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**B.Sc. (E.C.S.) – I (Semester – I) Examination, 2014**  
**COMPUTER SCIENCE**  
**Computer Fundamentals – I (Paper – I)**

Day and Date : Wednesday 23-4-2014

Max. Marks : 50

Time : 3.00 p.m. to 5.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the correct alternative : 10

- 1) \_\_\_\_\_ was the beginning of first generation computers.  
a) Abacus            b) ENIAC            c) ENIVAC            d) EDVAC
- 2) Smart terminal differ from dumb terminal as it has \_\_\_\_\_  
a) Primary memory            b) Cache memory  
c) Microprocessor            d) I/P device
- 3) Name the display feature that highlights areas of screen which require operator attention.  
a) Pixel            b) Cursor            c) Reverse video    d) dpi
- 4) The technique of placing software program in ROM is called \_\_\_\_\_  
a) PROM            b) EPROM            c) Firmware            d) Microprocessor
- 5) \_\_\_\_\_ is called low-level languages.  
a) Machine language            b) Assembly language  
c) Both            d) None
- 6) The difference between memory and storage is that memory is \_\_\_\_\_ and storage is \_\_\_\_\_  
a) Temporary, permanent            b) Slow, fast  
c) Permanent, temporary            d) All
- 7) \_\_\_\_\_ printer forms characters with magnetically charged ink sprayed dots.  
a) Laser            b) Inkjet            c) Drum            d) Dotmatrix



- 8)  $(1712.5)_{10} = (\text{_____})_{16}$ .
- a) 0B6.5                  b) 6B0.8                  c) 0B6.8                  d) 6B0.5
- 9) \_\_\_\_\_ command is used to see subdirectory of drive.
- a) List                  b) DIR                  c) Tree                  d) Subtree
- 10) Processor speed is measured in \_\_\_\_\_
- a) MHz                  b) MB                  c) GB                  d) MBPs

2. Answer **any five** of the following : 10
- 1) Define Analog computer.
  - 2) Explain ASCII code.
  - 3) List the functions of control unit.
  - 4) State the use of OMR.
  - 5) What are the limitations of computer ?
  - 6) Need of command.com file in Dos.
3. A) Answer **any two** of the following : 6
- 1) List the types of keys on keyboard.
  - 2) Define bit, byte, word.
  - 3) Define booting process. Write the steps carried out.
- B) Which is better Inkjet or Laser printer ? 4
4. Answer **any two** of the following : 10
- 1) Write a note on Binary Arithmetic.
  - 2) Write a note on magnetic disk.
  - 3) Write the difference between serial and parallel ports.
5. Answer **any two** of the following : 10
- 1) Define O.S. and list the different types of O.S.
  - 2) Give structural features of each generation of computer.
  - 3) Write the difference between primary memory and secondary memory.
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**B.Sc. (Part – I) (E.C.S.) (Semester – II) Examination, 2014**  
**MATHEMATICS (Paper – V)**  
**Algebra**

Day and Date : Monday, 28-4-2014

Max. Marks : 50

Time : 11.00 a.m. to 1.00 p.m.

- Instructions :** 1) Use of scientific calculators are **allowed**.  
2) **All** questions are **compulsory**.  
3) Figures to the **right** indicate **full** marks.

1. Choose the correct alternative for each of the following : 10i) If  $f(x) = x^3 - x^2 + 2x$  when  $f(-\frac{1}{2}) =$ 

a)  $\frac{-8}{10}$

b) 0

c)  $\frac{-11}{8}$

d)  $-\frac{1}{8}$

ii) Rule of addition in logic is

a)  $p \vdash p \wedge q$

b)  $q \vdash p \vee q$

c)  $p \wedge q \vdash p$

d)  $p \wedge q \vdash q$

iii) \_\_\_\_\_ is a proposition.

a)  $a + b = c$

b)  $a + b < c$

c)  $a < b$

d)  $2 + 3 = 6$

iv) The real part of  $\frac{1+i}{1-i} =$ 

a)  $i$

b) 2

c) 0

d)  $2i$

v) A function  $f : A \rightarrow B$  then the set A is called

a) Domain

b) Co-domain

c) Range

d) Image

vi) In \_\_\_\_\_ relation each element of set A is related to every element of set B.

a) Symmetric

b) Void

c) Transitive

d) Universal

vii) If  $z = (-1 - i)(2 + i)$  then modulus of z is

a)  $\sqrt{10}$

b)  $\sqrt{3}$

c)  $\sqrt{2}$

d)  $\sqrt{-1}$





5. Attempt **any two** from the following :

10

- 1) Let  $\sim$  be an equivalence relation on a set A. Let  $[a]$  be an equivalence class of an element a then prove that  $a \in [b]$  iff  $[a] = [b]$ .
- 2) Prove by mathematical induction,  $8^{n+1} - 7n + 41$  is divisible by 49  $\forall n \geq 1$ .
- 3) Let  $*$  be the binary operation defined on  $A = \{a, b, c, d, e\}$  given by the following multiplication table.

*	a	b	c	d	e
a	d	e	a	b	c
b	e	a	b	c	d
c	a	b	c	d	e
d	b	c	d	e	a
e	c	d	e	a	b

Then find :

- i)  $(a * b) * (d * e)$
  - ii) Find the identity element w.r.t.  $*$
  - iii) Find the inverse of each element of A.
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**B.Sc. (ECS) – I (Semester – II) Examination, 2014**  
**MATHEMATICS (Paper – VI)**  
**Operations Research**

Day and Date: Tuesday, 29-4-2014

Max. Marks : 50

Time: 11.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Use of scientific calculator is allowed.**

1. Choose the correct alternatives : 10
- 1) If primal of a LPP contains 3-constraints and 4-variables then its dual LPP will contains \_\_\_\_\_ variables and \_\_\_\_\_ constraints respectively.  
a) 3, 4                      b) 4, 3                      c) 3, 3                      d) 4, 4
  - 2) The optimality test of the T.P. is all  
a)  $C_{ij} \geq 0$                       b)  $d_{ij} \geq 0$                       c)  $d_{ij} \leq 0$                       d)  $(z_j - c_j) \geq 0$
  - 3) The opportunity cost for occupied cells is  
a) infinity                      b) positive                      c) zero                      d) negative
  - 4) The LPP is said to be in \_\_\_\_\_ form if the objective function is of maximize type and all the constraints are of  $\leq$  type.  
a) standard                      b) canonical                      c) dual                      d) general
  - 5) The coefficient of surplus variable in the objective function of maximization type is  
a) +M                      b) -M                      c) zero                      d) one
  - 6) The total number of allocations of  $m \times n$  T.P. is equal to  $m + n - 1$  then the problem has \_\_\_\_\_ solutions.  
a) degenerate                      b) non-degenerate  
c) optimal                      d) alternate
  - 7) In balanced A.P. number of jobs is \_\_\_\_\_ to number of facilities.  
a) not equal                      b) less                      c) greater                      d) equal



- 8) If feasible region does not exist in graphical solution of LPP, then LPP has \_\_\_\_\_ solutions.
- a) unique                      b) many                      c) unbounded                      d) no
- 9) The method of solving A.P. is
- a) Hitchcock                      b) Eulerian                      c) Hungarian                      d) Doppler
- 10) The variable which is subtracted from the LHS of  $\geq$  type constraint in order to make it an equation is called as \_\_\_\_\_ variable.
- a) slack                      b) decision                      c) surplus                      d) artificial

2. Attempt **any five** questions :

10

- 1) Define unbalanced T.P.
- 2) Define decision variable.
- 3) Define slack variable.
- 4) Write the formula to find opportunity cost  $d_{ij}$  of un-occupied cell. What is the opportunity cost of occupied cell ?
- 5) How many solutions will the LPP possess if there exists an artificial variable in the optimum solution ?
- 6) Define balanced A.P.

3. A) Attempt **any two** of the following :

6

- 1) Write tabular form of a T.P. having m-factories and n-warehouses.
- 2) Explain canonical form of LPP.
- 3) Write a note on degeneracy in T.P.

B) Write dual of the following LPP.

4

Maximize  $Z = 5x_1 + 2x_2 - 3x_3$  subject to

$$2x_1 + x_3 \leq 4;$$

$$4x_1 + 2x_2 - 2x_3 \leq 5;$$

$$4x_1 + 3x_2 \leq 6;$$

$$2x_1 + x_2 + 3x_3 \leq 7;$$

$$x_1, x_2, x_3 \geq 0.$$





4. Attempt **any two** of the following :

10

1) Solve the following LPP by using simplex method.

