group (MPEG) is used to compress
a) Frames b) Images c) Audio d) Video

12) A video consists of a sequence of
a) Frames b) Signals c) Packets d) Slots

13) Paint programs and image editors are used for creating and editing
a) Bitmap images b) Vector images c) Text d) HTML codes

14) If the frames are displayed on the screen fast enough, we get an impression of
a) Signals b) Motions c) Packets d) Bits

15) Joint Photographic Experts Group (JPEG) is used to compress
a) Music b) Pictures c) Images d) Frames

16) In Video Compression, an independent frame that is not related to any other frame is called
a) B-Frame b) C-Frame c) I-Frame d) P-Frame

17) For Music, we need to compress the digitize signals at
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18) Audio compression can be used for
a) Voice and Data b) Speech and Music
c) Picture and Colors d) Video and Voice

19) In Real Time Interactive Audio Video, conferencing requires two way communication between
a) Receivers and senders b) Packet to Frames
c) Pixels to Packets d) Frames to Pixels

20) A compressed audio/video file can be downloaded as a
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_____

SLR-EP – 122

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

1) Define multimedia. What are its elements?

2) What are the benefits offered by compression schemes in designing multimedia systems ?

3) Explain reverberation time and its need.

4) Compare headphones and headsets.

5) Explain MPEG audio encoder with suitable block diagram.

3. Attempt **any three** : **(3×8=24)**

1) How sound is optically recorded on photographic film using variable area method ?

2) State acoustical design parameters of auditorium.

3) State the features of the following video compression techniques :
   a) MPEG-2
   b) MPEG-4

4) Explain the working principle of facsimile machine.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?
   2) Define and compare luminance and chrominance signal of TV transmitter.
   3) Explain block converter used in cable TV.
   4) Explain additive and subtractive colour mixing.
   5) Describe PIL picture tube with neat diagram.

5. Attempt **any three** : **(3×8=24)**
   1) Explain with neat diagram SECAM encoder and decoder.
   2) With block diagram explain working of satellite TV receiver.
   3) Explain with neat diagram working principle of Image Orthicon camera tube. List the characteristics of camera tube.
   4) How does a mono-chrome TV receiver works? Draw detail block diagram of mono-chrome TV receiver.

_____

SLR-EP – 122

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative : **(20×1=20)**

1) In Video Compression, an independent frame that is not related to any other frame is called
   a) B-Frame b) C-Frame c) I-Frame d) P-Frame

2) For Music, we need to compress the digitize signals at
   a) 1.41 I-MHz b) 1.42 I-MHz c) 1.45 I-MHz d) 1.48 I-MHz

3) Audio compression can be used for
   a) Voice and Data b) Speech and Music
   c) Picture and Colors d) Video and Voice

4) In Real Time Interactive Audio Video, conferencing requires two way communication between
   a) Receivers and senders b) Packet to Frames
   c) Pixels to Packets d) Frames to Pixels

5) A compressed audio/video file can be downloaded as a
   a) Image b) Video c) Frame d) Text file

6) Photo-conductive principle is used in _____ camera tube.
   a) Vidicon b) PIL c) Orthicon d) None

7) A signal 'I' in NTSC is located at _____ with respect to colour signal in balanced modulator.
   a) 33° b) 57° c) 90° d) 147°

8) The process of bringing beam together in picture tube is known as
   a) Convergence b) Purity
   c) Degaussing d) Pincushion

9) The luminance signal is given as
   a) Y = 0.3R + 0.6G + 0.11B b) Y = 0.3R + 0.6G + 0.12B
   c) Y = 0.3R + 0.59G + 0.12B d) Y = 0.3R + 0.59G + 0.11B

10) Positive polar modulation is used in _____ system.
   a) PAL b) NTSC
   c) SECAM d) None of the above

11) _____ is the distance between the pedestal level and the average of value of the video signal.
   a) DC level b) Pedestal height
   c) Blanking level d) Dark level

12) _____ Circuit is used to vary gain of the receiver according to strength of signal picked by antenna.
   a) AFT b) RF c) IF d) AGC

13) The two new signals generated in PAL system are
   a) U and V b) R and B
   c) D_B and D_R d) (B – Y) and (R – Y)

14) _____ is the spectral purity of colour light.
   a) Luminance b) Brightness c) Hue d) Saturation

15) In delta gun picture tube, the guns are separated by an angle of
   a) 0° b) 45° c) 60° d) 120°

16) Moving Picture Experts Group (MPEG) is used to compress
   a) Frames b) Images c) Audio d) Video

17) A video consists of a sequence of
   a) Frames b) Signals c) Packets d) Slots

18) Paint programs and image editors are used for creating and editing
   a) Bitmap images b) Vector images c) Text d) HTML codes

19) If the frames are displayed on the screen fast enough, we get an impression of
   a) Signals b) Motions c) Packets d) Bits

20) Joint Photographic Experts Group (JPEG) is used to compress
   a) Music b) Pictures c) Images d) Frames

_____

SLR-EP – 122

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
AUDIO VIDEO SYSTEMS

Day and Date : Tuesday, 22-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) ***Assume*** *suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×4=16)**

1) Define multimedia. What are its elements?

2) What are the benefits offered by compression schemes in designing multimedia systems ?

3) Explain reverberation time and its need.

4) Compare headphones and headsets.

5) Explain MPEG audio encoder with suitable block diagram.

3. Attempt **any three** : **(3×8=24)**

1) How sound is optically recorded on photographic film using variable area method ?

2) State acoustical design parameters of auditorium.

3) State the features of the following video compression techniques :
   a) MPEG-2
   b) MPEG-4

4) Explain the working principle of facsimile machine.

SECTION – II

4. Attempt **any four** : **(4×4=16)**
   1) Describe vertical sync pulse. What is the need for pre and post equalizing pulses ?
   2) Define and compare luminance and chrominance signal of TV transmitter.
   3) Explain block converter used in cable TV.
   4) Explain additive and subtractive colour mixing.
   5) Describe PIL picture tube with neat diagram.

5. Attempt **any three** : **(3×8=24)**
   1) Explain with neat diagram SECAM encoder and decoder.
   2) With block diagram explain working of satellite TV receiver.
   3) Explain with neat diagram working principle of Image Orthicon camera tube. List the characteristics of camera tube.
   4) How does a mono-chrome TV receiver works? Draw detail block diagram of mono-chrome TV receiver.

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SLR-EP – 123

Seat No.	

Set **P**

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

2) Let R5 = 10 and R7 = 8. What will be the content of R7 after execution of instruction "MOV R7, R5, LSL#2" ?
a) 20 b) 10 c) 40 d) 5

3) The _____ assembler directive is used to store 32 bit data in memory.
a) ALIGN b) DCW c) DCB d) DCD

4) I2C master can address _____ other slaves at an instance.
a) 7 b) 11
c) 127 d) none of the above

5) _____ mode is the mode that the processor is in after reset.
a) System b) Supervisory c) User d) Abort

6) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

7) LPC2148's maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

8) _____ is the debug hardware built into the processor that allows break points and watch points to be set.
a) JTAG b) Embedded ICE
c) Boundary scan d) None of the above

P.T.O.

9) In ARM7TDMI-S, S stands for
   a) System b) Synthesizable
   c) Supervisory d) None of the above

10) In LPC2148 _____ pin select register is used to configure port pins P1.16 to P1.31.
   a) PINSEL0 b) PINSEL1 c) PINSEL2 d) IOSET2

11) TCB stands for
   a) Task Control Block b) Task Condition Block
   c) Task Communication Block d) None of the above

12) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
   a) Waiting b) Running c) Ready d) Dormant

13) A _____ is a situation in which two tasks are each unknowingly waiting for resources held by each other.
   a) Priority Inversion b) Deadlock
   c) Pending d) Dormant

14) Which of the following µC/OS-II services is used to create task ?
   a) OSTaskCreate() b) OSTaskDel()
   c) OSTaskResume() d) OSSemTask()

15) A _____ is software for controlling, receiving and sending a byte or stream of bytes from or to device.
   a) Kernel b) Shell c) Processor d) Device Driver

16) µcos-II can manage up to _____ tasks although it reserves the _____ highest priority tasks and the _____ lowest priority tasks for its own use.
   a) 32, 2, 2 b) 64, 4, 4 c) 128, 5, 5 d) 256, 8, 8

17) The _____ is the part of the kernel responsible for determining which task will run next.
   a) Scheduler b) Semaphore c) Mailbox d) Mutex

18) _____ kernels require that each task does something to explicitly give up control of the CPU.
   a) Preemptive b) Non-Preemptive
   c) Selective Preemption d) None of above

19) A _____ function is a function that can be used by more than one task without fear of data corruption.
   a) Non-reentrant b) Reentrant c) Swap d) None of above

20) A semaphore is a protocol mechanism 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 above

SLR-EP – 123

Seat No.	

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) List the various application areas of embedded systems and give examples for each application area.
   b) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
   c) Explain LDR and STR instruction in detail with example.
   d) List and elaborate the privileged and non-privileged modes of operation in ARM 7 processor.
   e) List and elaborate any two GPIO port related registers available in LPC2148.

3. Solve **any two** : **(8×2=16)**
   a) Classify and review different addressing modes of ARM7 with examples.
   b) Sketch and discuss the interfacing of 16*2 LCD with LPC2148 in 8 bit mode.
   c) Design an embedded system with LPC2148 for the following specifications.
      i) Connect a 10KΩ potentiometer to ADC input channel AD0.2 (Use P0.29 pin. Pin functions are P0.29/AD0.2/CAP0.3/MAT0.3)
      ii) Connect a relay to port pin P0.2.

      Write an embedded C program to trun ON relay when voltage on pin P0.29 goes above 2V and turn OFF relay when voltage goes below 2V.

SECTION – II

4. Solve **any four** : **(6×4=24)**

   a) Discuss the task scheduling handled in μcos-II.

   b) Discuss shared data problem and methods to solve it.

   c) Define a task. Elaborate different task states in detail.

   d) What is an interrupts and elaborate the factors that contribute to interrupt response time in a system ?

   e) Discuss the operation and significance of the μcos-II API functions, OSSemPend() and OSSemPost().

5. Solve **any two** : **(8×2=16)**

   a) Explain the various kernel objects for inter-process communication in μcos-II.

   b) Sketch and discuss the embedded system used in smart cards.

   c) Interface three LEDs with LPC2148. Draw a neat schematic diagram. Write a simple μcos-II program, which creates 3 LED tasks to blink LEDs in different frequency, 10 ms, 20 ms, 40 ms respectively. (Use port pins P0.2 to P0.4.)

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SLR-EP – 123

Seat No.	

Set Q

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) μcos-II can manage up to _____ tasks although it reserves the _____ highest priority tasks and the _____ lowest priority tasks for its own use.
a) 32, 2, 2 b) 64, 4, 4 c) 128, 5, 5 d) 256, 8, 8

2) The _____ is the part of the kernel responsible for determining which task will run next.
a) Scheduler b) Semaphore c) Mailbox d) Mutex

3) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive b) Non-Preemptive
c) Selective Preemption d) None of above

4) A _____ function is a function that can be used by more than one task without fear of data corruption.
a) Non-reentrant b) Reentrant c) Swap d) None of above

5) A semaphore is a protocol mechanism 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 above

6) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

P.T.O.

7) Let R5 = 10 and R7 = 8. What will be the content of R7 after execution of instruction "MOV R7, R5, LSL#2" ?
a) 20 b) 10 c) 40 d) 5

8) The _____ assembler directive is used to store 32 bit data in memory.
a) ALIGN b) DCW c) DCB d) DCD

9) I2C master can address _____ other slaves at an instance.
a) 7 b) 11
c) 127 d) none of the above

10) _____ mode is the mode that the processor is in after reset.
a) System b) Supervisory c) User d) Abort

11) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

12) LPC2148's maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

13) _____ is the debug hardware built into the processor that allows break points and watch points to be set.
a) JTAG b) Embedded ICE
c) Boundary scan d) None of the above

14) In ARM7TDMI-S, S stands for
a) System b) Synthesizable
c) Supervisory d) None of the above

15) In LPC2148 _____ pin select register is used to configure port pins P1.16 to P1.31.
a) PINSEL0 b) PINSEL1 c) PINSEL2 d) IOSET2

16) TCB stands for
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

17) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
a) Waiting b) Running c) Ready d) Dormant

18) A _____ is a situation in which two tasks are each unknowingly waiting for resources held by each other.
a) Priority Inversion b) Deadlock
c) Pending d) Dormant

19) Which of the following µC/OS-II services is used to create task ?
a) OSTaskCreate() b) OSTaskDel()
c) OSTaskResume() d) OSSemTask()

20) A _____ is software for controlling, receiving and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell c) Processor d) Device Driver

_____

SLR-EP – 123

Seat No.	

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**

a) List the various application areas of embedded systems and give examples for each application area.

b) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.

c) Explain LDR and STR instruction in detail with example.

d) List and elaborate the privileged and non-privileged modes of operation in ARM 7 processor.

e) List and elaborate any two GPIO port related registers available in LPC2148.

3. Solve **any two** : **(8×2=16)**

a) Classify and review different addressing modes of ARM7 with examples.

b) Sketch and discuss the interfacing of 16*2 LCD with LPC2148 in 8 bit mode.

c) Design an embedded system with LPC2148 for the following specifications.

i) Connect a 10KΩ potentiometer to ADC input channel AD0.2 (Use P0.29 pin. Pin functions are P0.29/AD0.2/CAP0.3/MAT0.3)

ii) Connect a relay to port pin P0.2.

Write an embedded C program to trun ON relay when voltage on pin P0.29 goes above 2V and turn OFF relay when voltage goes below 2V.

SECTION – II

4. Solve **any four** : **(6×4=24)**

   a) Discuss the task scheduling handled in μcos-II.

   b) Discuss shared data problem and methods to solve it.

   c) Define a task. Elaborate different task states in detail.

   d) What is an interrupts and elaborate the factors that contribute to interrupt response time in a system ?

   e) Discuss the operation and significance of the μcos-II API functions, OSSemPend() and OSSemPost().

5. Solve **any two** : **(8×2=16)**

   a) Explain the various kernel objects for inter-process communication in μcos-II.

   b) Sketch and discuss the embedded system used in smart cards.

   c) Interface three LEDs with LPC2148. Draw a neat schematic diagram. Write a simple μcos-II program, which creates 3 LED tasks to blink LEDs in different frequency, 10 ms, 20 ms, 40 ms respectively. (Use port pins P0.2 to P0.4.)

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SLR-EP – 123

Seat No.	

Set R

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) TCB stands for
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

2) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
a) Waiting b) Running c) Ready d) Dormant

3) A _____ is a situation in which two tasks are each unknowingly waiting for resources held by each other.
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4) Which of the following µC/OS-II services is used to create task ?
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c) OSTaskResume() d) OSSemTask()

5) A _____ is software for controlling, receiving and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell c) Processor d) Device Driver

6) µcos-II can manage up to _____ tasks although it reserves the _____ highest priority tasks and the _____ lowest priority tasks for its own use.
a) 32, 2, 2 b) 64, 4, 4 c) 128, 5, 5 d) 256, 8, 8

P.T.O.

7) The _____ is the part of the kernel responsible for determining which task will run next.
a) Scheduler b) Semaphore c) Mailbox d) Mutex

8) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive b) Non-Preemptive
c) Selective Preemption d) None of above

9) A _____ function is a function that can be used by more than one task without fear of data corruption.
a) Non-reentrant b) Reentrant c) Swap d) None of above

10) A semaphore is a protocol mechanism 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 above

11) ARM7 architecture support total _____ interrupt sources.
a) 20 b) 30 c) 32 d) 10

12) Let R5 = 10 and R7 = 8. What will be the content of R7 after execution of instruction “MOV R7, R5, LSL#2” ?
a) 20 b) 10 c) 40 d) 5

13) The _____ assembler directive is used to store 32 bit data in memory.
a) ALIGN b) DCW c) DCB d) DCD

14) I2C master can address _____ other slaves at an instance.
a) 7 b) 11
c) 127 d) none of the above

15) _____ mode is the mode that the processor is in after reset.
a) System b) Supervisory c) User d) Abort

16) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

17) LPC2148’s maximum operating frequency is _____ MHz.
a) 100 b) 80 c) 50 d) 60

18) _____ is the debug hardware built into the processor that allows break points and watch points to be set.
a) JTAG b) Embedded ICE
c) Boundary scan d) None of the above

19) In ARM7TDMI-S, S stands for
a) System b) Synthesizable
c) Supervisory d) None of the above

20) In LPC2148 _____ pin select register is used to configure port pins P1.16 to P1.31.
a) PINSEL0 b) PINSEL1 c) PINSEL2 d) IOSET2

Set R

_____

SLR-EP – 123

Seat No.	

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**

a) List the various application areas of embedded systems and give examples for each application area.

b) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.

c) Explain LDR and STR instruction in detail with example.

d) List and elaborate the privileged and non-privileged modes of operation in ARM 7 processor.

e) List and elaborate any two GPIO port related registers available in LPC2148.

3. Solve **any two** : **(8×2=16)**

a) Classify and review different addressing modes of ARM7 with examples.

b) Sketch and discuss the interfacing of 16*2 LCD with LPC2148 in 8 bit mode.

c) Design an embedded system with LPC2148 for the following specifications.

i) Connect a 10KΩ potentiometer to ADC input channel AD0.2 (Use P0.29 pin. Pin functions are P0.29/AD0.2/CAP0.3/MAT0.3)

ii) Connect a relay to port pin P0.2.

Write an embedded C program to trun ON relay when voltage on pin P0.29 goes above 2V and turn OFF relay when voltage goes below 2V.

SECTION – II

4. Solve **any four** : **(6×4=24)**

   a) Discuss the task scheduling handled in μcos-II.

   b) Discuss shared data problem and methods to solve it.

   c) Define a task. Elaborate different task states in detail.

   d) What is an interrupts and elaborate the factors that contribute to interrupt response time in a system ?

   e) Discuss the operation and significance of the μcos-II API functions, OSSemPend() and OSSemPost().

5. Solve **any two** : **(8×2=16)**

   a) Explain the various kernel objects for inter-process communication in μcos-II.

   b) Sketch and discuss the embedded system used in smart cards.

   c) Interface three LEDs with LPC2148. Draw a neat schematic diagram. Write a simple μcos-II program, which creates 3 LED tasks to blink LEDs in different frequency, 10 ms, 20 ms, 40 ms respectively. (Use port pins P0.2 to P0.4.)

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SLR-EP – 123

Seat No.	

Set S

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) The ARM register _____ is called link register.
a) R12 b) R13 c) R14 d) R15

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a) 100 b) 80 c) 50 d) 60

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6) TCB stands for
a) Task Control Block b) Task Condition Block
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7) The _____ state corresponds to a task which resides in memory but has not been made available to the multitasking kernel.
a) Waiting b) Running c) Ready d) Dormant

8) A _____ is a situation in which two tasks are each unknowingly waiting for resources held by each other.
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   c) OSTaskResume() d) OSSemTask()

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11) µcos-II can manage up to _____ tasks although it reserves the _____ highest priority tasks and the _____ lowest priority tasks for its own use.
   a) 32, 2, 2 b) 64, 4, 4 c) 128, 5, 5 d) 256, 8, 8

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   c) Selective Preemption d) None of above

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   a) Non-reentrant b) Reentrant c) Swap d) None of above

15) A semaphore is a protocol mechanism used to
   a) Control access to a shared resource
   b) Signal the occurrence of an event
   c) Allow two tasks to synchronize their activities
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16) ARM7 architecture support total _____ interrupt sources.
   a) 20 b) 30 c) 32 d) 10

17) Let R5 = 10 and R7 = 8. What will be the content of R7 after execution of instruction “MOV R7, R5, LSL#2” ?
   a) 20 b) 10 c) 40 d) 5

18) The _____ assembler directive is used to store 32 bit data in memory.
   a) ALIGN b) DCW c) DCB d) DCD

19) I2C master can address _____ other slaves at an instance.
   a) 7 b) 11
   c) 127 d) none of the above

20) _____ mode is the mode that the processor is in after reset.
   a) System b) Supervisory c) User d) Abort

SLR-EP – 123

Seat No.	

B.E. (Electronics) (Part – II) (New) Examination, 2016
EMBEDDED SYSTEM

Day and Date : Wednesday, 23-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data ***whenever*** *necessary.*

SECTION – I

2. Solve **any four** : **(6×4=24)**
   a) List the various application areas of embedded systems and give examples for each application area.
   b) Write an ARM ASM code to find smallest number from a series of 16 bit numbers.
   c) Explain LDR and STR instruction in detail with example.
   d) List and elaborate the privileged and non-privileged modes of operation in ARM 7 processor.
   e) List and elaborate any two GPIO port related registers available in LPC2148.

3. Solve **any two** : **(8×2=16)**
   a) Classify and review different addressing modes of ARM7 with examples.
   b) Sketch and discuss the interfacing of 16*2 LCD with LPC2148 in 8 bit mode.
   c) Design an embedded system with LPC2148 for the following specifications.
      i) Connect a 10KΩ potentiometer to ADC input channel AD0.2 (Use P0.29 pin. Pin functions are P0.29/AD0.2/CAP0.3/MAT0.3)
      ii) Connect a relay to port pin P0.2.

      Write an embedded C program to trun ON relay when voltage on pin P0.29 goes above 2V and turn OFF relay when voltage goes below 2V.

SECTION – II

4. Solve **any four** : **(6×4=24)**

   a) Discuss the task scheduling handled in μcos-II.

   b) Discuss shared data problem and methods to solve it.

   c) Define a task. Elaborate different task states in detail.

   d) What is an interrupts and elaborate the factors that contribute to interrupt response time in a system ?

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5. Solve **any two** : **(8×2=16)**

   a) Explain the various kernel objects for inter-process communication in μcos-II.

   b) Sketch and discuss the embedded system used in smart cards.

   c) Interface three LEDs with LPC2148. Draw a neat schematic diagram. Write a simple μcos-II program, which creates 3 LED tasks to blink LEDs in different frequency, 10 ms, 20 ms, 40 ms respectively. (Use port pins P0.2 to P0.4.)

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SLR-EP – 461

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) 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

2) With derivative control, the controller output is
i) Proportional to the rate of change of the error
ii) Zero when the error is constant
a) Both i and ii are true b) ii is true
c) i is true d) Both i and ii are false

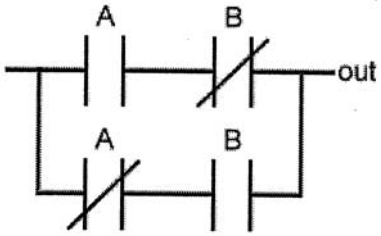
3) _____ is a PLC function capable of storing and shifting binary data.
a) Timer b) Shift register c) Counter d) Relay

4) The PLC contact shown in figure is

a) a normally open contact b) an output
c) a normally closed contact d) a timer

5) The difference of the reference input and the actual output signal is called
a) error signal b) controlling signal
c) actuating signal d) transfer function

6) The ladder diagram shown below is for _____ gate.



a) AND b) NOR c) EXOR d) NAND

P.T.O.

7) Different sensors are interfaced with _____ card of the PLC.
   a) Memory b) Input c) Output d) Power

8) The resolution of an analogue to digital converter with a word length of 12 bits and an analogue signal input range of 5 V is
   a) 9.76 mV b) 256 mV c) 1.22 mV d) 5 V

9) The basic element of ON/OFF controller is
   a) Amplifier b) Comparator
   c) Oscillator d) Differential amplifier

10) Actuators are interfaced with _____ card of the PLC.
   a) memory b) input c) output d) power

11) The difference of the reference input and the actual output signal is called
   a) error signal b) controlling signal
   c) actuating signal d) transfer function

12) In _____ strain gages, an electrical charge is induced in response to a mechanical strain.
   a) Piezo-electric b) RTD
   c) Piezo-resistive d) None of the above

13) The 1's complement representation of signed number –1 is
   a) 00000010 b) 00000001 c) 11111110 d) 11111101

14) A _____ actuator uses a pressurized air to drive a piston.
   a) Hydraulic b) Pneumatic
   c) Electric d) None of the above

15) _____ is a device that converts to mechanical motion.
   a) Sensors b) Actuators c) Transducers d) Amplifiers

16) A PLC can be programmed using
   a) Ladder diagram b) Sequential function chart
   c) Functional block diagram d) All of above

17) Closed loop control systems are
   i) More stable than open loop systems.
   ii) More complex to design than open loop systems.
   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

18) In PID controller _____ parameter is responsible for oscillation.
   a) KP b) PO c) KD d) KI

19) _____ is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
   a) Microprocessor b) PLC
   c) Microcontroller d) None of the above

20) The advantages of using the relay type output in PLC's is that
   a) They allows small currents to switch large
   b) Provides isolation to the PLC from external circuit currents
   c) Suitable for both AC and DC switching
   d) All of the above

_____

SLR-EP – 461

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right i****ndicate* ***full*** *marks.*
3) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(5×4=20)**

a) What is PLC ? Draw the block diagram and state applications of PLC.

b) Explain the factors considered for the selection of a PLC.

c) How SCR based drive works ? Explain with neat diagram and waveform.

d) What are the limitations of a two step on-off control and in what situation is such a control system commonly used ?

e) Compare the open loop and closed loop control system.

3. Attempt **any two** : **(10×2=20)**

a) Derive a mathematical model for PID controller. Explain electronic PID controller with necessary circuit diagrams.

b) Explain in detail different methods used to program PLC's with examples.

c) Draw and explain the ladder diagram and the equivalent PLC instruction and truth table of AND, OR, XOR and XNOR gates.

SECTION – II

4. Attempt **any four** : **(5×4=20)**

a) What is piezo-resistivity ? Explain the working of an accelerometer that uses piezo-resistivity.

b) List the advantages of LIGA fabrication process for MEMS devices.

Set P

c) What is etching ? Explain in detail wet etching process.

d) Compare the bulk micromachining and surface micromachining fabrication processes for MEMS devices.

e) What is photo-lithography ? Explain in detail with neat sketches.

5. Attempt **any two** : **(10×2=20)**

a) What are the different stages in designing a mechatronics system ? Explain in detail.

b) Explain the working principle of electro-hydraulic actuation system with a neat sketch.

c) List the manufacturing process of MEMS and explain any one of them.

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SLR-EP – 461

Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) A PLC can be programmed using
a) Ladder diagram b) Sequential function chart
c) Functional block diagram d) All of above

2) Closed loop control systems are
i) More stable than open loop systems.
ii) More complex to design than open loop systems.
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

3) In PID controller _____ parameter is responsible for oscillation.
a) KP b) PO c) KD d) KI

4) _____ is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
a) Microprocessor b) PLC
c) Microcontroller d) None of the above

5) The advantages of using the relay type output in PLC's is that
a) They allows small currents to switch large
b) Provides isolation to the PLC from external circuit currents
c) Suitable for both AC and DC switching
d) All of the above

6) 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

7) With derivative control, the controller output is
i) Proportional to the rate of change of the error
ii) Zero when the error is constant
a) Both i and ii are true b) ii is true
c) i is true d) Both i and ii are false

8) _____ is a PLC function capable of storing and shifting binary data.
a) Timer b) Shift register c) Counter d) Relay

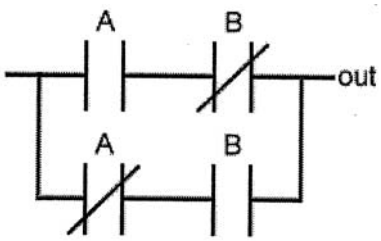
P.T.O.

9) The PLC contact shown in figure is

a) a normally open contact
b) an output
c) a normally closed contact
d) a timer

10) The difference of the reference input and the actual output signal is called
a) error signal
b) controlling signal
c) actuating signal
d) transfer function

11) The ladder diagram shown below is for _____ gate.



a) AND
b) NOR
c) EXOR
d) NAND

12) Different sensors are interfaced with _____ card of the PLC.
a) Memory
b) Input
c) Output
d) Power

13) The resolution of an analogue to digital converter with a word length of 12 bits and an analogue signal input range of 5 V is
a) 9.76 mV
b) 256 mV
c) 1.22 mV
d) 5 V

14) The basic element of ON/OFF controller is
a) Amplifier
b) Comparator
c) Oscillator
d) Differential amplifier

15) Actuators are interfaced with _____ card of the PLC.
a) memory
b) input
c) output
d) power

16) The difference of the reference input and the actual output signal is called
a) error signal
b) controlling signal
c) actuating signal
d) transfer function

17) In _____ strain gages, an electrical charge is induced in response to a mechanical strain.
a) Piezo-electric
b) RTD
c) Piezo-resistive
d) None of the above

18) The 1's complement representation of signed number –1 is
a) 00000010
b) 00000001
c) 11111110
d) 11111101

19) A _____ actuator uses a pressurized air to drive a piston.
a) Hydraulic
b) Pneumatic
c) Electric
d) None of the above

20) _____ is a device that converts to mechanical motion.
a) Sensors
b) Actuators
c) Transducers
d) Amplifiers

_____

SLR-EP – 461

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right i****ndicate* ***full*** *marks.*
3) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(5×4=20)**

a) What is PLC ? Draw the block diagram and state applications of PLC.

b) Explain the factors considered for the selection of a PLC.

c) How SCR based drive works ? Explain with neat diagram and waveform.

d) What are the limitations of a two step on-off control and in what situation is such a control system commonly used ?

e) Compare the open loop and closed loop control system.

3. Attempt **any two** : **(10×2=20)**

a) Derive a mathematical model for PID controller. Explain electronic PID controller with necessary circuit diagrams.

b) Explain in detail different methods used to program PLC's with examples.

c) Draw and explain the ladder diagram and the equivalent PLC instruction and truth table of AND, OR, XOR and XNOR gates.

SECTION – II

4. Attempt **any four** : **(5×4=20)**

a) What is piezo-resistivity ? Explain the working of an accelerometer that uses piezo-resistivity.

b) List the advantages of LIGA fabrication process for MEMS devices.

Set Q

c) What is etching ? Explain in detail wet etching process.

d) Compare the bulk micromachining and surface micromachining fabrication processes for MEMS devices.

e) What is photo-lithography ? Explain in detail with neat sketches.

5. Attempt **any two** : **(10×2=20)**

a) What are the different stages in designing a mechatronics system ? Explain in detail.

b) Explain the working principle of electro-hydraulic actuation system with a neat sketch.

c) List the manufacturing process of MEMS and explain any one of them.