Maximize  $Z = 5x_1 + 3x_2$  subject to,

$$3x_1 + 5x_2 \leq 15;$$

$$6x_1 + 2x_2 \leq 24;$$

$$x_1, x_2 \geq 0.$$

2) Find IBFS of the following T.P by using Vogel's Approximation Method.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Capacity
O <sub>1</sub>	5	2	4	3	22
O <sub>2</sub>	4	8	1	6	15
O <sub>3</sub>	4	6	7	5	18
Demand	7	12	17	19	

3) Solve the following A.P. to minimize the total assignment cost.

	I	II	III	IV
P	0	7	14	21
Q	12	17	22	27
R	12	17	22	27
S	18	22	26	30

5. Attempt **any two** of the following :

10

1) Solve the following A.P. to maximize the total profit.

	P	Q	R	S	T
I	32	38	40	28	40
II	40	24	28	21	36
III	41	27	33	30	37
IV	22	38	41	36	36
V	29	33	40	35	39



2) Solve the following LPP by using graphical method.

Minimize  $Z = 4x + 2y$  subject to,

$$4x + y \geq 20;$$

$$2x + y \geq 14;$$

$$x + 6y \geq 18;$$

$$x, y \geq 10.$$

3) By using MODI method find optimum solution of the following T.P.

	$W_1$	$W_2$	$W_3$	$W_4$	Capacity ( $a_i$ )
$F_1$	19 (5)	30	50	10 (2)	7
$F_2$	70	30	40 (7)	60 (2)	9
$F_3$	40	8 (8)	70	20 (10)	18
<b>Demand (<math>b_j</math>)</b>	5	8	7	14	34

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**B.Sc. (Entire Computer Science) (Part – I) (Semester – II) Examination, 2014**  
**Paper VII : DESCRIPTIVE STATISTICS – II**

Day and Date : Wednesday, 30-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Total Marks : 50

- Instructions :** i) **All questions are compulsory.**  
ii) **Use of simple or scientific calculator is allowed.**  
iii) **Figures to the right indicate full marks.**

1. Select most correct alternative : **10**
- i) If the correlation coefficient between X and Y is 0.8, then the correlation coefficient between  $2X$  and  $-3Y + 2$  is  
a) 0.8                                      b)  $-0.24$                                       c) 0.16                                      d)  $-0.8$
- ii) If correlation coefficient is 0.5 and one regression coefficient is 0.25 then the other regression coefficient must be  
a) 0.25                                      b) 0.5                                      c) 1                                      d) 1.25
- iii) The range multiple correlation coefficient R is  
a) 0 to 1                                      b) 0 to  $\infty$   
c)  $-1$  to  $+1$                                       d)  $-\infty$  to  $\infty$
- iv) In a multivariate study, the correlation between any two variables eliminating the effect of all other variables is called  
a) simple correlation                                      b) multiple correlation  
c) partial correlation                                      d) partial regression
- v) The general decline in sales of cotton clothes is attached to the component of the time series  
a) Secular trend                                      b) Seasonal variation  
c) Cyclical variation                                      d) All of these



- vi) Index number is also known as economic
- a) parameter  
b) barometer  
c) speedometer  
d) thermometer
- vii) Laspeyre's price index formula uses \_\_\_\_\_ as the weights.
- a) current year's quantities  
b) base year's prices  
c) current year's prices  
d) base year's quantities
- viii) If the line of regression of Y on X and X on Y are  $X + Y = 15$  and  $X + 2Y = 20$  respectively, then A. M. of X is \_\_\_\_\_
- a) 10  
b) 5  
c) 7.5  
d) none of these
- ix) Which of the following relation is correct ?
- a)  $r_{12.34} = r_{13.24}$   
b)  $r_{12.3} = r_{21.3}$   
c)  $r_{13} = r_{23}$   
d)  $r_{12.3} = r_{13.2}$
- x) The time series data is arranged
- a) Geographically  
b) Qualitatively  
c) Quantitatively  
d) Chronologically

2. Answer **any five** of the following :

10

- i) Define correlation.
- ii) Define time series
- iii) Given  $r_{12} = 0.6$ ,  $r_{13} = 0.5$  and  $r_{23} = 0.8$ , find  $r_{12.3}$ .
- iv) Suggest an index number that can be constructed and construct it when you are given  $\sum p_0q_0 = 700$  and  $\sum p_1q_0 = 1050$ .
- v) Given  $r_{12} = 0.6$ ,  $r_{13} = 0.5$ ,  $r_{23} = 0.8$ , find  $R_{2.13}$ .
- vi) If  $3y + 2x = 10$  is the line of regression of Y on X, find regression coefficient of it.



3. A) Answer **any two** of the following : 6

- i) Draw Scatter diagram for  $-1 < r < -0.5$ ,  $r = -1$  and  $r = 0$ .
- ii) Find the number of pairs of observations  $n$  from the following information  
 $r = 0.25$ ,  $\sum (X - \bar{X})(Y - \bar{Y}) = 60$ ,  $\sum (X - \bar{X})^2 = 90$   $\sigma_Y = 4$ .
- iii) Construct quantity index number by average of quantity relatives method using arithmetic mean

Commodity	A	B	C
Quantity in Kg. (Current year)	100	80	40
Quantity in Kg. (Base year)	150	100	50

B) What is multiple regression ? 4

4. Answer **any two** of the following : 10

- i) Calculate correlation coefficient between the ranks of X and Y from the following data :

<b>X</b>	51	64	46	37	70
<b>Y</b>	62	55	50	24	80

- ii) Measure a Secular Trend by the method of moving averages taking a period of 4 week for the following time series :

Week	1	2	3	4	5	6	7
<b>Production</b>	82	73	75	74	73	72	76

- iii) Give the procedure for fitting exponential curve of the type  $Y = a \cdot b^X$ .



5. Answer **any two** of the following :

**10**

i) Find the plane of regression of  $X_1$  on  $X_2$  and  $X_3$  from the following results

$$\bar{X}_1 = 15.9 \quad \bar{X}_2 = 3.67 \quad \bar{X}_3 = 5.79$$

$$\sigma_1 = 1.71 \quad \sigma_2 = 1.29 \quad \sigma_3 = 3.09$$

$$r_{12} = -0.66 \quad r_{23} = 0.60 \quad r_{13} = -0.13$$

ii) Construct an appropriate quantity index number for 2007

Item	2005		2007
	Price	Quantity	Quantity
A	200	250	190
B	800	90	500
C	950	175	800

iii) From a bivariate distribution a sample of 40 observations gives following results :

$$\sum X = 628 \quad \sum Y = 550 \quad \sum X^2 = 40376 \quad \sum Y^2 = 30812 \quad \sum XY = 33969$$

Find a line of regression of Y on X.

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**B.Sc. (ECS) – II (Semester – III) Examination, 2014**  
**COMPUTER SCIENCE (Paper – I)**  
**Operating System – I**

Day and Date : Monday, 12-5-2014

Max. Marks : 50

Time : 3.00 p.m. to 5.00 p.m.

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the **right** indicate **full** marks.*

1. Choose the correct alternative : 10

- 1) \_\_\_\_\_ is a logical extension of multiprogramming.
  - a) Real time
  - b) Multiprocessing
  - c) Distributed
  - d) Time sharing
- 2) The main purpose of a computer system is to \_\_\_\_\_ program.
  - a) compile
  - b) interpret
  - c) execute
  - d) re-allocate
- 3) A process generally includes the \_\_\_\_\_, which contains temporary data.
  - a) data section
  - b) program counter
  - c) process stack
  - d) text section
- 4) With \_\_\_\_\_ scheduling scheme, the process that requests the CPU first is allocated the CPU first.
  - a) priority
  - b) round robin
  - c) first-come, first served
  - d) shortest job first
- 5) Each process has a segment code, called a \_\_\_\_\_ section, in which the process may be changing common variables, updating a table, writing a file and so on.
  - a) critical
  - b) remainder
  - c) exit
  - d) entry
- 6) To speed up processing, operators \_\_\_\_\_ together jobs with similar needs and ran them through the computer as a group.
  - a) distributed
  - b) batched
  - c) multiprocessed
  - d) multiprogrammed



- 7) The system must be configured or generated for each specific computer site, a process sometimes known as
- system call
  - system implementation
  - system generation
  - system design
- 8) A new process is created by the \_\_\_\_\_ system call.
- execvp
  - wait
  - fork
  - none of these
- 9) In a uniprocessor system, only one process may run at a time; any other processes must \_\_\_\_\_ until the CPU is free and can be rescheduled.
- wait
  - ready
  - block
  - run
- 10) A semaphore S is an integer variable that, apart from initialization is accessed only through two standard atomic operations : \_\_\_\_\_ and \_\_\_\_\_
- wait, signal
  - wait, wakeup
  - signal, wakeup
  - none of these

2. Solve **any five** of the following :

10

- Define operating system. Give the types of operating system.
- What are the major activities of an operating system in regard to process management ?
- What is the difference between single thread and multiple thread ?
- Define (a) Dispatcher (b) Dispatch latency.
- What is the Bounded Buffer Problem ?
- Consider the following set of processes, with the length of the CPU burst time given in milliseconds.

Process	Burst-time
P <sub>1</sub>	6
P <sub>2</sub>	8
P <sub>3</sub>	7
P <sub>4</sub>	3

Using SJF scheduling, draw the Gantt chart and compute average waiting time.





3. A) Solve **any two** of the following : **6**
- 1) Explain the components of computer system.
  - 2) Explain the alternative sequence of CPU and I/O burst.
  - 3) What is the purpose of networking ?
- B) Explain Java virtual machine. **4**
4. Solve **any two** of the following : **10**
- 1) What is process ? Explain the process state with neat diagram.
  - 2) Explain the CPU scheduling criteria.
  - 3) Define the essential properties of the following types of operating system :
    - a) Batch
    - b) Real-time.
5. Solve **any two** of the following : **10**
- 1) Discuss the operating system services.
  - 2) What are the critical section problem and solutions ?
  - 3) Explain the benefits of virtual machine.
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**B.Sc. II (Semester – III) (ECS) Examination, 2014**  
**COMPUTER SCIENCE**  
**Object Oriented Programming Using C++ – I (Paper – II)**

Day and Date : Tuesday, 13-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose correct alternatives : 10
- 1) Which of the following operator is overloaded for object cout ?  
a) >>                      b) <<                      c) +                      d) =
  - 2) Which of the following concept means wrapping of data and functions together ?  
a) Abstraction                      b) Encapsulation  
c) Inheritance                      d) Polymorphism
  - 3) Which of the following is correct class of the object cout ?  
a) iostream                      b) istream                      c) ostream                      d) ifstream
  - 4) Which of the following task is performed by a constructor ?  
a) construct a new class                      b) construct a new object  
c) construct a new function                      d) initialize an object
  - 5) Which of the following is correct about the statements given below ?  
All operators can be overloaded in C++  
We can change the basic meaning of an operator in C++  
a) Only I is true                      b) Both I and II are false  
c) Only II is true                      d) Both I and II are true
  - 6) Which of the following operators can not be overloaded ?  
a) [ ]                      b) →                      c) ?:                      d) \*
  - 7) Which of the following statements regarding inline functions is correct ?  
a) It speedup execution                      b) It slows down execution  
c) It increase code size                      d) None of these

P.T.O.



- 8) Which of the following header file includes definition of function exit () ?  
a) stdio.h                    b) process.h                    c) iostream.h                    d) graphics.h
- 9) Which of the following keyword is used to overload an operator ?  
a) overload                    b) operator                    c) overwrite                    d) override
- 10) By default class has \_\_\_\_\_ access specification.  
a) public                    b) private                    c) protected                    d) general
2. Answer the following (**any 5**) : **10**
- 1) Define static data member.
  - 2) What are the use of new and delete operators ?
  - 3) Define reference operator.
  - 4) What is member dereferencing operator ?
  - 5) What is inline function ?
  - 6) Define cout and cin object.
3. A) Answer **any two** of the following : **6**
- 1) Differentiate between class and structure.
  - 2) What are the advantages of OOP languages ?
  - 3) Explain memory management operators used in C++.
- B) Write a program to calculate simple interest by using default parametrized constructor. Take rate of interest as default argument to the constructor.
4. Answer **any two** of the following : **10**
- 1) Explain functions used in C++.
  - 2) What is the main advantage of passing arguments by reference ? Explain it with example.
  - 3) Explain control structure used in C++.
5. Answer **any two** of the following : **10**
- 1) Explain derived datatypes in detail and given an example of array of object.
  - 2) Explain copy constructor with example.
  - 3) Explain : friend function work as bridge, between two classes with suitable example.
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**B.Sc. (ECS)-II (Semester – III) Examination, 2014**  
**Paper – VI : MICROPROCESSORS – I**

Day and Date : Monday, 19-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**N.B. :** 1) *All questions are compulsory.*  
2) *Figures to right indicates get full marks.*

1. Choose correct alternatives :

**10**

- 1) 8086 contains \_\_\_\_\_ byte instruction queue.  
a) 8                                                  b) 6                                                  c) 16                                                  d) 32
- 2) SETC is \_\_\_\_\_ instruction.  
a) Data transfer                                                  b) Program control  
c) Shift                                                  d) Logical
- 3) In maximum mode of 8086 pin no. 33 is connected to  
a) VCC                                                  b) Ground                                                  c) Clock                                                  d) Open
- 4) To access 128 byte memory it requires \_\_\_\_\_ address lines.  
a) 7                                                  b) 8                                                  c) 16                                                  d) 20
- 5) Intel 8089 IOP is \_\_\_\_\_ pin IC package.  
a) 20                                                  b) 14                                                  c) 24                                                  d) 40
- 6) Dynamic RAM consists of \_\_\_\_\_ to store binary information.  
a) Capacitor                                                  b) Pits and land  
c) Flipflop                                                  d) Register
- 7) ADDX R<sub>1</sub>, R<sub>2</sub> is \_\_\_\_\_ address instruction.  
a) two                                                  b) three                                                  c) one                                                  d) zero
- 8) 8086 has \_\_\_\_\_ bit address bus.  
a) 20                                                  b) 24                                                  c) 16                                                  d) 32

P.T.O.



- 9) \_\_\_\_\_ fetches the instruction from memory.  
a) User                                      b) ALU                                      c) PCU                                      d) input
- 10) Daisy chaining is simple \_\_\_\_\_ means of attaining a priority scheme.  
a) Hardware                                      b) Software  
c) Instruction                                      d) Control

2. Attempt **any five** of the following : **10**
- 1) Explain instruction format in stack organization.
  - 2) Explain optical memory.
  - 3) Explain features of 8088.
  - 4) Explain sequential ALU's.
  - 5) Explain arithmetic instruction.
  - 6) Explain asynchronous communication.
3. A) Attempt **any two** of the following : **6**
- 1) Explain INTR,  $\overline{\text{BHE}}$ , READY, HOLD.
  - 2) Explain register stack.
  - 3) Explain data manipulation instruction.
- B) Explain flag register of 8086.. **4**
4. Attempt **any two** of the following : **10**
- 1) Explain main memory design.
  - 2) Explain isolated and memory mapped I/O.
  - 3) Explain minimum mode of 8086 .
5. Attempt **any two** of the following : **10**
- 1) Explain 2901 bit slice processor.
  - 2) Explain memory connection to CPU.
  - 3) Explain DMA controller.
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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014**  
**COMPUTER SCIENCE**  
**Software Engineering – II (Paper – IV)**

Day and Date : Wednesday, 7-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**N.B.:** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the correct alternative : 10
- 1) Which of the following is basic type of structured English ?  
a) Sequential structures                      b) Decision structures  
c) Looping structures                         d) All of these
  - 2) \_\_\_\_\_ defines the relationships between the entities.  
a) ERD                      b) DFD                      c) DD                      d) FDD
  - 3) In \_\_\_\_\_ every non-key items are fully dependent on the primary key.  
a) 1NF                      b) 2NF                      c) 3NF                      d) 4NF
  - 4) Which of the following is not part of a DFD.  
a) Disk storage    b) Data store    c) Process    d) Data flow
  - 5) The first step of the implementation phase is  
a) Select the computer                      b) Implementation planning  
c) Prepare physical facilities                      d) None of these
  - 6) \_\_\_\_\_ is an example of language processing tool.  
a) Word processor                      b) Image editor  
c) Interpreter                      d) All of these
  - 7) In a \_\_\_\_\_ one module of the new information system is activates at a time.  
a) phased conversion                      b) parallel run conversion  
c) direct conversion                      d) system conversion
  - 8) The objective of testing is  
a) to analyze system                      b) to gain modularity  
c) debugging                      d) to design system



- 9) \_\_\_\_\_ can allow parallel implementation in the beginning.
- a) Top-down implementation                      b) Bottom-up implementation  
c) Both a and b                                      d) None of these
- 10) Which of the following is not a category of system maintenance ?
- a) Corrective maintenance                      b) Adaptive maintenance  
c) Perfective maintenance                      d) Effective maintenance
2. Answer **any five** of the following : **10**
- 1) Define entity and attribute.
- 2) Which are the various objectives of output design ?
- 3) Give the advantages of bottom-up incremental implementation.
- 4) What is the meaning of phase-in method ?
- 5) Give the difference between physical DFD and logical DFD.
- 6) What is structured English ?
3. A) Answer **any two** of the following : **6**
- 1) Explain different symbols used in DFD.
- 2) Write note on adaptive maintenance.
- 3) Explain White-Box testing with suitable examples.
- B) Write note on data validations : **4**
4. Answer **any two** of the following : **10**
- 1) Write note on collecting statistics for processes.
- 2) Explain the features of Turbo-Analyst.
- 3) Discuss on input design.
5. Answer **any one** of the following : **10**
- 1) What is normalization ? Explain different normal forms with suitable example.
- 2) What is data dictionary ? Make data dictionary for Fixed Deposit (FD).
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**B.Sc. (ECS) – I (Semester – I) Examination, 2014**  
**ELECTRONICS (Paper – IV)**  
**Digital Electronics – I**