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SLR-EP – 461

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

***Instructions** : 1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) The difference of the reference input and the actual output signal is called
   a) error signal b) controlling signal
   c) actuating signal d) transfer function

2) In _____ strain gages, an electrical charge is induced in response to a mechanical strain.
   a) Piezo-electric b) RTD
   c) Piezo-resistive d) None of the above

3) The 1's complement representation of signed number –1 is
   a) 00000010 b) 00000001 c) 11111110 d) 11111101

4) A _____ actuator uses a pressurized air to drive a piston.
   a) Hydraulic b) Pneumatic
   c) Electric d) None of the above

5) _____ is a device that converts to mechanical motion.
   a) Sensors b) Actuators c) Transducers d) Amplifiers

6) A PLC can be programmed using
   a) Ladder diagram b) Sequential function chart
   c) Functional block diagram d) All of above

7) Closed loop control systems are
   i) More stable than open loop systems.
   ii) More complex to design than open loop systems.
   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

8) In PID controller _____ parameter is responsible for oscillation.
   a) KP b) PO c) KD d) KI

9) _____ is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
   a) Microprocessor b) PLC
   c) Microcontroller d) None of the above

P.T.O.

10) The advantages of using the relay type output in PLC's is that
   a) They allows small currents to switch large
   b) Provides isolation to the PLC from external circuit currents
   c) Suitable for both AC and DC switching
   d) All of the above

11) 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
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12) With derivative control, the controller output is
   i) Proportional to the rate of change of the error
   ii) Zero when the error is constant
   a) Both i and ii are true
   b) ii is true
   c) i is true
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13) _____ is a PLC function capable of storing and shifting binary data.
   a) Timer b) Shift register c) Counter d) Relay

14) The PLC contact shown in figure is

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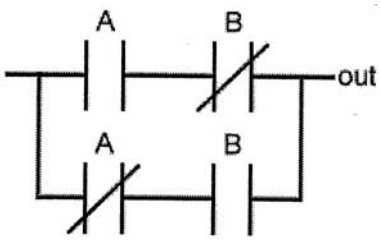
16) The ladder diagram shown below is for _____ gate.



   a) AND b) NOR c) EXOR d) NAND

17) Different sensors are interfaced with _____ card of the PLC.
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18) The resolution of an analogue to digital converter with a word length of 12 bits and an analogue signal input range of 5 V is
   a) 9.76 mV b) 256 mV c) 1.22 mV d) 5 V

19) The basic element of ON/OFF controller is
   a) Amplifier
   b) Comparator
   c) Oscillator
   d) Differential amplifier

20) Actuators are interfaced with _____ card of the PLC.
   a) memory b) input c) output d) power

_____

Set R

SLR-EP – 461

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right i****ndicate* ***full*** *marks.*
3) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(5×4=20)**

a) What is PLC ? Draw the block diagram and state applications of PLC.

b) Explain the factors considered for the selection of a PLC.

c) How SCR based drive works ? Explain with neat diagram and waveform.

d) What are the limitations of a two step on-off control and in what situation is such a control system commonly used ?

e) Compare the open loop and closed loop control system.

3. Attempt **any two** : **(10×2=20)**

a) Derive a mathematical model for PID controller. Explain electronic PID controller with necessary circuit diagrams.

b) Explain in detail different methods used to program PLC's with examples.

c) Draw and explain the ladder diagram and the equivalent PLC instruction and truth table of AND, OR, XOR and XNOR gates.

SECTION – II

4. Attempt **any four** : **(5×4=20)**

a) What is piezo-resistivity ? Explain the working of an accelerometer that uses piezo-resistivity.

b) List the advantages of LIGA fabrication process for MEMS devices.

Set R

c) What is etching ? Explain in detail wet etching process.

d) Compare the bulk micromachining and surface micromachining fabrication processes for MEMS devices.

e) What is photo-lithography ? Explain in detail with neat sketches.

5. Attempt **any two** : **(10×2=20)**

a) What are the different stages in designing a mechatronics system ? Explain in detail.

b) Explain the working principle of electro-hydraulic actuation system with a neat sketch.

c) List the manufacturing process of MEMS and explain any one of them.

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SLR-EP – 461

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

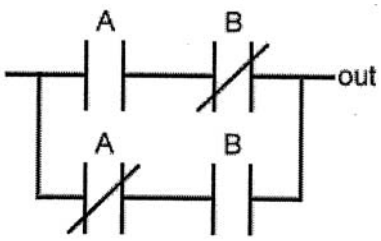
Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) The ladder diagram shown below is for _____ gate.



a) AND b) NOR c) EXOR d) NAND

2) Different sensors are interfaced with _____ card of the PLC.
a) Memory b) Input c) Output d) Power

3) The resolution of an analogue to digital converter with a word length of 12 bits and an analogue signal input range of 5 V is
a) 9.76 mV b) 256 mV c) 1.22 mV d) 5 V

4) The basic element of ON/OFF controller is
a) Amplifier b) Comparator
c) Oscillator d) Differential amplifier

5) Actuators are interfaced with _____ card of the PLC.
a) memory b) input c) output d) power

6) The difference of the reference input and the actual output signal is called
a) error signal b) controlling signal
c) actuating signal d) transfer function

7) In _____ strain gages, an electrical charge is induced in response to a mechanical strain.
a) Piezo-electric b) RTD
c) Piezo-resistive d) None of the above

8) The 1's complement representation of signed number –1 is
a) 00000010 b) 00000001 c) 11111110 d) 11111101

P.T.O.

9) A _____ actuator uses a pressurized air to drive a piston.
   a) Hydraulic b) Pneumatic
   c) Electric d) None of the above

10) _____ is a device that converts to mechanical motion.
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11) A PLC can be programmed using
   a) Ladder diagram b) Sequential function chart
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12) Closed loop control systems are
   i) More stable than open loop systems.
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13) In PID controller _____ parameter is responsible for oscillation.
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14) _____ is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
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15) The advantages of using the relay type output in PLC's is that
   a) They allows small currents to switch large
   b) Provides isolation to the PLC from external circuit currents
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16) In a temperature control system, what represents the output of the system ?
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18) _____ is a PLC function capable of storing and shifting binary data.
   a) Timer b) Shift register c) Counter d) Relay

19) The PLC contact shown in figure is

   a) a normally open contact b) an output
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   a) error signal b) controlling signal
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_____

SLR-EP – 461

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
MECHATRONICS (Elective – I)

Day and Date : Thursday, 8-12-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right i****ndicate* ***full*** *marks.*
3) Assume suitable data ***wherever*** *necessary.*

SECTION – I

2. Attempt **any four** : **(5×4=20)**

a) What is PLC ? Draw the block diagram and state applications of PLC.

b) Explain the factors considered for the selection of a PLC.

c) How SCR based drive works ? Explain with neat diagram and waveform.

d) What are the limitations of a two step on-off control and in what situation is such a control system commonly used ?

e) Compare the open loop and closed loop control system.

3. Attempt **any two** : **(10×2=20)**

a) Derive a mathematical model for PID controller. Explain electronic PID controller with necessary circuit diagrams.

b) Explain in detail different methods used to program PLC's with examples.

c) Draw and explain the ladder diagram and the equivalent PLC instruction and truth table of AND, OR, XOR and XNOR gates.

SECTION – II

4. Attempt **any four** : **(5×4=20)**

a) What is piezo-resistivity ? Explain the working of an accelerometer that uses piezo-resistivity.

b) List the advantages of LIGA fabrication process for MEMS devices.

c) What is etching ? Explain in detail wet etching process.

d) Compare the bulk micromachining and surface micromachining fabrication processes for MEMS devices.

e) What is photo-lithography ? Explain in detail with neat sketches.

5. Attempt **any two** : **(10×2=20)**

a) What are the different stages in designing a mechatronics system ? Explain in detail.

b) Explain the working principle of electro-hydraulic actuation system with a neat sketch.

c) List the manufacturing process of MEMS and explain any one of them.

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SLR-EP – 462

Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) In _____ image we notice that the components of histogram are concentrated on the low side on intensity scale.
a) Bright b) Dark c) Colorful d) All of the above

2) Histogram matching is also called as
a) Histogram equalization b) Histogram specification
c) Histogram linearization d) None

3) Which one of the edge detection mask is of size 2 × 2 mask ?
a) Prewitt b) Sobel c) Robert d) None

4) Which segmentation algorithm groups pixels or sub region into larger regions based on predefined criteria ?
a) Region growing b) Region splitting and merging
c) K-means d) None

5) What is the difference between Convolution and Correlation ?
a) Image is pre-rotated by 180 degree for correlation
b) Image is pre-rotated by 180 degree for convolution
c) Image is pre-rotated by 90 degree for correlation
d) Image is pre-rotated by 90 degree for convolution

6) Advantages of image transform include
a) Conservation of energy b) Energy compaction
c) Speed of processing d) All above

7) Image enhancement traditionally included
a) Smoothing b) Sharpening c) Degradation d) Both a) and b)

8) Before applying DCT an image is normally divided into blocks of size
a) 4 × 4 b) 8 × 8 c) 16 × 16 d) 256 × 256

9) In a binary image, total no. of intensity levels are
a) 8 b) 2 c) 256 d) 4

10) A perceptual attribute of light which measures total energy is
a) Hue b) Brightness c) Saturation d) None

11) Objective of Image Representation and Description
a) To represent and describe information embedded in an image in other forms that are less suitable than the image itself
b) To represent and describe information embedded in an image in other forms that are more suitable than the image itself
c) a) and b)
d) None of the above

12) _____ counting the number of direction change (in counter clockwise) between 2 adjacent elements of the code.
a) The second difference of a chain code
b) The third difference of a chain code
c) The first difference of a chain code
d) None of the above

13) _____ view a coordinate (x, y) as a complex number (x = real part and y = imaginary part) then apply the Fourier transform to a sequence of boundary points.
a) Fourier descriptor b) Laplace descriptor
c) Regional descriptor d) None

14) The city block distance between P and Q is defined as _____ where (x, y) and (s, t) are co-ordinates of P and Q respectively.
a) $\{[(x-s)^2 + (y-t)^2]^{1/2}$ b) $\{[(x-s)^2 + (y-t)^2]$
c) $|x-s| + |y-t|$ d) None of these

15) _____ represent an object boundary by a connected sequence of straight line segments of specified length and direction.
a) Hex codes b) Chain codes c) Binary codes d) None of these

16) The sum of cosines and sines coefficient multiplied as
a) Fourier series b) Fourier transform
c) Fast Fourier series d) Fast Fourier transform

17) Digital video is sequence of
a) Pixels b) Matrix c) Frames d) Coordinates

18) Image compression comprised of
a) Encoder b) Decoder c) Frames d) Both a) and b)

19) One dimensional functional representation of a boundary is
a) Polygonal approximation b) Signature
c) Skeleton d) None

20) Vector quantization method of image compression is
a) Efficient b) Lossy c) Lossless d) Predictive

_____

SLR-EP – 462

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

a) Explain the basic relationships between pixels.

b) Explain convolution property in 2D Fourier Transform.

c) Define image smoothing and sharpening.

d) Give the mask used for high boost filtering.

e) Write a note on median filter.

3. Solve **any two** : **(2×8=16)**

a) Explain with necessary diagrams Histogram Equalization.

b) Explain Wiener smoothing filter and its relation with inverse filtering.

c) What do you mean by digital image processing ? Discuss the different application areas of digital image processing.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

   a) What is shape number ? Draw all shapes of order 8 along with 4 directional chain code and shape number.

   b) Explain the process of edge detection using gradient operators.

   c) Define data compression, entropy and relative data redundancy and compression ratio.

   d) Differentiate between lossless and lossy compression.

   e) Define and explain dilation in image processing.

5. Attempt **any two** : **(2×8=16)**

   a) What is polygonal approximation method ? Specify the various polygonal approximation methods.

   b) Discuss in detail the discrete image transform used in image compression.

   c) Describe the steps involved in Morphological algorithms.

SLR-EP – 462

Seat No.	

Set Q

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Assume suitable data ***if necessary****.*
4) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) The sum of cosines and sines coefficient multiplied as
a) Fourier series b) Fourier transform
c) Fast Fourier series d) Fast Fourier transform

2) Digital video is sequence of
a) Pixels b) Matrix c) Frames d) Coordinates

3) Image compression comprised of
a) Encoder b) Decoder c) Frames d) Both a) and b)

4) One dimensional functional representation of a boundary is
a) Polygonal approximation b) Signature
c) Skeleton d) None

5) Vector quantization method of image compression is
a) Efficient b) Lossy c) Lossless d) Predictive

6) In _____ image we notice that the components of histogram are concentrated on the low side on intensity scale.
a) Bright b) Dark c) Colorful d) All of the above

7) Histogram matching is also called as
a) Histogram equalization b) Histogram specification
c) Histogram linearization d) None

8) Which one of the edge detection mask is of size 2 × 2 mask ?
a) Prewitt b) Sobel c) Robert d) None

9) Which segmentation algorithm groups pixels or sub region into larger regions based on predefined criteria ?
a) Region growing b) Region splitting and merging
c) K-means d) None

P.T.O.

10) What is the difference between Convolution and Correlation ?
   a) Image is pre-rotated by 180 degree for correlation
   b) Image is pre-rotated by 180 degree for convolution
   c) Image is pre-rotated by 90 degree for correlation
   d) Image is pre-rotated by 90 degree for convolution

11) Advantages of image transform include
   a) Conservation of energy b) Energy compaction
   c) Speed of processing d) All above

12) Image enhancement traditionally included
   a) Smoothing b) Sharpening c) Degradation d) Both a) and b)

13) Before applying DCT an image is normally divided into blocks of size
   a) 4×4 b) 8×8 c) 16×16 d) 256×256

14) In a binary image, total no. of intensity levels are
   a) 8 b) 2 c) 256 d) 4

15) A perceptual attribute of light which measures total energy is
   a) Hue b) Brightness c) Saturation d) None

16) Objective of Image Representation and Description
   a) To represent and describe information embedded in an image in other forms that are less suitable than the image itself
   b) To represent and describe information embedded in an image in other forms that are more suitable than the image itself
   c) a) and b)
   d) None of the above

17) _____ counting the number of direction change (in counter clockwise) between 2 adjacent elements of the code.
   a) The second difference of a chain code
   b) The third difference of a chain code
   c) The first difference of a chain code
   d) None of the above

18) _____ view a coordinate (x, y) as a complex number (x = real part and y = imaginary part) then apply the Fourier transform to a sequence of boundary points.
   a) Fourier descriptor b) Laplace descriptor
   c) Regional descriptor d) None

19) The city block distance between P and Q is defined as _____ where (x, y) and (s, t) are co-ordinates of P and Q respectively.
   a) $\{[(x-s)^2 + (y-t)^2]^{1/2}$ b) $\{[(x-s)^2 + (y-t)^2]$
   c) $|x-s| + |y-t|$ d) None of these

20) _____ represent an object boundary by a connected sequence of straight line segments of specified length and direction.
   a) Hex codes b) Chain codes c) Binary codes d) None of these

_____

SLR-EP – 462

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

a) Explain the basic relationships between pixels.

b) Explain convolution property in 2D Fourier Transform.

c) Define image smoothing and sharpening.

d) Give the mask used for high boost filtering.

e) Write a note on median filter.

3. Solve **any two** : **(2×8=16)**

a) Explain with necessary diagrams Histogram Equalization.

b) Explain Wiener smoothing filter and its relation with inverse filtering.

c) What do you mean by digital image processing ? Discuss the different application areas of digital image processing.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

   a) What is shape number ? Draw all shapes of order 8 along with 4 directional chain code and shape number.

   b) Explain the process of edge detection using gradient operators.

   c) Define data compression, entropy and relative data redundancy and compression ratio.

   d) Differentiate between lossless and lossy compression.

   e) Define and explain dilation in image processing.

5. Attempt **any two** : **(2×8=16)**

   a) What is polygonal approximation method ? Specify the various polygonal approximation methods.

   b) Discuss in detail the discrete image transform used in image compression.

   c) Describe the steps involved in Morphological algorithms.