Day and Date : Saturday, 26-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions :** i) **All questions are compulsory and carry equal marks.**  
ii) **Draw neat diagram wherever necessary.**  
iii) **Any type of calculator allowed.**

1. Fill in the blanks with correct alternative and rewrite : **10**
- 1) The binary code of  $(21.125)_{10}$  is  
a) 10101.001      b) 10100.001      c) 10101.010      d) 10100.100
  - 2) The radix of the octal system is  
a) 2                      b) 8                      c) 7                      d) 6
  - 3) The excess-3 code is also known as  
a) weighted code                      b) cyclic redundancy code  
c) self complementing code                      d) algebraic code
  - 4) The binary equivalent of gray code 101 is  
a) 101                      b) 100                      c) 110                      d) 111
  - 5) ASCII (not ASCII-8) is  
a) 4-bit code      b) 6-bit code      c) 7-bit code      d) none of these
  - 6) The 2's complement of binary number 0.01011 is  
a) 1.10101      b) 0.10101      c) 1.10100      d) 0.10100
  - 7)  $\bar{A} \cdot \bar{B} \cdot \bar{C} = D$  represents a  
a) AND gate      b) NAND gate      c) NOR gate      d) EX-OR gate
  - 8) The o/p of the following gate is 1 only if atleast one of its inputs is 0  
a) AND gate      b) OR gate      c) NAND gate      d) NOR gate



9) The following device selects one of the several inputs and transmits it to a single output

- a) decoder          b) multiplexer      c) demultiplexer      d) counter

10) A demultiplexer is used to

- a) route data from single I/P to one of many O/P  
b) Select data from several I/P's and route it to single output  
c) Performs serial to parallel conversion  
d) All of the above

2. Answer **any five** of the following.

**(5×2=10)**

- a) What is difference between analog signal and digital signal ?  
b) What is multiplexer and demultiplexer ?  
c) Draw symbols of all basic logic gates.  
d) Write one example of binary to decimal conversion.  
e) What is BCD code ? Explain with one example.  
f) Write statements of De-Morgan's theorem.

3. A) Answer **any two** of the following.

**(3×2=6)**

- i) Explain Excess-3 code.  
ii) Explain Half subtractor.  
iii) Draw diagram of 4 to 1 multiplexer.

B) Let the Hamming code received be 0110110 with odd parity. Let us check the error position.

**4**

4. Attempt **any two** of the following.

**(2×5=10)**

- i) What is encoder ? Explain decimal to binary encoder.  
ii) Explain Interconversion of gates using NAND.  
iii) What are different logic families ? Give their different characteristics.

5. Attempt **any two** of the following.

**(2×5=10)**

- i) Compare TTL and MOS logic families.  
ii) Explain tree multiplexing with one example.  
iii) Explain IC 74154.
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**B.Sc. (E.C.S.) (Semester – VI) Examination, 2014  
ENVIRONMENTAL STUDIES (Comp.)**

Day and Date : Sunday, 27-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Multiple choice questions :

10

- I) Earth day is celebrated on \_\_\_\_\_.  
A) 22<sup>nd</sup> Jan.      B) 22<sup>nd</sup> Feb.      C) 22<sup>nd</sup> March      D) 22<sup>nd</sup> April
- II) 'Sahara' is an example of \_\_\_\_\_ ecosystem.  
A) Desert      B) Forest      C) Marine      D) Grassland
- III) Marine life is in danger due to \_\_\_\_\_ pollution.  
A) Air      B) Water      C) Land      D) Noise
- IV) \_\_\_\_\_ gas is responsible for ozone depletion.  
A) CFC      B) CO<sub>2</sub>      C) SO<sub>2</sub>      D) O<sub>2</sub>
- V) In India Wildlife Protection Act passed in \_\_\_\_\_.  
A) 1962      B) 1972      C) 1982      D) 1992
- VI) The main source of air pollution in India is \_\_\_\_\_.  
A) Automobiles      B) Industrialization  
C) Forest fire      D) Nuclear explosion
- VII) \_\_\_\_\_ percent of earth geographical area is under water.  
A) 60%      B) 61%      C) 70%      D) 71%
- VIII) Need for public awareness is important for the \_\_\_\_\_.  
A) AIDS      B) Malaria      C) Filariasis      D) Elephantiasis
- IX) The primary source of energy is \_\_\_\_\_.  
A) Wind      B) Sun      C) Hydal energy      D) Tidels
- X) Lion is \_\_\_\_\_ consumer in the ecosystem.  
A) Primary      B) Secondary      C) Tertiary      D) Heterotrophs

P.T.O.



2. Write short answers of the following (**any four** out of six) : **8**
- a) Definition of environment
  - b) Food chain of ecosystem
  - c) Causes of water pollution
  - d) Causes of generation of solid waste
  - e) Biodiversity in Western Ghat
  - f) Causes of population growth.
3. Write short notes of the following (**any four** out of six) : **12**
- a) Forest ecosystem
  - b) Uses of minerals
  - c) Nuclear Hazards
  - d) Remedies of water pollution
  - e) Effects of water pollution
  - f) Causes of noise pollution.
4. a) What is Forest resources ? Describe how forest resources can be conserved. **10**
- OR
- b) What is pollution ? Discuss the causes, effects and preventive measures of air pollution.
5. Define global warming. Explain the causes and effects of it. **10**
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**B.Sc. (ECS) (Part – I) (Semester – I) Examination, 2014**  
**MATHEMATICS (Paper – V)**  
**Graph Theory**

Day and Date : Monday, 28-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**N.B. :** i) Use of scientific calculators are **allowed**.  
ii) **All questions are compulsory**.  
iii) Figures to the **right** indicate **full marks**.

1. Choose correct alternative for each of the following : 10

1) In a binary tree a vertex of degree 2 is called \_\_\_\_\_ of binary tree.

- a) pendant vertex                      b) isolated vertex  
c) root                                    d) none of these

2) A graph  $G$  in which there is exactly one path between every pair of vertices is called \_\_\_\_\_.

- a) tree                                      b) complete graph  
c) regular graph                      d) null graph

3) The total degree of a complete bipartite graph  $K_{m,n}$  is \_\_\_\_\_.

- a)  $mn$                       b)  $m + n$                       c)  $2mn$                       d)  $m - n$

4) A complete graph  $K_8$  is \_\_\_\_\_ regular.

- a) 8                                          b) 64                                          c) 16                                          d) 7

5) The ring sum of a graph  $G$  with itself is \_\_\_\_\_.

- a) complete graph                      b) null graph  
c) tree                                      d) none of these

6) If graph  $G_1$  has  $m$  vertices and graph  $G_2$  has  $n$  vertices then  $G_1 \times G_2$  has \_\_\_\_\_ vertices.

- a)  $mn$                       b)  $m + n$                       c)  $\frac{m}{n}$                       d)  $2mn$

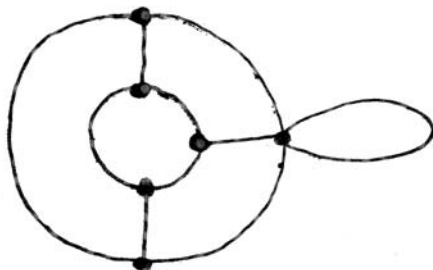


- 7) A single vertex is a path of length
  - a) zero
  - b) one
  - c) two
  - d) none of these
- 8) If a connected graph G has a \_\_\_\_\_ then its edge connectivity is one.
  - a) loop
  - b) parallel edge
  - c) cut edge
  - d) none of these
- 9) \_\_\_\_\_ graph is 2-connected
  - a) Hamiltonian
  - b) Eulerian
  - c) Hungarian
  - d) Simple
- 10) A subgraph of G which is tree is called \_\_\_\_\_.
  - a) spanning subgraph
  - b) tree subgraph
  - c) induced subgraph
  - d) simple subgraph

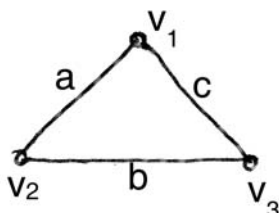
2. Attempt **any five** from the following :

10

- 1) Define complete graph. Is every regular graph is complete ?
- 2) Draw a graph which is neither Eulerian nor Hamiltonian.
- 3) Find the total degree of the following graph.



4) Find  $G \cup G$  of the following graph.



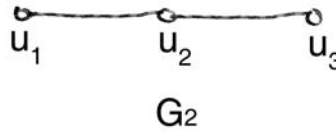
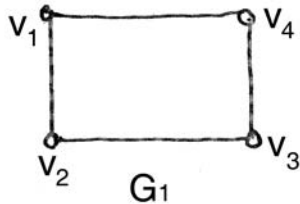
- 5) The sequence {2, 1, 1, 0} is not graphical. State whether it is true or false.
- 6) What is total degree of  $K_{4,8}$  ?



3. A) Attempt **any two** of the following :

6

1) Find  $G_1 \times G_2$  for the following pairs of graph.



2) Define vertex induced and edge induced subgraphs.

3) Prove that number of pendant vertices in a binary tree are  $\frac{n+1}{2}$  where n is the number of vertices in a binary tree.

B) Write a note on matrix representation of graph.

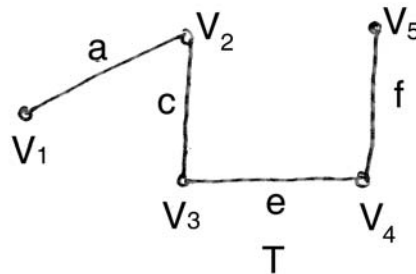
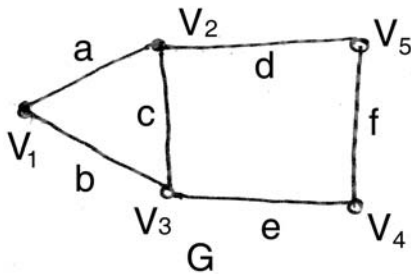
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4. Attempt **any two** of the following :

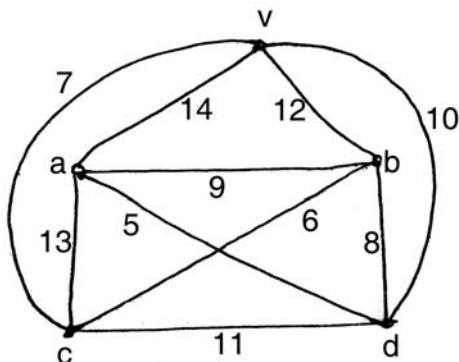
10

1) Prove that a tree with n vertices has n – 1 edges.

2) Find all fundamental circuits and cutsets of the following graph G. w.r.t. spanning tree T.



3) By starting with vertex v, solve the travelling salesman problem for the following graph.

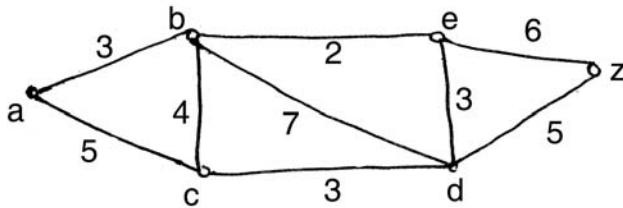




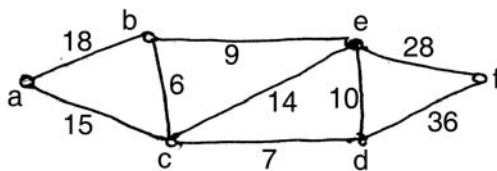
5. Attempt **any two** of the following :

10

- 1) By using Dijkstra's algorithm find the shortest path and its weight from vertex a to z for the following graph.



- 2) Solve Chinese postman problem for the following graph.



- 3) Prove edge  $e_i$  of a graph  $G$  is an isthmus iff it does not belongs to any circuit in  $G$ .

\_\_\_\_\_





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**B.Sc. (ECS) (Part – I) (Semester – I) Examination, 2014**  
**MATHEMATICS (Paper – VI)**  
**Numerical Methods**

Day and Date : Tuesday, 29-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- N.B. :** 1) Use of scientific calculator is **allowed**.  
2) **All** questions are **compulsory**.  
3) Figures to the **right** indicate **full** marks.

1. Choose correct alternative for **each** of the following : **10**
- 1)  $E^{-1} f(x) =$
- a)  $f(x)$                                       b)  $f(x + h)$                                       c)  $f(x - h)$                                       d)  $f(x + 2h)$
- 2) Homogeneous system of linear equations is never
- a) Inconsistent                                      b) Consistent  
c) Trivial                                      d) None of these
- 3)  $0.9874 E - 4 \div 0.3432 E - 6 =$
- a)  $0.2877 E 3$                                       b)  $2.8770 E3$   
c)  $0.2877 E - 3$                                       d)  $0.2877 E - 2$
- 4) One of the roots of the equation  $f(x) = e^x - 4x = 0$  lies in the interval  $(0, 1)$  iff  $f(0)$  and  $f(1)$  have \_\_\_\_\_ signs.
- a) Same                                      b) Opposite  
c) Positive                                      d) Negative
- 5) To find value of  $\int_a^b f(x).dx$  by taking  $(n + 1)$  equally spaced arguments we have to divide the interval of integration into \_\_\_\_\_ equal parts.
- a)  $(n + 1)$                                       b)  $(n - 1)$                                       c)  $2n$                                       d)  $n$
- 6) \_\_\_\_\_ method is used to solve ordinary differential equation.
- a) Gaussian                                      b) Euler's  
c) Aitken's  $\Delta^2$                                       d) Newton's



- 7) The equations involving trigonometric functions or logarithmic functions or exponential functions are called as \_\_\_\_\_ equations.
- a) linear  
b) normal  
c) transcendental  
d) ordinary differential
- 8)  $(E \nabla) f(x) =$
- a)  $E f(x)$   
b)  $\Delta f(x)$   
c)  $\nabla f(x)$   
d)  $(1 + \Delta) f(x)$
- 9) While doing addition of two numbers in normalised floating point notation exponents should be
- a) added  
b) subtracted  
c) multiplied  
d) made equal
- 10) The consistant system of four linear equations in six variables has \_\_\_\_\_ solutions.
- a) unique  
b) four  
c) No.  
d) infinitely many

2. Attempt **any five** of the following :

10

- 1) State formulae for  $K_1$  and  $K_4$  in Runge – Kutta forth order method.
- 2) Show that  $(1 + \Delta) f(x) = E f(x)$ .
- 3) Define relative error and percentage error.
- 4) State Regula Falsi Method formula to find the root of the equation  $f(x) = 0$  in the interval  $(x_0, x_1)$ .
- 5) State Simpson's  $\left(\frac{1}{3}\right)^{\text{rd}}$  rule.
- 6) Find the interval in which one of the roots of the equation  $x^3 - 2x - 5 = 0$  lies.

3. A) Attempt **any two** of the following :

6

- 1) Obtain Row Echelon Form for the following matrix

$$A = \begin{bmatrix} 1 & 0 & 2 & 1 & 3 \\ 1 & 1 & 5 & 2 & 3 \\ 1 & 2 & 8 & 4 & 4 \end{bmatrix}_{3 \times 5}$$



2) Evaluate  $\left[ \frac{\Delta^2}{E} \right] x^2$  by taking  $h = 1$ .

3) Solve  $\frac{dy}{dx} = x^2 + y$  by Taylor's series method. Given that  $y(1) = 2$ .

Find  $y(1.2)$  with  $h = 0.2$ .

B) Evaluate  $\int_0^7 e^x \cdot dx$  by Simpson's  $\left(\frac{1}{3}\right)^{rd}$  rule. Take  $h = 1$ . 4

4. Attempt **any two** of the following : 10

1) By using Euler's method find  $y(1.8)$  Given that  $\frac{dy}{dx} = x^2 + y^2$  with initial conditions  $y(1) = 1$  in four steps.

2) Write an algorithm to solve system of m-linear equations in n-variables by using Gauss elimination method.

3) Estimate the value of  $f(15)$  by using Newton's forward difference interpolation formula for the following data

<b>x</b>	10	20	30	40
<b>y = f(x)</b>	4	8	16	32

5. Attempt **any two** of the following : 10

1) Find approximate value of the root of equation  $x^3 - 4x - 9 = 0$  by using Bisection Method. Take only three iterations.

2) Evaluate  $\int_0^{10} (x^2 + 1) dx$  by using Trapezoidal rule. Take  $h = 1$ .

3) Derive Newton – Raphson formula to find square root of a given number.