SLR-EP – 462

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) *Assume suitable data* ***if necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) Objective of Image Representation and Description
   a) To represent and describe information embedded in an image in other forms that are less suitable than the image itself
   b) To represent and describe information embedded in an image in other forms that are more suitable than the image itself
   c) a) and b)
   d) None of the above

2) _____ counting the number of direction change (in counter clockwise) between 2 adjacent elements of the code.
   a) The second difference of a chain code
   b) The third difference of a chain code
   c) The first difference of a chain code
   d) None of the above

3) _____ view a coordinate (x, y) as a complex number (x = real part and y = imaginary part) then apply the Fourier transform to a sequence of boundary points.
   a) Fourier descriptor b) Laplace descriptor
   c) Regional descriptor d) None

4) The city block distance between P and Q is defined as _____ where (x, y) and (s, t) are co-ordinates of P and Q respectively.
   a) $\{[(x-s)^2 + (y-t)^2]^{1/2}$ b) $\{[(x-s)^2 + (y-t)^2]$
   c) $|x-s| + |y-t|$ d) None of these

5) _____ represent an object boundary by a connected sequence of straight line segments of specified length and direction.
   a) Hex codes b) Chain codes c) Binary codes d) None of these

P.T.O.

6) The sum of cosines and sines coefficient multiplied as
   a) Fourier series b) Fourier transform
   c) Fast Fourier series d) Fast Fourier transform

7) Digital video is sequence of
   a) Pixels b) Matrix c) Frames d) Coordinates

8) Image compression comprised of
   a) Encoder b) Decoder c) Frames d) Both a) and b)

9) One dimensional functional representation of a boundary is
   a) Polygonal approximation b) Signature
   c) Skeleton d) None

10) Vector quantization method of image compression is
   a) Efficient b) Lossy c) Lossless d) Predictive

11) In _____ image we notice that the components of histogram are concentrated on the low side on intensity scale.
   a) Bright b) Dark c) Colorful d) All of the above

12) Histogram matching is also called as
   a) Histogram equalization b) Histogram specification
   c) Histogram linearization d) None

13) Which one of the edge detection mask is of size 2 × 2 mask ?
   a) Prewitt b) Sobel c) Robert d) None

14) Which segmentation algorithm groups pixels or sub region into larger regions based on predefined criteria ?
   a) Region growing b) Region splitting and merging
   c) K-means d) None

15) What is the difference between Convolution and Correlation ?
   a) Image is pre-rotated by 180 degree for correlation
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16) Advantages of image transform include
   a) Conservation of energy b) Energy compaction
   c) Speed of processing d) All above

17) Image enhancement traditionally included
   a) Smoothing b) Sharpening c) Degradation d) Both a) and b)

18) Before applying DCT an image is normally divided into blocks of size
   a) 4 × 4 b) 8 × 8 c) 16 × 16 d) 256 × 256

19) In a binary image, total no. of intensity levels are
   a) 8 b) 2 c) 256 d) 4

20) A perceptual attribute of light which measures total energy is
   a) Hue b) Brightness c) Saturation d) None

_____

SLR-EP – 462

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

a) Explain the basic relationships between pixels.

b) Explain convolution property in 2D Fourier Transform.

c) Define image smoothing and sharpening.

d) Give the mask used for high boost filtering.

e) Write a note on median filter.

3. Solve **any two** : **(2×8=16)**

a) Explain with necessary diagrams Histogram Equalization.

b) Explain Wiener smoothing filter and its relation with inverse filtering.

c) What do you mean by digital image processing ? Discuss the different application areas of digital image processing.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

   a) What is shape number ? Draw all shapes of order 8 along with 4 directional chain code and shape number.

   b) Explain the process of edge detection using gradient operators.

   c) Define data compression, entropy and relative data redundancy and compression ratio.

   d) Differentiate between lossless and lossy compression.

   e) Define and explain dilation in image processing.

5. Attempt **any two** : **(2×8=16)**

   a) What is polygonal approximation method ? Specify the various polygonal approximation methods.

   b) Discuss in detail the discrete image transform used in image compression.

   c) Describe the steps involved in Morphological algorithms.

SLR-EP – 462

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) ***All*** *questions are* ***compulsory****.*
2) *Figures to the* ***right*** *indicates* ***full*** *marks.*
3) *Assume suitable data* ***if necessary****.*
4) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
5) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(1×20=20)**

1) Advantages of image transform include
   a) Conservation of energy b) Energy compaction
   c) Speed of processing d) All above

2) Image enhancement traditionally included
   a) Smoothing b) Sharpening c) Degradation d) Both a) and b)

3) Before applying DCT an image is normally divided into blocks of size
   a) 4×4 b) 8×8 c) 16×16 d) 256×256

4) In a binary image, total no. of intensity levels are
   a) 8 b) 2 c) 256 d) 4

5) A perceptual attribute of light which measures total energy is
   a) Hue b) Brightness c) Saturation d) None

6) Objective of Image Representation and Description
   a) To represent and describe information embedded in an image in other forms that are less suitable than the image itself
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   c) The first difference of a chain code
   d) None of the above

8) _____ view a coordinate (x, y) as a complex number (x = real part and y = imaginary part) then apply the Fourier transform to a sequence of boundary points.
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   c) Regional descriptor d) None

9) The city block distance between P and Q is defined as _____ where (x, y) and (s, t) are co-ordinates of P and Q respectively.
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   c) $|x-s| + |y-t|$ d) None of these

10) _____ represent an object boundary by a connected sequence of straight line segments of specified length and direction.
   a) Hex codes b) Chain codes c) Binary codes d) None of these

11) The sum of cosines and sines coefficient multiplied as
   a) Fourier series b) Fourier transform
   c) Fast Fourier series d) Fast Fourier transform

12) Digital video is sequence of
   a) Pixels b) Matrix c) Frames d) Coordinates

13) Image compression comprised of
   a) Encoder b) Decoder c) Frames d) Both a) and b)

14) One dimensional functional representation of a boundary is
   a) Polygonal approximation b) Signature
   c) Skeleton d) None

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   a) Efficient b) Lossy c) Lossless d) Predictive

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17) Histogram matching is also called as
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   c) Histogram linearization d) None

18) Which one of the edge detection mask is of size 2×2 mask ?
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20) What is the difference between Convolution and Correlation ?
   a) Image is pre-rotated by 180 degree for correlation
   b) Image is pre-rotated by 180 degree for convolution
   c) Image is pre-rotated by 90 degree for correlation
   d) Image is pre-rotated by 90 degree for convolution

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SLR-EP – 462

Seat No.	

B.E. (Electronics Engineering) (Part – I) Examination, 2016
Elective – I : IMAGE PROCESSING

Day and Date : Thursday, 8-12-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*

2) Figures to the ***right*** *indicates* ***full*** *marks.*

3) Assume suitable data ***if necessary****.*

SECTION – I

2. Attempt **any four** : **(4×6=24)**

a) Explain the basic relationships between pixels.

b) Explain convolution property in 2D Fourier Transform.

c) Define image smoothing and sharpening.

d) Give the mask used for high boost filtering.

e) Write a note on median filter.

3. Solve **any two** : **(2×8=16)**

a) Explain with necessary diagrams Histogram Equalization.

b) Explain Wiener smoothing filter and its relation with inverse filtering.

c) What do you mean by digital image processing ? Discuss the different application areas of digital image processing.

SECTION – II

4. Attempt **any four** : **(4×6=24)**

   a) What is shape number ? Draw all shapes of order 8 along with 4 directional chain code and shape number.

   b) Explain the process of edge detection using gradient operators.

   c) Define data compression, entropy and relative data redundancy and compression ratio.

   d) Differentiate between lossless and lossy compression.

   e) Define and explain dilation in image processing.

5. Attempt **any two** : **(2×8=16)**

   a) What is polygonal approximation method ? Specify the various polygonal approximation methods.

   b) Discuss in detail the discrete image transform used in image compression.

   c) Describe the steps involved in Morphological algorithms.

SLR-EP – 463

Seat No.	

Set P

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) *Figures to the* ***right*** *indicate* ***full*** *marks.*
4) *Assume suitable data if* ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative. **(20×1=20)**

1) X.25, it was developed for computer connections used for
   a) Time sharing connection b) Terminal connection
   c) Both a and b d) None of these

2) DLCI identifies _____ in frame relay.
   a) Virtual circuit b) Receiver's address
   c) Frame d) Both b and c

3) In X.25, a host connected at 56 kbps and communicating with numerous remote sites can be linked with cheaper _____ lines.
   a) 18.2 kbps b) 19.2 kbps c) 20.2 kbps d) 22.2 kbps

4) X.25 protocol exchanged the data control information between
   a) A node b) A user device c) Both a and b d) None of these

5) A X.25 protocol use
   a) Store and forward method b) Stop and wait method
   c) Store and stop method d) None of these

6) Logical channels are identified by a number referred by
   a) DLCI (Data Link Connection Identifier)
   b) VLCI (Very Large Connection Identifier)
   c) HDLC (High Level Data Link Control)
   d) QLLC

7) BRI affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

P.T.O.

8) Advantages of ISDN internet working are
   a) Quality b) Economy c) Availability d) All of these

9) The B-channel is capable of carrying
   a) Voice b) Data c) Both a and b d) None of these

10) Equipment that controls the physical and electrical termination of ISDN at the user's premises is called
   a) NT1 b) NT2 c) NT3 d) NT4

11) Advantages of cell relay are
   a) High-speed transmission b) Multiplexing transmission
   c) Both a and b d) None of these

12) The cell relay protocol corresponds to first _____ layer of OSI.
   a) One b) Two c) Three d) Four

13) In cell relay these logical channels are represented as
   a) Virtual Channels (VCs) b) Virtual Paths (VPs)
   c) Both a and b d) None of these

14) ATM is an
   a) International Telecommunication
   b) International Telecommunication-Union
   c) International Telecommunication Union-Telecommunication Standardization Sector (ITU-T)
   d) International Telecommunication Union-Telecommunication

15) In ISDN _____, the network can change or process the content of the data.
   a) Bearer services b) Teleservices
   c) Supplementary services d) None of the above

16) ATM cell has a fixed length of
   a) 52 bytes b) 53 bytes c) 54 bytes d) 55 bytes

17) The _____ service is suitable for customer who need real time video transmission.
   a) CBR b) VBR c) ABR d) UBR

18) Narrow band ISDN provides for the following services.
   a) Circuit-switched voice b) Circuit-switched data
   c) Low-speed packet d) All of these

19) SONET's _____ layer transfers signal across the physical line.
   a) Path b) Line c) Section d) Photonic

20) The optical link between STS multiplexer and regenerator is called
   a) A section b) A line c) A path d) None of above

_____

SLR-EP – 463

Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

SECTION – I

2. Answer **any four** from the following : **(4×5=20)**

   1) Compare the performance of analog and digital transmission. What are the benefits of virtual path transmission ?

   2) Explain effect of packet size on transmission time. Discuss control signaling for circuit switching networks.

   3) Explain principles and I-series recommendation in case of ISDN.

   4) Compare between message switching, circuit switching and packet switching.

   5) What are the advantages of Intelligent Digital Networks (IDN) ? Draw and explain ISDN addressing system.

3. Answer **any two** from the following : **(2×10=20)**

   1) What is X.25 ? Explain external and internal virtual circuit and datagram operations in X.25 packet networks.

   2) How congestion is controlled in frame relay ? Explain different link layer core parameters.

   3) Why flow control is required in ATM communication ? Discuss generic flow control algorithm in ATM.

SECTION – II

4. Answer the following : **(4×5=20)**

   1) Explain in detail BISDN architecture and BISDN user interface.

   2) Draw and discuss SONET frame format and explain.

   3) Discuss cell delineation process in ATM.

   4) How ATM cell is processed in an ATM switch ?

5. Answer **any two** from the following : **(2×10=20)**

   1) Draw and explain ATM cell formats at UNI and NNI interface.

   2) Explain AAL 1 protocol in detail.

   3) Explain the SONET layer model.

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Seat No.	

Set Q

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) *Figures to the* ***right*** *indicate* ***full*** *marks.*
4) *Assume suitable data if* ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative. **(20×1=20)**

1) ATM cell has a fixed length of
a) 52 bytes b) 53 bytes c) 54 bytes d) 55 bytes

2) The _____ service is suitable for customer who need real time video transmission.
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a) Circuit-switched voice b) Circuit-switched data
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4) SONET's _____ layer transfers signal across the physical line.
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5) The optical link between STS multiplexer and regenerator is called
a) A section b) A line c) A path d) None of above

6) X.25, it was developed for computer connections used for
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P.T.O.

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10) A X.25 protocol use
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   c) Store and stop method d) None of these

11) Logical channels are identified by a number referred by
   a) DLCI (Data Link Connection Identifier)
   b) VLCI (Very Large Connection Identifier)
   c) HDLC (High Level Data Link Control)
   d) QLLC

12) BRI affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

13) Advantages of ISDN internet working are
   a) Quality b) Economy c) Availability d) All of these

14) The B-channel is capable of carrying
   a) Voice b) Data c) Both a and b d) None of these

15) Equipment that controls the physical and electrical termination of ISDN at the user's premises is called
   a) NT1 b) NT2 c) NT3 d) NT4

16) Advantages of cell relay are
   a) High-speed transmission b) Multiplexing transmission
   c) Both a and b d) None of these

17) The cell relay protocol corresponds to first _____ layer of OSI.
   a) One b) Two c) Three d) Four

18) In cell relay these logical channels are represented as
   a) Virtual Channels (VCs) b) Virtual Paths (VPs)
   c) Both a and b d) None of these

19) ATM is an
   a) International Telecommunication
   b) International Telecommunication-Union
   c) International Telecommunication Union-Telecommunication Standardization Sector (ITU-T)
   d) International Telecommunication Union-Telecommunication

20) In ISDN _____, the network can change or process the content of the data.
   a) Bearer services b) Teleservices
   c) Supplementary services d) None of the above

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

SECTION – I

2. Answer **any four** from the following : **(4×5=20)**

   1) Compare the performance of analog and digital transmission. What are the benefits of virtual path transmission ?

   2) Explain effect of packet size on transmission time. Discuss control signaling for circuit switching networks.

   3) Explain principles and I-series recommendation in case of ISDN.

   4) Compare between message switching, circuit switching and packet switching.

   5) What are the advantages of Intelligent Digital Networks (IDN) ? Draw and explain ISDN addressing system.

3. Answer **any two** from the following : **(2×10=20)**

   1) What is X.25 ? Explain external and internal virtual circuit and datagram operations in X.25 packet networks.

   2) How congestion is controlled in frame relay ? Explain different link layer core parameters.

   3) Why flow control is required in ATM communication ? Discuss generic flow control algorithm in ATM.

SECTION – II

4. Answer the following : **(4×5=20)**

   1) Explain in detail BISDN architecture and BISDN user interface.

   2) Draw and discuss SONET frame format and explain.

   3) Discuss cell delineation process in ATM.

   4) How ATM cell is processed in an ATM switch ?

5. Answer **any two** from the following : **(2×10=20)**

   1) Draw and explain ATM cell formats at UNI and NNI interface.

   2) Explain AAL 1 protocol in detail.

   3) Explain the SONET layer model.

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Seat No.	