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**B.Sc. (ECS) (Part – I) (Semester – II) Examination, 2014  
PROGRAMMING USING ‘C’ – II (Paper – II)**

Day and Date : Thursday, 24-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Total Marks : 50

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. Choose correct alternatives : 10

- 1) \_\_\_\_\_ bytes of memory is required for float type pointer.  
a) 1                      b) 2                      c) 4                      d) 8
- 2) For dynamic memory allocation \_\_\_\_\_ is used.  
a) Array                      b) Function                      c) Structure                      d) Pointer
- 3) Function parameters can use \_\_\_\_\_ storage class.  
a) Auto                      b) Static                      c) Register                      d) Extern
- 4) \_\_\_\_\_ is user defined data type.  
a) Structure                      b) Union  
c) Both a) and b)                      d) int
- 5) What will be the output of following ‘c’ code :  
    int \*z;  
    char 9 = ‘B’;  
    z = & 9;  
    printf (“%c”, \*z);  
a) 66                      b) B                      c) Error                      d) None of these
- 6) The value returned by Ftell ( ), if an error occurs is \_\_\_\_\_  
a) –1                      b) 0                      c) 1                      d) 2
- 7) typedef is storage class.  
a) True                      b) False
- 8) Change in pointer does not causes change in value of variable to whom pointer points.  
a) True                      b) False



9) By default storage class of local variable is \_\_\_\_\_

- a) Static                      b) Extern                      c) Register                      d) Auto

10) The members of \_\_\_\_\_ are stored from their own memory location.

- a) Structure                      b) Union  
c) Both a) and b)                      d) None of these

2. Answer **any five** of the following : **10**

- 1) Define : chain of pointer.
- 2) Define : local and global variable.
- 3) What is file pointer ?
- 4) Write some advantages of external storage class.
- 5) Write the use of realloc ( ) function.
- 6) What is self-referential structure ?

3. A) Answer **any two** of the following : **6**

- 1) What is function ? List out its advantages.
- 2) What is pointer ? List out invalid pointer arithmetic operations.
- 3) Differentiate between structure and union.

B) Explain file handling functions : getw ( ) and putw ( ). **4**

4. Answer **any two** of the following : **10**

- 1) Write a program to check input number is prime or not by using function without argument with return value.
- 2) Write a program which copy the data of one file into another file.
- 3) Explain the concept : pointer to structure.

5. Answer **any two** of the following : **10**

- 1) What is recursion ? Write a program to find factorial of entered number by using recursion.
  - 2) Explain : register and static storage classes.
  - 3) Write a program to reverse entered number by using pointer.
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**B.Sc. (E.C.S.) (Part – I) (Semester – II) Examination, 2014  
LINEAR ELECTRONICS – II (Paper – III)**

Day and Date : Friday, 25-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Total Marks : 50

- Instructions :** 1) **All the questions are compulsory.**  
2) **Figures to right indicates full marks.**  
3) **Draw diagram wherever necessary.**

1. Choose correct alternative :

10

- 1) In negative feedback gain is always \_\_\_\_\_  
a) Less                      b) Zero                      c) High                      d) Infinity
- 2) \_\_\_\_\_ is mostly used for power amplifier.  
a) Transformer coupled                      b) Rc coupled  
c) LC coupled                      d) Direct coupled
- 3) In inverting amplifier the non-inverting terminal is connected to \_\_\_\_\_  
a) Ground                      b) V/C                      c) O/P                      d) None of these
- 4) An electronic circuit used to increase the strength of signal are called as \_\_\_\_\_  
a) Oscillator                      b) Amplifier                      c) Multivibrator                      d) Comparator
- 5) In P-channel JFET \_\_\_\_\_ are majority charge carrier.  
a) Electron                      b) Hole  
c) Electron and hole                      d) None of these
- 6) An oscillator produces \_\_\_\_\_ oscillations.  
a) Damped                      b) Undamped                      c) Growing                      d) None of these
- 7) When we use op-amp as a differentiator the O/P is feedback to I/P by \_\_\_\_\_  
a) Resistor                      b) Capacitor                      c) Inductor                      d) None of these

P.T.O.



- 8) I/P impedance of MOSFET is \_\_\_\_\_ than the FET.  
a) Less                      b) More                      c) Very less                      d) Very high
- 9) For positive feedback, feedback energy is \_\_\_\_\_ with the I/P signal.  
a) In phase                      b) Out of phase                      c) Zero                      d) None of these
- 10) RC coupled amplifier is used for \_\_\_\_\_ amplification.  
a) Voltage                      b) Current                      c) Resistance                      d) None of these

2. Attempt **any five** of the following : **10**
- 1) Explain virtual ground concept.
  - 2) Give classification of amplifier according to frequency range.
  - 3) Define I/P terminals of op-amp.
  - 4) Give classification of FET.
  - 5) Give application of amplifier.
  - 6) Explain Barkhausen criteria.
3. A) Attempt **any two** of the following : **6**
- 1) Explain Hartely oscillator.
  - 2) Explain class-B amplifier.
  - 3) Give difference between FET and BJT.
- B) Write a note on crystal oscillator. **4**
4. Attempt **any two** of the following : **10**
- 1) Explain construction and working of MOSFET.
  - 2) Explain parameters of OP-amp.
  - 3) Write a note on RC coupled amplifier.
5. Attempt **any two** of the following : **10**
- 1) Explain op-amp as a adder and subtractor.
  - 2) Write a note on N-channel JFET.
  - 3) Explain a stable multivibrator using IC 555.
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**B.Sc. I (ECS) (Semester – II) Examination, 2014**  
**DIGITAL ELECTRONICS – II**  
**(Paper – IV)**

Day and Date : Saturday, 26-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

- Instructions :** i) **All questions are compulsory and carry equal marks.**  
ii) **Draw neat diagram whenever necessary.**  
iii) **Use of calculator is allowed.**

1. Choose correct alternative and rewrite the sentence : **10**
- 1) The maximum modulo number that can be obtained by ripple counter using five flip flop is
- a) Five                                      b) Ten                                      c) Thirty one                                      d) Thirty two
- 2) Preset and clear terminals are \_\_\_\_\_ inputs.
- a) Synchronous                                      b) Asynchronous  
c) Strobe                                      d) Select
- 3) For 4 bit R-2R ladder network DAC the resolution is
- a)  $\frac{1}{16}$                                       b)  $\frac{1}{15}$                                       c)  $\frac{1}{4}$                                       d) 1
- 4) \_\_\_\_\_ is a non volatile memory.
- a) Static RAM                                      b) Dynamic RAM  
c) ROM                                      d) Both a and b
- 5) Race around condition occurs in \_\_\_\_\_ flip flop.
- a) JKMS                                      b) JK                                      c) D                                      d) RS
- 6) \_\_\_\_\_ ADC the “n” conversion cycles are required for “n” bit digital O/P.
- a) Single slope                                      b) Dual slope                                      c) SAR type                                      d) Flash





- 7) A counter in which each flip flop is triggered by the O/P of the previous flip flop is known as
- |                        |                   |
|------------------------|-------------------|
| a) Parallel counter    | b) Ripple counter |
| c) Synchronous counter | d) Down counter   |
- 8) A RAM is \_\_\_\_\_ memory.
- |                 |                                |
|-----------------|--------------------------------|
| a) Non-volatile | b) Only dynamic                |
| c) Only static  | d) Volatile, static or dynamic |
- 9) The IC 7495 is
- |                   |                             |
|-------------------|-----------------------------|
| a) Decade counter | b) Dual D flip flop         |
| c) JK flip flop   | d) Universal shift register |
- 10) In \_\_\_\_\_ counter inverse feedback is used.
- |           |                |
|-----------|----------------|
| a) Ring   | b) Shift       |
| c) Decade | d) Synchronous |

2. Answer **any five** of the following :

**(5×2=10)**

- 1) Compare Binary weighted DAC and R-2R ladder network DAC (3 points).
- 2) Draw R-S flip-flop by using NAND and NOR gate and write their truth tables.
- 3) How many comparators and resistors are required to construct 3 bit and 4 bit flash ADC ?
- 4) How many flip flops are required to count 16 pulses and 30 pulses with the help of counter ?
- 5) Compare volatile and non volatile memory (4 points).
- 6) Why DRAM requires refresh signal ?

3. A) Attempt **any two** of the following :

**(2×3=6)**

- 1) Explain in brief with suitable diagram IC 7490 as divided by 10 counter, write its truth table.
- 2) Explain in brief with diagram 3 bit flash ADC.
- 3) Draw the static memory cell by using MOS transistors.

B) For 6 bit R-2R ladder network, find out O/P voltage for following digital I/P

- |           |           |
|-----------|-----------|
| a) 101001 | b) 110010 |
|-----------|-----------|

Assume that 0 = 0 Volt and 1 = 10 Volt.



4. Attempt **any two** of the following : **(2×5=10)**

- 1) Explain in brief with suitable diagram and timing diagram the working of 3 bit ring counter.
- 2) Explain in brief with suitable diagram the action of single slope ADC.
- 3) Explain in brief :
  - 1) D flip flop
  - 2) J-K. flip flop.

Write their truth tables.

5. Attempt **any two** of the following : **(2×5=10)**

- 1) Explain with suitable diagram three bit Bi- directional shift register.
  - 2) Explain with suitable diagram and timing diagrams action of 3 bit ripple counter.
  - 3) Explain in brief with suitable diagram the working of JK master-slave flip flop.
-





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**B.Sc. (Entire Computer Science) (Part – I) (Semester – II) Examination, 2014  
Paper – VIII : PROBABILITY THEORY – II**

Day and Date : Friday, 2-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Total Marks : 50

- Instructions :** i) **All questions are compulsory.**  
ii) **Use of simple or scientific calculator is allowed.**  
iii) **Figures to the right indicate full marks.**

1. Select most correct alternative :

10

- i) If  $E(X) = 2/3$  and  $E(Y) = 1/2$ , then the two random variables  $X$  and  $Y$  are said to be independent if
- a)  $E(XY) = 1/3$                       b)  $E(XY) = 0$   
c)  $E(XY) = 1$                       d)  $E(XY) = \text{any constant value}$
- ii) If  $X$  and  $Y$  are two discrete random variables and  $P(X = 4 / Y = 6) = 0$  then is  $P(X = 4, Y = 6)$  is
- a) 1                      b) 0.5                      c) 0.66                      d) 0
- iii) If the p.d.f. of a continuous random variable  $X$  is  $f(x) = \frac{1}{2}$  ;  $0 < x < 2$  then  $E(X)$  is
- a)  $-1$                       b) 0                      c) 0.5                      d) 1
- iv) If the p.d.f. of a continuous random variable  $X$  is  $f(x) = 1$  ;  $0 < x < 1$  then  $P(X < 0.5)$  is
- a) 0.3                      b) 0                      c) 0.5                      d) 1
- v) Let  $F(x)$  be a cumulative distribution function of a continuous random variable  $X$ . If  $F(4.7) = 1$  then  $P(X > 4.7)$  is
- a) 0                      b) 0.25                      c) 0.47                      d) 1
- vi) If a continuous random variable  $X$  follows normal distribution with parameters  $\mu = 50$  and  $\sigma^2 = 9$  then its third quartile is
- a) 41                      b) 44                      c) 52                      d) 59

P.T.O.



- vii) If a continuous random variable X follows exponential distribution with mean 4 then its variance is  
 a) 2                      b) 4                      c) 16                      d) 0.25
- viii) If a continuous random variable X follows uniform distribution over (2, 14) then its variance is  
 a) 144                      b) 12                      c) 1                      d) 28
- ix) Whether the test is one sided or two sided depends on  
 a) composite hypothesis                      b) alternative hypothesis  
 c) null hypothesis                      d) simple hypothesis
- x) Area of the critical region depends on  
 a) value of the statistic                      b) number of observations  
 c) size of type I error                      d) size of type II error

2. Answer **any five** of the following :

10

- i) Define joint probability mass function of the bivariate discrete r.v. (X, Y).  
 ii) Define a continuous r.v. X.  
 iii) Define expectation of a continuous r.v. X.  
 iv) Define exponential distribution.  
 v) Find the E (X + 10) if the p.d.f. of a r.v. X. is given by

$$f(x) = \begin{cases} \frac{1}{2} & , 1 < x < 3 \\ 0 & , \text{otherwise} \end{cases}$$

- vi) Define a null hypothesis.

3. A) Answer **any two** of the following :

6

- i) The joint p.m.f. of a bivariate r.v. (X, Y) is given by  
 $P(x, y) = k(5x + 3y)$  ;  $x = 1, 2, 3$ ,  $y = 0, 1, 2$   
 Find the value of k and  $P(X \leq 2, Y \geq 1)$ .



ii) Verify whether the following function is the probability density function of a continuous r.v. X

$$f(x) = \begin{cases} 2x, & 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

If yes, find  $P(X \geq 0.25)$ .

iii) A continuous random variable X has the p.d.f. :

$$f(x) = \begin{cases} 5x^4, & 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

Find variance.

B) Define cumulative distribution function of continuous random variable X and state any four properties of it. 4

4. Answer **any two** of the following : 10

i) Find cumulative distribution function of a continuous uniform distribution.

ii) Define normal distribution. State any four properties of it.

iii) The life length of the computers manufactured by certain company has an exponential distribution with mean life time 360 hours. What is the probability that the computer will operate for 180 hours or less ?

5. Answer **any two** of the following : 10

i) A random sample of 100 cigarettes of a certain brand gives the average nicotine content 27 mg with a standard deviation of 8 mg. Test whether the average nicotine content of the cigarettes is 30 mg at 5% level of significance. Given  $Z_{\alpha/2} = 1.96$ .

ii) Write the test procedure for single proportion.

iii) The joint probability distribution of a bivariate r.v. (X, Y) is given by

		Y		
		1	2	3
X	1	0.1	0.1	0.2
	2	0.2	0.3	0.1

Verify whether X and Y are independent random variables.

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**B.Sc. (ECS) (Part – II) (Semester – III) Examination, 2014**  
**COMPUTER SCIENCE**  
**Data Structures and Algorithms – I (Paper – III)**

Day and Date : Thursday 15-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. Choose correct alternatives : 10
- 1) In \_\_\_\_\_ priority queue, smallest element have maximum priority.  
a) Ascending            b) Descending    c) Both a and b    d) None
  - 2) The postfix equivalent of the prefix : \* + ab – cd is  
a) ab + cd – \*            b) abcd + – \*    c) ab + cd \*–      d) ab + – cd \*
  - 3) In case of circular linked list, 'NULL' pointer of last node is replaced by address of \_\_\_\_\_ node.  
a) Last                    b) Second last    c) Middle            d) First
  - 4) \_\_\_\_\_ is useful data structure for any simulation application.  
a) Stack                  b) Queue            c) Linked list        d) Tree
  - 5) Attempt to push element in full stack is called  
a) Overloading          b) Underflow      c) Overflow          d) None
  - 6) Array is not data structure  
a) True                    b) False
  - 7) Forward and backward traversing is possible in singly linked list.  
a) True                    b) False
  - 8) Dynamic memory allocation by means of  
a) Array                  b) Pointer            c) Function            d) Both a and b
  - 9) The total number of fields of double linked list is  
a) 1                        b) 2                    c) 3                    d) 4
  - 10) Queue works in \_\_\_\_\_ manner.  
a) LIFO                    b) LILO                c) FILO                d) FIFO



2. Answer **any five** of the following : **10**
- 1) Why linked list is called as 'linear data structure' ?
  - 2) Define 'push' operation of stack.
  - 3) Differentiate between linear and non-linear data structure.
  - 4) How two-dimensional array initialized ?
  - 5) Define space complexity.
  - 6) Define 'priority queue'.
3. A) Answer **any two** of the following : **6**
- 1) Write an algorithm to convert infix expression into postfix expression.
  - 2) Define 'insert after' operation of singly linear linked list.
  - 3) Write a program to find sum of elements of array.
- B) Write a program to reverse the string by using stack. **4**
4. Answer **any two** of the following : **10**
- 1) What is ADT ? Explain ADT for queue.
  - 2) What is circular linked list ? Explain 'search' operation of doubly circular linked list.
  - 3) Explain use of stack in recursion.
5. Answer **any two** of the following : **10**
- 1) Write a program to implement queue by following operations  
a) insert                      b) remove                      c) display
  - 2) Suppose an array a [15] stores numeric values, write algorithm for  
a) Calculate average of all values of array 'a'.  
b) Display even numbers stored in array 'a'.
  - 3) Write an algorithm for evaluation of postfix expression.
-





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**B.Sc. (ECS) (Part – I) (Semester – I) Examination, 2014  
PROGRAMMING USING ‘C’ – I (Paper – II)**

Day and Date : Thursday, 24-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. Choose correct alternatives : 10

1) What will be the output of following ‘c’ code :

```
void main ( )  
{  
    int a[3] = {1, 2, 3},  
    printf(“%d”, 1[a]);  
}
```

- a) 1                      b) 2                      c) 3                      d) Error

2) What will be the output of following ‘c’ code :

```
void main ( )  
{  
    int a;  
    a = sizeof (void);  
    printf(“%d”, a);  
}
```

- a) 0                      b) 1                      c) 2                      d) Error


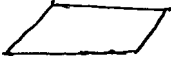
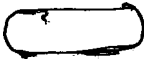

3) The string is nothing but array of \_\_\_\_\_

- a) character      b) integer      c) float      d) double

4) We can define more than one main ( ) in ‘c’ program.

- a) True                      b) False



- 5) \_\_\_\_\_ is not keyword in 'c' language.  
a) const                      b) int                      c) auto                      d) string
- 6) What will be the output of following 'c' code :  
int z = 5;  
printf ("%d\t%d", z++, ++z);  
a) 5 6                      b) 6 6                      c) 6 5                      d) 5 5
- 7) \_\_\_\_\_ operator is not operates on float and double type value.  
a) sizeof                                              b) bitwise  
c) arithmetic                                              d) none of these
- 8) \_\_\_\_\_ flowchart symbol is used to show input and output steps of algorithm.  
a)                                               b)   
c)                                               d) 
- 9) The case label in switch statement must be \_\_\_\_\_  
a) constant                                              b) unique  
c) both a) and b)                                              d) none of these
- 10) \_\_\_\_\_ type of array requires maximum memory to store 10 values.  
a) int                                              b) char                                              c) float                                              d) double

2. Answer **any five** of the following :

10

- 1) Define keyword and identifier.
- 2) Define 'operator'. Write use of = operator.
- 3) What is string ? List out any three string handling function.
- 4) What is entry controlled loop ? List out entry controlled loops available in 'c' language.
- 5) What is array ? List out types of array.
- 6) What is the importance of main ( ) in 'c' program ?