Set R

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) *Figures to the* ***right*** *indicate* ***full*** *marks.*
4) *Assume suitable data if* ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative. **(20×1=20)**

1) Advantages of cell relay are
   a) High-speed transmission b) Multiplexing transmission
   c) Both a and b d) None of these

2) The cell relay protocol corresponds to first _____ layer of OSI.
   a) One b) Two c) Three d) Four

3) In cell relay these logical channels are represented as
   a) Virtual Channels (VCs) b) Virtual Paths (VPs)
   c) Both a and b d) None of these

4) ATM is an
   a) International Telecommunication
   b) International Telecommunication-Union
   c) International Telecommunication Union-Telecommunication Standardization Sector (ITU-T)
   d) International Telecommunication Union-Telecommunication

5) In ISDN _____, the network can change or process the content of the data.
   a) Bearer services b) Teleservices
   c) Supplementary services d) None of the above

6) ATM cell has a fixed length of
   a) 52 bytes b) 53 bytes c) 54 bytes d) 55 bytes

7) The _____ service is suitable for customer who need real time video transmission.
   a) CBR b) VBR c) ABR d) UBR

P.T.O.

8) Narrow band ISDN provides for the following services.
   a) Circuit-switched voice b) Circuit-switched data
   c) Low-speed packet d) All of these

9) SONET's _____ layer transfers signal across the physical line.
   a) Path b) Line c) Section d) Photonic

10) The optical link between STS multiplexer and regenerator is called
   a) A section b) A line c) A path d) None of above

11) X.25, it was developed for computer connections used for
   a) Time sharing connection b) Terminal connection
   c) Both a and b d) None of these

12) DLCI identifies _____ in frame relay.
   a) Virtual circuit b) Receiver's address
   c) Frame d) Both b and c

13) In X.25, a host connected at 56 kbps and communicating with numerous remote sites can be linked with cheaper _____ lines.
   a) 18.2 kbps b) 19.2 kbps c) 20.2 kbps d) 22.2 kbps

14) X.25 protocol exchanged the data control information between
   a) A node b) A user device c) Both a and b d) None of these

15) A X.25 protocol use
   a) Store and forward method b) Stop and wait method
   c) Store and stop method d) None of these

16) Logical channels are identified by a number referred by
   a) DLCI (Data Link Connection Identifier)
   b) VLCI (Very Large Connection Identifier)
   c) HDLC (High Level Data Link Control)
   d) QLLC

17) BRI affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

18) Advantages of ISDN internet working are
   a) Quality b) Economy c) Availability d) All of these

19) The B-channel is capable of carrying
   a) Voice b) Data c) Both a and b d) None of these

20) Equipment that controls the physical and electrical termination of ISDN at the user's premises is called
   a) NT1 b) NT2 c) NT3 d) NT4

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

SECTION – I

2. Answer **any four** from the following : **(4×5=20)**

   1) Compare the performance of analog and digital transmission. What are the benefits of virtual path transmission ?

   2) Explain effect of packet size on transmission time. Discuss control signaling for circuit switching networks.

   3) Explain principles and I-series recommendation in case of ISDN.

   4) Compare between message switching, circuit switching and packet switching.

   5) What are the advantages of Intelligent Digital Networks (IDN) ? Draw and explain ISDN addressing system.

3. Answer **any two** from the following : **(2×10=20)**

   1) What is X.25 ? Explain external and internal virtual circuit and datagram operations in X.25 packet networks.

   2) How congestion is controlled in frame relay ? Explain different link layer core parameters.

   3) Why flow control is required in ATM communication ? Discuss generic flow control algorithm in ATM.

SECTION – II

4. Answer the following : **(4×5=20)**

   1) Explain in detail BISDN architecture and BISDN user interface.

   2) Draw and discuss SONET frame format and explain.

   3) Discuss cell delineation process in ATM.

   4) How ATM cell is processed in an ATM switch ?

5. Answer **any two** from the following : **(2×10=20)**

   1) Draw and explain ATM cell formats at UNI and NNI interface.

   2) Explain AAL 1 protocol in detail.

   3) Explain the SONET layer model.

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Seat No.	

Set S

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) *Figures to the* ***right*** *indicate* ***full*** *marks.*
4) *Assume suitable data if* ***necessary****.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct alternative. **(20×1=20)**

1) Logical channels are identified by a number referred by
   a) DLCI (Data Link Connection Identifier)
   b) VLCI (Very Large Connection Identifier)
   c) HDLC (High Level Data Link Control)
   d) QLLC

2) BRI affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

3) Advantages of ISDN internet working are
   a) Quality b) Economy c) Availability d) All of these

4) The B-channel is capable of carrying
   a) Voice b) Data c) Both a and b d) None of these

5) Equipment that controls the physical and electrical termination of ISDN at the user's premises is called
   a) NT1 b) NT2 c) NT3 d) NT4

6) Advantages of cell relay are
   a) High-speed transmission b) Multiplexing transmission
   c) Both a and b d) None of these

7) The cell relay protocol corresponds to first _____ layer of OSI.
   a) One b) Two c) Three d) Four

P.T.O.

8) In cell relay these logical channels are represented as
   a) Virtual Channels (VCs) b) Virtual Paths (VPs)
   c) Both a and b d) None of these

9) ATM is an
   a) International Telecommunication
   b) International Telecommunication-Union
   c) International Telecommunication Union-Telecommunication Standardization Sector (ITU-T)
   d) International Telecommunication Union-Telecommunication

10) In ISDN _____, the network can change or process the content of the data.
   a) Bearer services b) Teleservices
   c) Supplementary services d) None of the above

11) ATM cell has a fixed length of
   a) 52 bytes b) 53 bytes c) 54 bytes d) 55 bytes

12) The _____ service is suitable for customer who need real time video transmission.
   a) CBR b) VBR c) ABR d) UBR

13) Narrow band ISDN provides for the following services.
   a) Circuit-switched voice b) Circuit-switched data
   c) Low-speed packet d) All of these

14) SONET's _____ layer transfers signal across the physical line.
   a) Path b) Line c) Section d) Photonic

15) The optical link between STS multiplexer and regenerator is called
   a) A section b) A line c) A path d) None of above

16) X.25, it was developed for computer connections used for
   a) Time sharing connection b) Terminal connection
   c) Both a and b d) None of these

17) DLCI identifies _____ in frame relay.
   a) Virtual circuit b) Receiver's address
   c) Frame d) Both b and c

18) In X.25, a host connected at 56 kbps and communicating with numerous remote sites can be linked with cheaper _____ lines.
   a) 18.2 kbps b) 19.2 kbps c) 20.2 kbps d) 22.2 kbps

19) X.25 protocol exchanged the data control information between
   a) A node b) A user device c) Both a and b d) None of these

20) A X.25 protocol use
   a) Store and forward method b) Stop and wait method
   c) Store and stop method d) None of these

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
BROADBAND COMMUNICATION (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

SECTION – I

2. Answer **any four** from the following : **(4×5=20)**

   1) Compare the performance of analog and digital transmission. What are the benefits of virtual path transmission ?

   2) Explain effect of packet size on transmission time. Discuss control signaling for circuit switching networks.

   3) Explain principles and I-series recommendation in case of ISDN.

   4) Compare between message switching, circuit switching and packet switching.

   5) What are the advantages of Intelligent Digital Networks (IDN) ? Draw and explain ISDN addressing system.

3. Answer **any two** from the following : **(2×10=20)**

   1) What is X.25 ? Explain external and internal virtual circuit and datagram operations in X.25 packet networks.

   2) How congestion is controlled in frame relay ? Explain different link layer core parameters.

   3) Why flow control is required in ATM communication ? Discuss generic flow control algorithm in ATM.

SECTION – II

4. Answer the following : **(4×5=20)**

   1) Explain in detail BISDN architecture and BISDN user interface.

   2) Draw and discuss SONET frame format and explain.

   3) Discuss cell delineation process in ATM.

   4) How ATM cell is processed in an ATM switch ?

5. Answer **any two** from the following : **(2×10=20)**

   1) Draw and explain ATM cell formats at UNI and NNI interface.

   2) Explain AAL 1 protocol in detail.

   3) Explain the SONET layer model.

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Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
i) ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
iii) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
iv) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select correct alternatives : **20**

1) Proportional band of the controller is expressed as
   a) Gain b) Ratio
   c) Percentage d) Range of control variables

2) The term reset control refers to
   a) Proportional b) Integral
   c) Derivative d) None of the above

3) The integral control
   a) Increases the steady state error b) Decreases the steady state error
   c) Increases the noise and stability d) Decreases the damping coefficient

4) The word address in PLC not includes
   a) SMPS b) INPUT
   c) OUTPUT d) Rack number

5) The device which provides maximum isolation is
   a) Pulse transformer b) Normal transformer
   c) Opto isolator d) None of the above

6) In PID which parameter is responsible for oscillation
   a) KP b) KD
   c) KI d) PO

7) The basic element of ON/OFF controller is
   a) Amplifier b) Comparator
   c) Oscillator d) Differential amplifier

8) Which sensor is semiconductor sensor ?
   a) RTD b) PT100
   c) LM335 d) Thermocouple

9) Proportional band of a controller is defined as the range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

P.T.O.

10) In a proportional temperature controller, if the quantity under the heater increases the offset will
   a) Increase
   b) Reduce
   c) Remain un effected
   d) None of the above

11) When derivative action is included in a proportional controller, the proportional band
   a) Increases
   b) Reduces
   c) Remains unchanged
   d) None of the above

12) The number of operational amplifiers require for designing of electronic PID controller is
   a) 1
   b) 2
   c) 3
   d) 6

13) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action
   b) Proportional + integral action
   c) Proportional + differential action
   d) Proportional + integral + differential action

14) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced
   b) Increased
   c) Reduced to zero
   d) None of the above

15) In a PID controller, the overshoots has increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Increased
   b) Reduced
   c) Reduced to zero
   d) None of the above

16) For electric traction which drive is most suitable
   a) Two quadrant
   b) Four quadrant
   c) Single quadrant
   d) None of these

17) Actuators are interfaced with which card of PLC
   a) Memory card
   b) Output card
   c) Input card
   d) Power supply

18) Which sensor is self generating type ?
   a) Thermocouple
   b) RTD
   c) PT100
   d) Thermostat

19) Execution time of PLC depends on
   a) Memory size
   b) Ladder size
   c) Power supply used for PLC
   d) Number of I/O

20) The number of I/O's for micro PLC are
   a) More than 8
   b) Less than 4
   c) More than 16
   d) More than 32

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *i)* ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*

SECTION – I

2. Solve **any three** : **15**

   a) Why SMPS is preferred over linear power supply in case of PLC ?

   b) Write note on classification of PLC.

   c) What are different blocks in PLC ?

   d) State advantages of PLCs over hard wired relay.

3. Solve **any two** : **15**

   a) Develop a ladder diagram to start and stop the motor using 'START', 'STOP' Push Buttons (PB). Represent the solution as per i) physical ladder ii) programmable ladder.

   b) Develop and draw ladder diagram automatic bottle filling plant.

   c) What are the different specifications of PLC ? Explain two in detail.

4. Develop a ladder diagram for an elevator shown in figure. The platform moves the objects UP and DOWN. The platform carries something to UP position when UP button is pushed, and when DOWN button is pushed the platform carries something to DOWN position. **10**

SECTION – II

5. Solve **any three** : **15**

   a) Elaborate the selection of grounded load converter and floating load converter.

   b) Design converter for conversion of 4MA to 20MA into 0V to 5V using floating input.

   c) Explain Data Acquisition System (DAS) using digital logic.

   d) Explain with neat sketch why the current range is 4MA to 20MA. Why it is started from 4MA instead of ZERO ?

Set P

6. Solve **any two** : **15**

a) What are different components of robotic system ? How these components are interfaced ?

b) Explain different types of pressure sensors.

c) Design 2 channel Data Acquisition System with following specification :

Channel 1 :

i) Temp. Range - 0 to 500°C

ii) Sensor - Thermocouple

Channel 2 :

i) Temp. Range - 0 to 200°C

ii) Sensor - LM35

7. Design analog proportional integral controller for following specification : **10**

i) Process variable range - 100°C to 1000°C

ii) Set point - 400°C to 600°C

iii) Use K type thermocouple with sensitivity 7 micro V/°C

iv) Proportional band 65%

v) Integral Constant - 2

vi) Assume suitable data.

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Seat No.	

Set **Q**

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
i) ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
iii) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
iv) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select correct alternatives : **20**

1) For electric traction which drive is most suitable
   a) Two quadrant b) Four quadrant
   c) Single quadrant d) None of these

2) Actuators are interfaced with which card of PLC
   a) Memory card b) Output card
   c) Input card d) Power supply

3) Which sensor is self generating type ?
   a) Thermocouple b) RTD
   c) PT100 d) Thermostat

4) Execution time of PLC depends on
   a) Memory size b) Ladder size
   c) Power supply used for PLC d) Number of I/O

5) The number of I/O's for micro PLC are
   a) More than 8 b) Less than 4
   c) More than 16 d) More than 32

6) Proportional band of the controller is expressed as
   a) Gain b) Ratio
   c) Percentage d) Range of control variables

7) The term reset control refers to
   a) Proportional b) Integral
   c) Derivative d) None of the above

8) The integral control
   a) Increases the steady state error b) Decreases the steady state error
   c) Increases the noise and stability d) Decreases the damping coefficient

P.T.O.

9) The word address in PLC not includes
   a) SMPS b) INPUT
   c) OUTPUT d) Rack number

10) The device which provides maximum isolation is
   a) Pulse transformer b) Normal transformer
   c) Opto isolator d) None of the above

11) In PID which parameter is responsible for oscillation
   a) KP b) KD
   c) KI d) PO

12) The basic element of ON/OFF controller is
   a) Amplifier b) Comparator
   c) Oscillator d) Differential amplifier

13) Which sensor is semiconductor sensor ?
   a) RTD b) PT100
   c) LM335 d) Thermocouple

14) Proportional band of a controller is defined as the range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

15) In a proportional temperature controller, if the quantity under the heater increases the offset will
   a) Increase b) Reduce
   c) Remain un effected d) None of the above

16) When derivative action is included in a proportional controller, the proportional band
   a) Increases b) Reduces
   c) Remains unchanged d) None of the above

17) The number of operational amplifiers require for designing of electronic PID controller is
   a) 1 b) 2
   c) 3 d) 6

18) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action b) Proportional + integral action
   c) Proportional + differential action d) Proportional + integral + differential action

19) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced b) Increased
   c) Reduced to zero d) None of the above

20) In a PID controller, the overshoots has increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Increased b) Reduced
   c) Reduced to zero d) None of the above

_____

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Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *i)* ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*

SECTION – I

2. Solve **any three** : **15**

   a) Why SMPS is preferred over linear power supply in case of PLC ?

   b) Write note on classification of PLC.

   c) What are different blocks in PLC ?

   d) State advantages of PLCs over hard wired relay.

3. Solve **any two** : **15**

   a) Develop a ladder diagram to start and stop the motor using 'START', 'STOP' Push Buttons (PB). Represent the solution as per i) physical ladder ii) programmable ladder.

   b) Develop and draw ladder diagram automatic bottle filling plant.

   c) What are the different specifications of PLC ? Explain two in detail.

4. Develop a ladder diagram for an elevator shown in figure. The platform moves the objects UP and DOWN. The platform carries something to UP position when UP button is pushed, and when DOWN button is pushed the platform carries something to DOWN position. **10**

SECTION – II

5. Solve **any three** : **15**

   a) Elaborate the selection of grounded load converter and floating load converter.

   b) Design converter for conversion of 4MA to 20MA into 0V to 5V using floating input.

   c) Explain Data Acquisition System (DAS) using digital logic.

   d) Explain with neat sketch why the current range is 4MA to 20MA. Why it is started from 4MA instead of ZERO ?

Set Q

6. Solve **any two** : **15**

a) What are different components of robotic system ? How these components are interfaced ?

b) Explain different types of pressure sensors.

c) Design 2 channel Data Acquisition System with following specification :

Channel 1 :

i) Temp. Range - 0 to 500°C

ii) Sensor - Thermocouple

Channel 2 :

i) Temp. Range - 0 to 200°C

ii) Sensor - LM35

7. Design analog proportional integral controller for following specification : **10**

i) Process variable range - 100°C to 1000°C

ii) Set point - 400°C to 600°C

iii) Use K type thermocouple with sensitivity 7 micro V/°C

iv) Proportional band 65%

v) Integral Constant - 2

vi) Assume suitable data.

SLR-EP – 464

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
i) ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
iii) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
iv) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select correct alternatives : **20**

1) When derivative action is included in a proportional controller, the proportional band
   a) Increases b) Reduces
   c) Remains unchanged d) None of the above

2) The number of operational amplifiers require for designing of electronic PID controller is
   a) 1 b) 2
   c) 3 d) 6

3) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action b) Proportional + integral action
   c) Proportional + differential action d) Proportional + integral + differential action

4) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced b) Increased
   c) Reduced to zero d) None of the above

5) In a PID controller, the overshoots has increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Increased b) Reduced
   c) Reduced to zero d) None of the above

6) For electric traction which drive is most suitable
   a) Two quadrant b) Four quadrant
   c) Single quadrant d) None of these

7) Actuators are interfaced with which card of PLC
   a) Memory card b) Output card
   c) Input card d) Power supply

8) Which sensor is self generating type ?
   a) Thermocouple b) RTD
   c) PT100 d) Thermostat

P.T.O.

9) Execution time of PLC depends on
   a) Memory size
   b) Ladder size
   c) Power supply used for PLC
   d) Number of I/O

10) The number of I/O's for micro PLC are
   a) More than 8
   b) Less than 4
   c) More than 16
   d) More than 32

11) Proportional band of the controller is expressed as
   a) Gain
   b) Ratio
   c) Percentage
   d) Range of control variables

12) The term reset control refers to
   a) Proportional
   b) Integral
   c) Derivative
   d) None of the above

13) The integral control
   a) Increases the steady state error
   b) Decreases the steady state error
   c) Increases the noise and stability
   d) Decreases the damping coefficient

14) The word address in PLC not includes
   a) SMPS
   b) INPUT
   c) OUTPUT
   d) Rack number

15) The device which provides maximum isolation is
   a) Pulse transformer
   b) Normal transformer
   c) Opto isolator
   d) None of the above

16) In PID which parameter is responsible for oscillation
   a) KP
   b) KD
   c) KI
   d) PO

17) The basic element of ON/OFF controller is
   a) Amplifier
   b) Comparator
   c) Oscillator
   d) Differential amplifier

18) Which sensor is semiconductor sensor ?
   a) RTD
   b) PT100
   c) LM335
   d) Thermocouple

19) Proportional band of a controller is defined as the range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

20) In a proportional temperature controller, if the quantity under the heater increases the offset will
   a) Increase
   b) Reduce
   c) Remain un effected
   d) None of the above

SLR-EP – 464

Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *i)* ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*

SECTION – I

2. Solve **any three** : **15**

   a) Why SMPS is preferred over linear power supply in case of PLC ?

   b) Write note on classification of PLC.

   c) What are different blocks in PLC ?

   d) State advantages of PLCs over hard wired relay.

3. Solve **any two** : **15**

   a) Develop a ladder diagram to start and stop the motor using 'START', 'STOP' Push Buttons (PB). Represent the solution as per i) physical ladder ii) programmable ladder.

   b) Develop and draw ladder diagram automatic bottle filling plant.

   c) What are the different specifications of PLC ? Explain two in detail.

4. Develop a ladder diagram for an elevator shown in figure. The platform moves the objects UP and DOWN. The platform carries something to UP position when UP button is pushed, and when DOWN button is pushed the platform carries something to DOWN position. **10**

SECTION – II

5. Solve **any three** : **15**

   a) Elaborate the selection of grounded load converter and floating load converter.

   b) Design converter for conversion of 4MA to 20MA into 0V to 5V using floating input.

   c) Explain Data Acquisition System (DAS) using digital logic.

   d) Explain with neat sketch why the current range is 4MA to 20MA. Why it is started from 4MA instead of ZERO ?

Set R

6. Solve **any two** : **15**

   a) What are different components of robotic system ? How these components are interfaced ?

   b) Explain different types of pressure sensors.

   c) Design 2 channel Data Acquisition System with following specification :

      Channel 1 :

      i) Temp. Range - 0 to 500°C

      ii) Sensor - Thermocouple

      Channel 2 :

      i) Temp. Range - 0 to 200°C

      ii) Sensor - LM35

7. Design analog proportional integral controller for following specification : **10**

   i) Process variable range - 100°C to 1000°C

   ii) Set point - 400°C to 600°C

   iii) Use K type thermocouple with sensitivity 7 micro V/°C

   iv) Proportional band 65%

   v) Integral Constant - 2

   vi) Assume suitable data.

SLR-EP – 464

Seat No.	

Set **S**

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:*
i) ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
iii) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
iv) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Select correct alternatives : **20**

1) In PID which parameter is responsible for oscillation
   a) KP b) KD
   c) KI d) PO

2) The basic element of ON/OFF controller is
   a) Amplifier b) Comparator
   c) Oscillator d) Differential amplifier

3) Which sensor is semiconductor sensor ?
   a) RTD b) PT100
   c) LM335 d) Thermocouple

4) Proportional band of a controller is defined as the range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

5) In a proportional temperature controller, if the quantity under the heater increases the offset will
   a) Increase b) Reduce
   c) Remain un effected d) None of the above

6) When derivative action is included in a proportional controller, the proportional band
   a) Increases b) Reduces
   c) Remains unchanged d) None of the above

7) The number of operational amplifiers require for designing of electronic PID controller is
   a) 1 b) 2 c) 3 d) 6

8) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action b) Proportional + integral action
   c) Proportional + differential action d) Proportional + integral + differential action

P.T.O.

9) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced b) Increased
   c) Reduced to zero d) None of the above

10) In a PID controller, the overshoots has increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Increased b) Reduced
   c) Reduced to zero d) None of the above

11) For electric traction which drive is most suitable
   a) Two quadrant b) Four quadrant
   c) Single quadrant d) None of these

12) Actuators are interfaced with which card of PLC
   a) Memory card b) Output card
   c) Input card d) Power supply

13) Which sensor is self generating type ?
   a) Thermocouple b) RTD
   c) PT100 d) Thermostat

14) Execution time of PLC depends on
   a) Memory size b) Ladder size
   c) Power supply used for PLC d) Number of I/O

15) The number of I/O's for micro PLC are
   a) More than 8 b) Less than 4
   c) More than 16 d) More than 32

16) Proportional band of the controller is expressed as
   a) Gain b) Ratio
   c) Percentage d) Range of control variables

17) The term reset control refers to
   a) Proportional b) Integral
   c) Derivative d) None of the above

18) The integral control
   a) Increases the steady state error b) Decreases the steady state error
   c) Increases the noise and stability d) Decreases the damping coefficient

19) The word address in PLC not includes
   a) SMPS b) INPUT
   c) OUTPUT d) Rack number

20) The device which provides maximum isolation is
   a) Pulse transformer b) Normal transformer
   c) Opto isolator d) None of the above

SLR-EP – 464

Seat No.	

B.E. (Electronics Engineering) (Part – II) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions: *i)* ***All*** *questions are* ***compulsory****.*
ii) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*

SECTION – I

2. Solve **any three** : **15**

   a) Why SMPS is preferred over linear power supply in case of PLC ?

   b) Write note on classification of PLC.

   c) What are different blocks in PLC ?

   d) State advantages of PLCs over hard wired relay.

3. Solve **any two** : **15**

   a) Develop a ladder diagram to start and stop the motor using 'START', 'STOP' Push Buttons (PB). Represent the solution as per i) physical ladder ii) programmable ladder.

   b) Develop and draw ladder diagram automatic bottle filling plant.

   c) What are the different specifications of PLC ? Explain two in detail.

4. Develop a ladder diagram for an elevator shown in figure. The platform moves the objects UP and DOWN. The platform carries something to UP position when UP button is pushed, and when DOWN button is pushed the platform carries something to DOWN position. **10**

SECTION – II

5. Solve **any three** : **15**

   a) Elaborate the selection of grounded load converter and floating load converter.

   b) Design converter for conversion of 4MA to 20MA into 0V to 5V using floating input.

   c) Explain Data Acquisition System (DAS) using digital logic.

   d) Explain with neat sketch why the current range is 4MA to 20MA. Why it is started from 4MA instead of ZERO ?

Set S

6. Solve **any two** : **15**

   a) What are different components of robotic system ? How these components are interfaced ?

   b) Explain different types of pressure sensors.

   c) Design 2 channel Data Acquisition System with following specification :

      Channel 1 :

      i) Temp. Range - 0 to 500°C

      ii) Sensor - Thermocouple

      Channel 2 :

      i) Temp. Range - 0 to 200°C

      ii) Sensor - LM35

7. Design analog proportional integral controller for following specification : **10**

   i) Process variable range - 100°C to 1000°C

   ii) Set point - 400°C to 600°C

   iii) Use K type thermocouple with sensitivity 7 micro V/°C

   iv) Proportional band 65%

   v) Integral Constant - 2

   vi) Assume suitable data.

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Seat No.	

Set **P**

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) Figures to the ***right*** *indicate* ***full*** *marks.*
4) Assume suitable ***data*** *if necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) The maximum data capacity for optical fiber cable is
a) 10 mbps b) 100 mbps c) 1000 mbps d) 10000 mbps

2) The services provided by ISDN
a) Bearer service b) Tele-service
c) Secondary service d) All of the mentioned

3) ATM standard defines _____ layers.
a) 2 b) 3 c) 4 d) 5

4) Frame relay has error detection at the
a) physical layer b) data link layer c) network layer d) transport layer

5) ATM is
a) a frame relay implementation b) a cell relay implementation
c) a circuit switch implementation d) a packet switch implementation

6) Which of the following is done in the physical layer of the ATM network ?
a) Cell multiplexing and de-multiplexing
b) Generic flow control
c) Transmission frame generation/recovery
d) Monitoring of the user information field for bit errors and possible corrective actions

7) To enable control of 4096 logical channels in X.25, there are _____ channel groups.
a) 256 b) 16 c) 4096 d) 2556

8) X.25 is a
a) Protocol b) Data service
c) Telephone service d) Technology

9) Logical channels are identified by a number referred by
a) DLCI b) VLCI c) HDLC d) QLLC

P.T.O.

10) In ATM a fixed length of data known as _____ is used for data transmission.
a) Cell b) Frame c) Relay d) Cell relay

11) In cell relay communication performed between
a) two VPs b) two VCs c) VP and VC d) VP and VCI

12) Which is a portion carries the actual information ?
a) Payload b) Payment c) Payroll d) None of these

13) ATM cells coming from a user are guaranteed delivery at the other end with a
a) High probability b) Low delay c) Both a and b d) None of these

14) Basic rate access affords an ISDN user with simultaneous access to two _____ data channels.
a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

15) Which service provide up to thirty independent 64 kbps B channels and a separate 64 kbps D channel to carried the signaling ?
a) Basic rate access b) Primary rate access
c) Both a and b d) None of these

16) PRI can carry up to 30 independent, _____ lines of data or voice channels.
a) 62 kbps b) 63 kbps c) 64 kbps d) 65 kbps

17) Term that is responsible for movement of a signal across a physical line is called
a) Line layer b) Section layer c) Path layer d) Direction layer

18) Term that is responsible for movement of a signal from its optical source to its optical destination is called
a) Line layer b) Section layer c) Path layer d) Direction layer

19) A _____ is the optical link connecting two neighbor devices.
a) path b) line c) section d) none of the above

20) In _____ type of networks, routers themselves are mobile.
a) Wide Area Network b) Mobile Ad hoc Network
c) Mobile Network d) Local Area Network

_____

SLR-EP – 465

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
   1) What are the different switching techniques used for data communication ? Explain each in brief.
   2) Compare the performance of X.25 with frame relay.
   3) What are the service categories defined by ATM forum ? Describe four ATM attribute.
   4) Draw flow chart showing call establishment process using virtual circuit in case of ATM and explain it neatly.
   5) List ATM QoS parameters defined by ATM forum and describe each in brief.

3. Attempt **any two** : **(2×10=20)**
   1) Draw and discuss ATM protocol architecture in detail.
   2) Draw ATM cell format at User Network Interface (UNI) and Network-Network Interface (NNI) and explain it in detail.
   3) What is frame relay and frame switching ? Explain LAPF core control in detail.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
   1) Describe in brief various broadband services.
   2) List various channels available in ISDN along with their capacities. Which are the different access interfaces supported by ISDN ?
   3) Sketch logical and physical hierarchy of SONET system and describe it in brief.
   4) What is MANET ? Explain the characteristics of MANET.
   5) What is the need of ATM switching ? Draw and explain basic ATM switch element.

Set P

5. Attempt **any two** : **(2×10=20)**

1) Draw block diagram showing ISDN functional grouping and reference points and explain its working in detail.

2) What is multi framing in ISDN ? Draw frame structure at reference points S and T for ISDN Basic rate access in multi-framing and describe it neatly.

3) What is rate adaptation related to ISDN ? Discuss various methods used for rate adaptation.

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Seat No.	

Set Q

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) Figures to the **right** indicate **full** marks.*
*4) Assume suitable **data** if necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) PRI can carry up to 30 independent, _____ lines of data or voice channels.
a) 62 kbps b) 63 kbps c) 64 kbps d) 65 kbps

2) Term that is responsible for movement of a signal across a physical line is called
a) Line layer b) Section layer c) Path layer d) Direction layer

3) Term that is responsible for movement of a signal from its optical source to its optical destination is called
a) Line layer b) Section layer c) Path layer d) Direction layer

4) A _____ is the optical link connecting two neighbor devices.
a) path b) line c) section d) none of the above

5) In _____ type of networks, routers themselves are mobile.
a) Wide Area Network b) Mobile Ad hoc Network
c) Mobile Network d) Local Area Network

6) The maximum data capacity for optical fiber cable is
a) 10 mbps b) 100 mbps c) 1000 mbps d) 10000 mbps

7) The services provided by ISDN
a) Bearer service b) Tele-service
c) Secondary service d) All of the mentioned

8) ATM standard defines _____ layers.
a) 2 b) 3 c) 4 d) 5

9) Frame relay has error detection at the
a) physical layer b) data link layer c) network layer d) transport layer

10) ATM is
a) a frame relay implementation b) a cell relay implementation
c) a circuit switch implementation d) a packet switch implementation

P.T.O.

11) Which of the following is done in the physical layer of the ATM network ?
   a) Cell multiplexing and de-multiplexing
   b) Generic flow control
   c) Transmission frame generation/recovery
   d) Monitoring of the user information field for bit errors and possible corrective actions

12) To enable control of 4096 logical channels in X.25, there are _____ channel groups.
   a) 256 b) 16 c) 4096 d) 2556

13) X.25 is a
   a) Protocol b) Data service
   c) Telephone service d) Technology

14) Logical channels are identified by a number referred by
   a) DLCI b) VLCI c) HDLC d) QLLC

15) In ATM a fixed length of data known as _____ is used for data transmission.
   a) Cell b) Frame c) Relay d) Cell relay

16) In cell relay communication performed between
   a) two VPs b) two VCs c) VP and VC d) VP and VCI

17) Which is a portion carries the actual information ?
   a) Payload b) Payment c) Payroll d) None of these

18) ATM cells coming from a user are guaranteed delivery at the other end with a
   a) High probability b) Low delay c) Both a and b d) None of these

19) Basic rate access affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

20) Which service provide up to thirty independent 64 kbps B channels and a separate 64 kbps D channel to carried the signaling ?
   a) Basic rate access b) Primary rate access
   c) Both a and b d) None of these

_____

SLR-EP – 465

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
   1) What are the different switching techniques used for data communication ? Explain each in brief.
   2) Compare the performance of X.25 with frame relay.
   3) What are the service categories defined by ATM forum ? Describe four ATM attribute.
   4) Draw flow chart showing call establishment process using virtual circuit in case of ATM and explain it neatly.
   5) List ATM QoS parameters defined by ATM forum and describe each in brief.

3. Attempt **any two** : **(2×10=20)**
   1) Draw and discuss ATM protocol architecture in detail.
   2) Draw ATM cell format at User Network Interface (UNI) and Network-Network Interface (NNI) and explain it in detail.
   3) What is frame relay and frame switching ? Explain LAPF core control in detail.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
   1) Describe in brief various broadband services.
   2) List various channels available in ISDN along with their capacities. Which are the different access interfaces supported by ISDN ?
   3) Sketch logical and physical hierarchy of SONET system and describe it in brief.
   4) What is MANET ? Explain the characteristics of MANET.
   5) What is the need of ATM switching ? Draw and explain basic ATM switch element.

Set Q

5. Attempt **any two** : **(2×10=20)**

   1) Draw block diagram showing ISDN functional grouping and reference points and explain its working in detail.

   2) What is multi framing in ISDN ? Draw frame structure at reference points S and T for ISDN Basic rate access in multi-framing and describe it neatly.

   3) What is rate adaptation related to ISDN ? Discuss various methods used for rate adaptation.

_____

SLR-EP – 465

Seat No.	

Set R

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
2) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
3) Figures to the ***right*** *indicate* ***full*** *marks.*
4) Assume suitable ***data*** *if necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) In cell relay communication performed between
a) two VPs b) two VCs c) VP and VC d) VP and VCI

2) Which is a portion carries the actual information ?
a) Payload b) Payment c) Payroll d) None of these

3) ATM cells coming from a user are guaranteed delivery at the other end with a
a) High probability b) Low delay c) Both a and b d) None of these

4) Basic rate access affords an ISDN user with simultaneous access to two _____ data channels.
a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

5) Which service provide up to thirty independent 64 kbps B channels and a separate 64 kbps D channel to carried the signaling ?
a) Basic rate access b) Primary rate access
c) Both a and b d) None of these

6) PRI can carry up to 30 independent, _____ lines of data or voice channels.
a) 62 kbps b) 63 kbps c) 64 kbps d) 65 kbps

7) Term that is responsible for movement of a signal across a physical line is called
a) Line layer b) Section layer c) Path layer d) Direction layer

8) Term that is responsible for movement of a signal from its optical source to its optical destination is called
a) Line layer b) Section layer c) Path layer d) Direction layer

9) A _____ is the optical link connecting two neighbor devices.
a) path b) line c) section d) none of the above

10) In _____ type of networks, routers themselves are mobile.
a) Wide Area Network b) Mobile Ad hoc Network
c) Mobile Network d) Local Area Network

P.T.O.

11) The maximum data capacity for optical fiber cable is
a) 10 mbps b) 100 mbps c) 1000 mbps d) 10000 mbps

12) The services provided by ISDN
a) Bearer service b) Tele-service
c) Secondary service d) All of the mentioned

13) ATM standard defines _____ layers.
a) 2 b) 3 c) 4 d) 5

14) Frame relay has error detection at the
a) physical layer b) data link layer c) network layer d) transport layer

15) ATM is
a) a frame relay implementation b) a cell relay implementation
c) a circuit switch implementation d) a packet switch implementation

16) Which of the following is done in the physical layer of the ATM network ?
a) Cell multiplexing and de-multiplexing
b) Generic flow control
c) Transmission frame generation/recovery
d) Monitoring of the user information field for bit errors and possible corrective actions

17) To enable control of 4096 logical channels in X.25, there are _____ channel groups.
a) 256 b) 16 c) 4096 d) 2556

18) X.25 is a
a) Protocol b) Data service
c) Telephone service d) Technology

19) Logical channels are identified by a number referred by
a) DLCI b) VLCI c) HDLC d) QLLC

20) In ATM a fixed length of data known as _____ is used for data transmission.
a) Cell b) Frame c) Relay d) Cell relay

_____

SLR-EP – 465

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
   1) What are the different switching techniques used for data communication ? Explain each in brief.
   2) Compare the performance of X.25 with frame relay.
   3) What are the service categories defined by ATM forum ? Describe four ATM attribute.
   4) Draw flow chart showing call establishment process using virtual circuit in case of ATM and explain it neatly.
   5) List ATM QoS parameters defined by ATM forum and describe each in brief.

3. Attempt **any two** : **(2×10=20)**
   1) Draw and discuss ATM protocol architecture in detail.
   2) Draw ATM cell format at User Network Interface (UNI) and Network-Network Interface (NNI) and explain it in detail.
   3) What is frame relay and frame switching ? Explain LAPF core control in detail.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
   1) Describe in brief various broadband services.
   2) List various channels available in ISDN along with their capacities. Which are the different access interfaces supported by ISDN ?
   3) Sketch logical and physical hierarchy of SONET system and describe it in brief.
   4) What is MANET ? Explain the characteristics of MANET.
   5) What is the need of ATM switching ? Draw and explain basic ATM switch element.

Set R

5. Attempt **any two** : **(2×10=20)**

   1) Draw block diagram showing ISDN functional grouping and reference points and explain its working in detail.

   2) What is multi framing in ISDN ? Draw frame structure at reference points S and T for ISDN Basic rate access in multi-framing and describe it neatly.

   3) What is rate adaptation related to ISDN ? Discuss various methods used for rate adaptation.

_____

SLR-EP – 465

Seat No.	

Set S

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.*
*2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***
*3) Figures to the **right** indicate **full** marks.*
*4) Assume suitable **data** if necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **(20×1=20)**

1) Which of the following is done in the physical layer of the ATM network ?
   a) Cell multiplexing and de-multiplexing
   b) Generic flow control
   c) Transmission frame generation/recovery
   d) Monitoring of the user information field for bit errors and possible corrective actions

2) To enable control of 4096 logical channels in X.25, there are _____ channel groups.
   a) 256 b) 16 c) 4096 d) 2556

3) X.25 is a
   a) Protocol b) Data service
   c) Telephone service d) Technology

4) Logical channels are identified by a number referred by
   a) DLCI b) VLCI c) HDLC d) QLLC

5) In ATM a fixed length of data known as _____ is used for data transmission.
   a) Cell b) Frame c) Relay d) Cell relay

6) In cell relay communication performed between
   a) two VPs b) two VCs c) VP and VC d) VP and VCI

7) Which is a portion carries the actual information ?
   a) Payload b) Payment c) Payroll d) None of these

8) ATM cells coming from a user are guaranteed delivery at the other end with a
   a) High probability b) Low delay c) Both a and b d) None of these

9) Basic rate access affords an ISDN user with simultaneous access to two _____ data channels.
   a) 32 kbps b) 64 kbps c) 128 kbps d) 256 kbps

P.T.O.

10) Which service provide up to thirty independent 64 kbps B channels and a separate 64 kbps D channel to carried the signaling ?
a) Basic rate access b) Primary rate access
c) Both a and b d) None of these

11) PRI can carry up to 30 independent, _____ lines of data or voice channels.
a) 62 kbps b) 63 kbps c) 64 kbps d) 65 kbps

12) Term that is responsible for movement of a signal across a physical line is called
a) Line layer b) Section layer c) Path layer d) Direction layer

13) Term that is responsible for movement of a signal from its optical source to its optical destination is called
a) Line layer b) Section layer c) Path layer d) Direction layer

14) A _____ is the optical link connecting two neighbor devices.
a) path b) line c) section d) none of the above

15) In _____ type of networks, routers themselves are mobile.
a) Wide Area Network b) Mobile Ad hoc Network
c) Mobile Network d) Local Area Network

16) The maximum data capacity for optical fiber cable is
a) 10 mbps b) 100 mbps c) 1000 mbps d) 10000 mbps

17) The services provided by ISDN
a) Bearer service b) Tele-service
c) Secondary service d) All of the mentioned

18) ATM standard defines _____ layers.
a) 2 b) 3 c) 4 d) 5

19) Frame relay has error detection at the
a) physical layer b) data link layer c) network layer d) transport layer

20) ATM is
a) a frame relay implementation b) a cell relay implementation
c) a circuit switch implementation d) a packet switch implementation

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SLR-EP – 465

Seat No.	

B.E. (Electronics Engineering) (Part – II) (New) Examination, 2016
BROADBAND COMMUNICATION (Elective – II)

Day and Date : Thursday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Figures to the* ***right*** *indicate* ***full*** *marks.*
2) Assume suitable data if ***necessary****.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
   1) What are the different switching techniques used for data communication ? Explain each in brief.
   2) Compare the performance of X.25 with frame relay.
   3) What are the service categories defined by ATM forum ? Describe four ATM attribute.
   4) Draw flow chart showing call establishment process using virtual circuit in case of ATM and explain it neatly.
   5) List ATM QoS parameters defined by ATM forum and describe each in brief.

3. Attempt **any two** : **(2×10=20)**
   1) Draw and discuss ATM protocol architecture in detail.
   2) Draw ATM cell format at User Network Interface (UNI) and Network-Network Interface (NNI) and explain it in detail.
   3) What is frame relay and frame switching ? Explain LAPF core control in detail.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
   1) Describe in brief various broadband services.
   2) List various channels available in ISDN along with their capacities. Which are the different access interfaces supported by ISDN ?
   3) Sketch logical and physical hierarchy of SONET system and describe it in brief.
   4) What is MANET ? Explain the characteristics of MANET.
   5) What is the need of ATM switching ? Draw and explain basic ATM switch element.

Set S

5. Attempt **any two** : **(2×10=20)**

   1) Draw block diagram showing ISDN functional grouping and reference points and explain its working in detail.

   2) What is multi framing in ISDN ? Draw frame structure at reference points S and T for ISDN Basic rate access in multi-framing and describe it neatly.

   3) What is rate adaptation related to ISDN ? Discuss various methods used for rate adaptation.

_____

SLR-EP – 467

Seat No.	

Set P

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) Proportional band of the controller is defined as a range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

2) Proportional band of the controller is expressed as
   a) Gain b) Ratio c) Percentage d) Range of control variables

3) The term reset control refers to
   a) Proportional b) Integral c) Derivative d) None of above

4) The integral control
   a) Increases the steady state error b) Decreases the steady state error
   c) Increases the noise and stability d) Decreases the damping coefficient

5) In a proportional temperature controller, if the quality under the heater increases the offset will
   a) Increase b) Reduce c) Remain affected d) None of above

6) When derivative action is included in a proportional controller, the proportional band
   a) Increases b) Reduce
   c) Remains unchanged d) None of the above

7) The number of operational amplifiers require for designing for electronic PID controller is
   a) 1 b) 2 c) 3 d) 6

8) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action b) Proportional + Integral action
   c) Proportional + Differential action d) Proportional + Integral + Derivative action

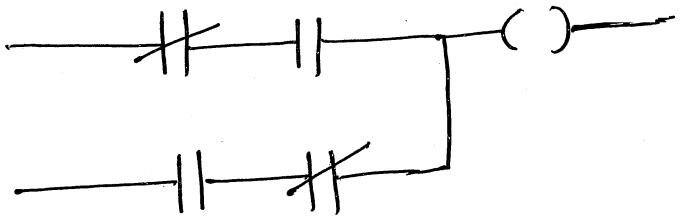
9) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced b) Increased c) Reduced to zero d) None of the above

10) In a PID controller, the overshoots have increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Reduced b) Increased c) Reduced to zero d) None of the above

11) Which sensor is the semiconductor sensor ?
   a) RTD b) PT100 c) LM35 d) None of these

12) Which sensor is self generating type sensor ?
   a) PT 100 b) Thermocouple c) RTD d) Thermostat

13) Ladder diagram shown below is



   a) NAND b) NOR c) XOR d) XNOR

14) Scan time in PLC depends on
   a) SMPS b) Linear power supply
   c) Number of rows in ladder d) None of the above

15) PLC is universal controller
   a) YES b) NO c) Both d) None of the above

16) Which device provides maximum Isolation ?
   a) Pulse transformer b) Normal transformer
   c) Opto Isolator d) None of the above

17) Word address in PLC not includes
   a) SMPS b) Input c) Output d) Rack number

18) PT100 has sensitivity of
   a) 51 μ V/°C b) 40 μ V/°C c) 0.0039'Ω/°C d) None of these

19) Micro PLC stands for
   a) I/O upto 4 b) I/O upto 8
   c) I/O between 4 to 8 d) I/O between 8 to 16

20) Dead band in controller
   a) Increases the accuracy b) Decreases the accuracy
   c) Decreases the linearity d) None of these

SLR-EP – 467

Seat No.	

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thurday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) ***Assume*** *suitable data* ***if required****.*

SECTION – 1

2. Solve **any four** : **20**

a) What are different components of PLC ?

b) What is programming Language used in PLC ? Explain with examples.

c) Write a note on PLC architecture.

d) What is SCAN in PLC ?

e) Advantages of PLCs than Hard Wired Relay.

3. Solve **any two** : **20**

a) Fluid from storage tank is pumped in to a pressure tank for use in a chemical process. The following automatic controls should be incorporated.

Narrative statements :

1) Fill the storage tank for 10 minutes.
2) LLS1 shows low level in storage tank.
3) When LLS2 shows low level in pressure tank, the pump should become ON automatically ?
4) When LLS3 shows high level in pressure tank, the pressure tank, the pump should become OFF automatically.
5) If pressure in the pressure tank is low the solenoid valve should be operated by pressure limit switch PL1 and air with high pressure is inlet in the pressure tank and the system should become OFF.
6) Provide over current trip with thermal overload to the pump.
7) The manual control could be used in automatic system fails.

b) Develop a ladder diagram for an overhead crane. Crane has two motors one is for moving the object up and down another is for moving crane in forward and backward direction.

Narrative statements :

1) DOWN PB is pressed hook comes down and stops when STOP PB is pushed.
2) UP PB is pressed hook goes upwards and stops when STOP PB is pushed.
3) FORWARD PB is pressed crane goes in forward direction and stops when STOP PB is pushed.
4) BACKWARD PB is pressed crane goes in backward direction and stops when STOP PB is pushed.

c) Develop a ladder diagram for preparing ice in a factory

Narrative Statements :

- Fill the tank with water.
- Start the compressor.
- Ensure that the ice has been ready or not.
- Open the door.

SECTION – 2

4. Solve **any four** : **20**

a) Write a short note on Pressure sensors.

b) Write a note on pneumatic actuators.

c) Design converter for conversion of 0V to 5V into 4mA to 20mA using Floating load.

d) Design a converter for conversion 4mA to 20mA into 0V to +2V using floating input.

e) Write a note on flow sensors.

5. Solve **any two** : **20**

a) Design analog proportional integral controller for following specification :

1) Process variable range – 100° to 900° C
2) Set point – 400° to 500° C

3) Use K type thermocouple with sensitivity 7 micro V/°C
4) Proportional band 60%
5) Integral Constant – 3
6) Assume suitable data.

b) Design analog proportional derivative controller for following specification :
1) Process variable range 0 to 800° C
2) Set point 200 to 300° C
3) Use R type thermocouple with sensitivity 40 micro V/°C
4) Proportional band 60%
5) Derivative constant 2
6) Assume suitable data.

c) Explain Data Acquisition System (DAS) in detail.

Set P

SLR-EP – 467

Seat No.	

Set Q

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
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4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) Which device provides maximum Isolation ?
   a) Pulse transformer b) Normal transformer
   c) Opto Isolator d) None of the above

2) Word address in PLC not includes
   a) SMPS b) Input c) Output d) Rack number

3) PT100 has sensitivity of
   a) 51 μ V/°C b) 40 μ V/°C c) 0.0039'Ω/°C d) None of these

4) Micro PLC stands for
   a) I/O upto 4 b) I/O upto 8
   c) I/O between 4 to 8 d) I/O between 8 to 16

5) Dead band in controller
   a) Increases the accuracy b) Decreases the accuracy
   c) Decreases the linearity d) None of these

6) Proportional band of the controller is defined as a range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

7) Proportional band of the controller is expressed as
   a) Gain b) Ratio c) Percentage d) Range of control variables

P.T.O.

8) The term reset control refers to
a) Proportional b) Integral c) Derivative d) None of above

9) The integral control
a) Increases the steady state error b) Decreases the steady state error
c) Increases the noise and stability d) Decreases the damping coefficient

10) In a proportional temperature controller, if the quality under the heater increases the offset will
a) Increase b) Reduce c) Remain affected d) None of above

11) When derivative action is included in a proportional controller, the proportional band
a) Increases b) Reduce
c) Remains unchanged d) None of the above

12) The number of operational amplifiers require for designing for electronic PID controller is
a) 1 b) 2 c) 3 d) 6

13) Which of the following system provides excellent transient and steady state response ?
a) Proportional action b) Proportional + Integral action
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14) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
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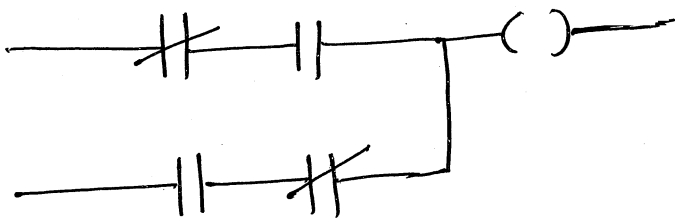
16) Which sensor is the semiconductor sensor ?
a) RTD b) PT100 c) LM35 d) None of these

17) Which sensor is self generating type sensor ?
a) PT 100 b) Thermocouple c) RTD d) Thermostat

18) Ladder diagram shown below is



a) NAND b) NOR c) XOR d) XNOR

19) Scan time in PLC depends on
a) SMPS b) Linear power supply
c) Number of rows in ladder d) None of the above

20) PLC is universal controller
a) YES b) NO c) Both d) None of the above

_____

SLR-EP – 467

Seat No.	

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thurday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) ***Assume*** *suitable data* ***if required****.*

SECTION – 1

2. Solve **any four** : **20**

a) What are different components of PLC ?

b) What is programming Language used in PLC ? Explain with examples.

c) Write a note on PLC architecture.

d) What is SCAN in PLC ?

e) Advantages of PLCs than Hard Wired Relay.

3. Solve **any two** : **20**

a) Fluid from storage tank is pumped in to a pressure tank for use in a chemical process. The following automatic controls should be incorporated.

Narrative statements :

1) Fill the storage tank for 10 minutes.
2) LLS1 shows low level in storage tank.
3) When LLS2 shows low level in pressure tank, the pump should become ON automatically ?
4) When LLS3 shows high level in pressure tank, the pressure tank, the pump should become OFF automatically.
5) If pressure in the pressure tank is low the solenoid valve should be operated by pressure limit switch PL1 and air with high pressure is inlet in the pressure tank and the system should become OFF.
6) Provide over current trip with thermal overload to the pump.
7) The manual control could be used in automatic system fails.

b) Develop a ladder diagram for an overhead crane. Crane has two motors one is for moving the object up and down another is for moving crane in forward and backward direction.

Narrative statements :

1) DOWN PB is pressed hook comes down and stops when STOP PB is pushed.
2) UP PB is pressed hook goes upwards and stops when STOP PB is pushed.
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4) BACKWARD PB is pressed crane goes in backward direction and stops when STOP PB is pushed.

c) Develop a ladder diagram for preparing ice in a factory

Narrative Statements :

- Fill the tank with water.
- Start the compressor.
- Ensure that the ice has been ready or not.
- Open the door.

SECTION – 2

4. Solve **any four** : **20**

a) Write a short note on Pressure sensors.

b) Write a note on pneumatic actuators.

c) Design converter for conversion of 0V to 5V into 4mA to 20mA using Floating load.

d) Design a converter for conversion 4mA to 20mA into 0V to +2V using floating input.

e) Write a note on flow sensors.

5. Solve **any two** : **20**

a) Design analog proportional integral controller for following specification :

1) Process variable range – 100° to 900° C
2) Set point – 400° to 500° C

3) Use K type thermocouple with sensitivity 7 micro V/°C
4) Proportional band 60%
5) Integral Constant – 3
6) Assume suitable data.

b) Design analog proportional derivative controller for following specification :
1) Process variable range 0 to 800° C
2) Set point 200 to 300° C
3) Use R type thermocouple with sensitivity 40 micro V/°C
4) Proportional band 60%
5) Derivative constant 2
6) Assume suitable data.

c) Explain Data Acquisition System (DAS) in detail.

Set Q

SLR-EP – 467

Seat No.	

Set **R**

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *:* 1) ***All*** *the questions are* ***compulsory****.*
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3) *Q. No.* ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

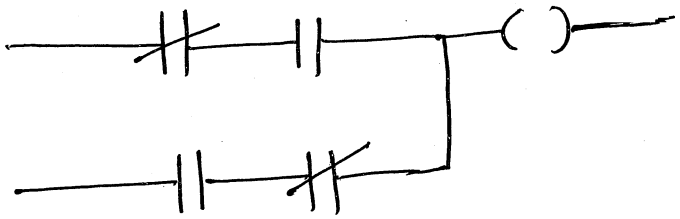
Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) Which sensor is the semiconductor sensor ?
a) RTD b) PT100 c) LM35 d) None of these

2) Which sensor is self generating type sensor ?
a) PT 100 b) Thermocouple c) RTD d) Thermostat

3) Ladder diagram shown below is



a) NAND b) NOR c) XOR d) XNOR

4) Scan time in PLC depends on
a) SMPS b) Linear power supply
c) Number of rows in ladder d) None of the above

5) PLC is universal controller
a) YES b) NO c) Both d) None of the above

6) Which device provides maximum Isolation ?
a) Pulse transformer b) Normal transformer
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P.T.O.

7) Word address in PLC not includes
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15) In a proportional temperature controller, if the quality under the heater increases the offset will
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_____

SLR-EP – 467

Seat No.	

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thurday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) ***Assume*** *suitable data* ***if required****.*

SECTION – 1

2. Solve **any four** : **20**

a) What are different components of PLC ?

b) What is programming Language used in PLC ? Explain with examples.

c) Write a note on PLC architecture.

d) What is SCAN in PLC ?

e) Advantages of PLCs than Hard Wired Relay.

3. Solve **any two** : **20**

a) Fluid from storage tank is pumped in to a pressure tank for use in a chemical process. The following automatic controls should be incorporated.

Narrative statements :

1) Fill the storage tank for 10 minutes.
2) LLS1 shows low level in storage tank.
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6) Provide over current trip with thermal overload to the pump.
7) The manual control could be used in automatic system fails.

b) Develop a ladder diagram for an overhead crane. Crane has two motors one is for moving the object up and down another is for moving crane in forward and backward direction.

Narrative statements :

1) DOWN PB is pressed hook comes down and stops when STOP PB is pushed.
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4) BACKWARD PB is pressed crane goes in backward direction and stops when STOP PB is pushed.

c) Develop a ladder diagram for preparing ice in a factory

Narrative Statements :

- Fill the tank with water.
- Start the compressor.
- Ensure that the ice has been ready or not.
- Open the door.

SECTION – 2

4. Solve **any four** : **20**

a) Write a short note on Pressure sensors.

b) Write a note on pneumatic actuators.

c) Design converter for conversion of 0V to 5V into 4mA to 20mA using Floating load.

d) Design a converter for conversion 4mA to 20mA into 0V to +2V using floating input.

e) Write a note on flow sensors.

5. Solve **any two** : **20**

a) Design analog proportional integral controller for following specification :

1) Process variable range – 100° to 900° C
2) Set point – 400° to 500° C

3) Use K type thermocouple with sensitivity 7 micro V/°C
4) Proportional band 60%
5) Integral Constant – 3
6) Assume suitable data.

b) Design analog proportional derivative controller for following specification :
1) Process variable range 0 to 800° C
2) Set point 200 to 300° C
3) Use R type thermocouple with sensitivity 40 micro V/°C
4) Proportional band 60%
5) Derivative constant 2
6) Assume suitable data.

c) Explain Data Acquisition System (DAS) in detail.

SLR-EP – 467

Seat No.	

Set S

B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thursday, 24-11-2016 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) Q. No. ***1*** *is* ***compulsory****. It should be solved in* ***first 30 minutes*** *in Answer Book Page No.* ***3****.* ***Each*** *question carries* ***one*** *mark.*
4) ***Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.***

MCQ/Objective Type Questions

Duration : 30 Minutes Marks : 20

1. Choose the correct answer : **20**

1) When derivative action is included in a proportional controller, the proportional band
   a) Increases b) Reduce
   c) Remains unchanged d) None of the above

2) The number of operational amplifiers require for designing for electronic PID controller is
   a) 1 b) 2 c) 3 d) 6

3) Which of the following system provides excellent transient and steady state response ?
   a) Proportional action b) Proportional + Integral action
   c) Proportional + Differential action d) Proportional + Integral + Derivative action

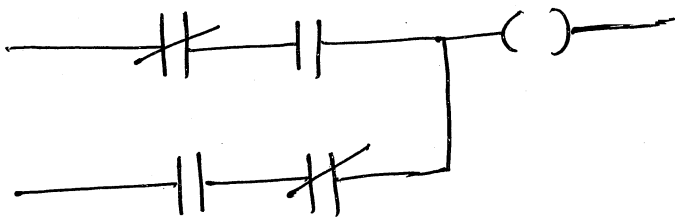
4) In a PID controller, the offset has increased. The integral time constant has to be _____ so as to reduce offset.
   a) Reduced b) Increased c) Reduced to zero d) None of the above

5) In a PID controller, the overshoots have increased. The derivative time constant has to be _____ so as to reduce the overshoots.
   a) Reduced b) Increased c) Reduced to zero d) None of the above

6) Which sensor is the semiconductor sensor ?
   a) RTD b) PT100 c) LM35 d) None of these

7) Which sensor is self generating type sensor ?
   a) PT 100 b) Thermocouple c) RTD d) Thermostat

8) Ladder diagram shown below is



a) NAND b) NOR c) XOR d) XNOR

9) Scan time in PLC depends on
   a) SMPS b) Linear power supply
   c) Number of rows in ladder d) None of the above

10) PLC is universal controller
   a) YES b) NO c) Both d) None of the above

11) Which device provides maximum Isolation ?
   a) Pulse transformer b) Normal transformer
   c) Opto Isolator d) None of the above

12) Word address in PLC not includes
   a) SMPS b) Input c) Output d) Rack number

13) PT100 has sensitivity of
   a) 51 μ V/°C b) 40 μ V/°C c) 0.0039'Ω/°C d) None of these

14) Micro PLC stands for
   a) I/O upto 4 b) I/O upto 8
   c) I/O between 4 to 8 d) I/O between 8 to 16

15) Dead band in controller
   a) Increases the accuracy b) Decreases the accuracy
   c) Decreases the linearity d) None of these

16) Proportional band of the controller is defined as a range of
   a) Measured variable to the set variable
   b) Air output as the measured variable varies from maximum to minimum
   c) Measured variables through which the air output varies from maximum to minimum
   d) None of the above

17) Proportional band of the controller is expressed as
   a) Gain b) Ratio c) Percentage d) Range of control variables

18) The term reset control refers to
   a) Proportional b) Integral c) Derivative d) None of above

19) The integral control
   a) Increases the steady state error b) Decreases the steady state error
   c) Increases the noise and stability d) Decreases the damping coefficient

20) In a proportional temperature controller, if the quality under the heater increases the offset will
   a) Increase b) Reduce c) Remain affected d) None of above

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B.E. (Electronics Engineering) (Part – II) Elective – II (New) Examination, 2016
PLC AND INDUSTRIAL CONTROLLERS

Day and Date : Thurday, 24-11-2016 Marks : 80
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) Figures of ***right*** *hand side indicate* ***maximum*** *marks.*
3) ***Assume*** *suitable data* ***if required****.*

SECTION – 1

2. Solve **any four** : **20**

a) What are different components of PLC ?

b) What is programming Language used in PLC ? Explain with examples.

c) Write a note on PLC architecture.

d) What is SCAN in PLC ?

e) Advantages of PLCs than Hard Wired Relay.

3. Solve **any two** : **20**

a) Fluid from storage tank is pumped in to a pressure tank for use in a chemical process. The following automatic controls should be incorporated.

Narrative statements :

1) Fill the storage tank for 10 minutes.
2) LLS1 shows low level in storage tank.
3) When LLS2 shows low level in pressure tank, the pump should become ON automatically ?
4) When LLS3 shows high level in pressure tank, the pressure tank, the pump should become OFF automatically.
5) If pressure in the pressure tank is low the solenoid valve should be operated by pressure limit switch PL1 and air with high pressure is inlet in the pressure tank and the system should become OFF.
6) Provide over current trip with thermal overload to the pump.
7) The manual control could be used in automatic system fails.

b) Develop a ladder diagram for an overhead crane. Crane has two motors one is for moving the object up and down another is for moving crane in forward and backward direction.

Narrative statements :

1) DOWN PB is pressed hook comes down and stops when STOP PB is pushed.
2) UP PB is pressed hook goes upwards and stops when STOP PB is pushed.
3) FORWARD PB is pressed crane goes in forward direction and stops when STOP PB is pushed.
4) BACKWARD PB is pressed crane goes in backward direction and stops when STOP PB is pushed.

c) Develop a ladder diagram for preparing ice in a factory

Narrative Statements :

- Fill the tank with water.
- Start the compressor.
- Ensure that the ice has been ready or not.
- Open the door.

SECTION – 2

4. Solve **any four** : **20**

a) Write a short note on Pressure sensors.

b) Write a note on pneumatic actuators.

c) Design converter for conversion of 0V to 5V into 4mA to 20mA using Floating load.

d) Design a converter for conversion 4mA to 20mA into 0V to +2V using floating input.

e) Write a note on flow sensors.

5. Solve **any two** : **20**

a) Design analog proportional integral controller for following specification :

1) Process variable range – 100° to 900° C
2) Set point – 400° to 500° C

3) Use K type thermocouple with sensitivity 7 micro V/°C
4) Proportional band 60%
5) Integral Constant – 3
6) Assume suitable data.

b) Design analog proportional derivative controller for following specification :
1) Process variable range 0 to 800° C
2) Set point 200 to 300° C
3) Use R type thermocouple with sensitivity 40 micro V/°C
4) Proportional band 60%
5) Derivative constant 2
6) Assume suitable data.

c) Explain Data Acquisition System (DAS) in detail.

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