3. A) Answer **any two** of the following : **6**
- 1) Differentiate between while and do-while loop.
  - 2) Explain strcpy ( ) function in details.
  - 3) Explain getchar ( ) and putchar ( ) with example.
- B) Write short note on : Mixed mode expression. **4**
4. Answer **any two** of the following : **10**
- 1) Write a program to find minimum number between array elements.
  - 2) Explain ternary operator with example.
  - 3) Explain 'else-if' ladder statement with example.
5. Answer **any two** of the following : **10**
- 1) Write a program which counts total number of spaces in entered string.
  - 2) What is flowchart ? Explain different symbols used in flow chart.
  - 3) Write a program to check entered number is perfect or not.
-



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**B.Sc. (ECS) – II (Semester – III) Examination, 2014**  
**Paper – IV : SOFTWARE ENGINEERING – I**

Day and Date : Friday, 16-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to right indicate full marks.**

1. Choose the correct alternative : 10

- 1) The specific methods used for collecting data are called \_\_\_\_\_ techniques.
  - a) Observation
  - b) Fact finding
  - c) Interview
  - d) All
- 2) Decision tables are divided into
  - a) 4 columns
  - b) 4 quadrants
  - c) 4 rows
  - d) none
- 3) Training given to the user in the system development is \_\_\_\_\_ feasibility.
  - a) Technical
  - b) Economical
  - c) Operational
  - d) All
- 4) In \_\_\_\_\_ model o/p of one phase will be input to the next phase.
  - a) Spiral
  - b) SDLC
  - c) Waterfall
  - d) Prototyping
- 5) Banking system is example of
  - a) TPS
  - b) MES
  - c) DSS
  - d) ES
- 6) System analysis means \_\_\_\_\_ the system.
  - a) Understanding
  - b) Identifying
  - c) Examining
  - d) All
- 7) Due to \_\_\_\_\_ all team members know the exact status of the software project.
  - a) Reliability
  - b) Portability
  - c) Visibility
  - d) Trust
- 8) A \_\_\_\_\_ analysis is a feature must be included in every new system.
  - a) Determination
  - b) Requirement
  - c) Database
  - d) System



- 9) \_\_\_\_\_ is feedback data for a driver.
  - a) Traffic signal
  - b) Person for asking lift
  - c) Speedometer
  - d) Indicator
- 10) The input \_\_\_\_\_ on which the system operates.
  - a) Money
  - b) Machine
  - c) Man
  - d) Material

- 2. Answer **any five** of the following : 10
    - 1) Define interface with example.
    - 2) Explain HIPO chart.
    - 3) What is request clarification ?
    - 4) List the tools for prototyping.
    - 5) What is record review ?
    - 6) What the radius of the spiral model indicates ?
  
  - 3. A) Answer **any two** of the following : 6
    - 1) Explain need of decision tables.
    - 2) What is software engineering ?
    - 3) Explain the role of system analyst.  
B) Explain prototyping in short. 4
  
  - 4. Answer **any two** of the following : 10
    - 1) Explain skills required in system analyst.
    - 2) List the qualities of software.
    - 3) Explain decision trees with example.
  
  - 5. Answer **any one** of the following : 10
    - 1) Explain different types of system with example.
    - 2) Explain SDLC with waterfall model.
-



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**B.Sc. (ECS) – II (Semester – III) Examination, 2014**  
**Paper – V : ORGANIZATION OF P.C – I**

Day and Date : Saturday, 17-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

**Instructions:** i) **All questions are compulsory and carry equal marks.**  
ii) **Draw neat diagram wherever necessary.**

1. Fill in the blanks with correct alternative and rewrite : **10**

1) \_\_\_\_\_ is used to temporarily remember certain special condition.

- a) Control unit
- b) Instruction register
- c) Flag
- d) Cache memory

2) The \_\_\_\_\_ unit is most complex unit in computer.

- a) CPU
- b) ALU
- c) CU
- d) RAM

3) The \_\_\_\_\_ memory is the working memory of the computer.

- a) RAM
- b) HDD
- c) DVD
- d) USB

4) The fetching of instruction is done by \_\_\_\_\_ unit.

- a) ALU
- b) Control
- c) Memory
- d) Input device

5) In \_\_\_\_\_ mouse a small round rubber ball in bottom touches the mouse pad.

- a) Optical
- b) Wireless
- c) Mechanical
- d) Both a & c

6) The Laser printer is \_\_\_\_\_ printer.

- a) impact
- b) non-impact
- c) mechanical
- d) none

7) In CD-ROM the track length is \_\_\_\_\_

- a) 1 km
- b) 5 km
- c) 10 km
- d) 20 km



8) \_\_\_\_\_ is special input device to convert both pictures and text into stream of data.

- a) printer                      b) modem                      c) scanner                      d) keyboard

9) \_\_\_\_\_ operating system is widely used for 8088.

- a) Windows 95                      b) Windows 98                      c) DOS                      d) Mac-OS

10) The \_\_\_\_\_ supports multiprogramming and virtual memory.

- a) PC-XT                      b) PC-AT                      c) PC-NT                      d) PC

2. Answer **any five** of the following :

**10**

- a) Write three phases of Instruction cycle with concept.
- b) List of names of memory hierarchy.
- c) Give four functions of operating system.
- d) Write four characteristics of printer.
- e) Draw diagram of floppy disk drive.
- f) Give difference between CD & DVD.

3. A) Answer **any two** of the following :

**6**

- 1) Explain keyboard interface.
- 2) Explain control signals in PC.
- 3) Compare PC & PC – AT.

B) What is interrupt ? Explain different types of interrupt.

**4**

4. Attempt **any two** of the following :

**10**

- 1) Explain working of laser printer.
- 2) Define PC family. Explain NG PC family in details.
- 3) Explain error detection techniques.

5. Attempt **any two** of the following :

**10**

- 1) What are different types of scanner ? Explain working of scanner.
  - 2) Write short note on cache memory.
  - 3) Write a note on DMA.
-



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**B.Sc. (ECS) II (Semester – III) Examination, 2014  
ENGLISH – I (Compulsory) (Paper – VII)**

Day and Date : Tuesday, 20-5-2014

Max. Marks : 50

Time : 3.00 p.m. to 5.00 p.m.

**Instructions:** i) *All questions are compulsory.*  
ii) *Figures to the **right** indicate **full** marks.*

1. A) Fill in the blanks in the following sentences by choosing the correct alternative : **6**
- 1) Ellsworth was greatly interested in
    - a) listening to radio
    - b) reading books
    - c) business activities
    - d) watching TV serials
  - 2) The ice-cap is compared to
    - a) a big wedding-cake
    - b) a giant
    - c) a vast ocean
    - d) the round earth
  - 3) The growth of plant life on the Antarctic peninsula is due to
    - a) breaking of the iceberg
    - b) global warming
    - c) ample sea-water
    - d) chilly winds
  - 4) Garbage is
    - a) waste material
    - b) fiber
    - c) stale food
    - d) garden products
  - 5) Use of the verb 'urge' in the title 'Say No To Plastic Bags' Urge Greens suggests :
    - a) a sense of politeness
    - b) a sense of appeal
    - c) a sense of sadness
    - d) a feeling of anger
  - 6) What is the intruders intention ?
    - a) to be Vincent Charles guard
    - b) to be a big smuggler
    - c) to be a murderer
    - d) to be a good human being





B) Pair the synonyms :

4

**A**

- 1) Specs
- 2) Gypsy
- 3) Green grocer
- 4) Treat

**B**

- a) a wandering race
- b) glasses
- c) something that gives pleasure
- d) a dealer in domestic goods
- e) counterfeit
- f) sentimental
- g) balanced

2. Give brief answers to the following questions. (attempt **any five**)

10

- 1) Who was Ellsworth ? Why was he in the hospital ?
- 2) Where do swallows catch the insects ?
- 3) What is the intruder's intention ?
- 4) How large was the iceberg ?
- 5) What does the title "Say No To Plastic Bags" suggests ?
- 6) What interested Mr. Ellsworth in the art galleries ?

3. A) Write short notes on **any two** of the following :

6

- 1) Frank Swain as tutor
- 2) Gerard as melodramatic character
- 3) The theme of 'Breaking The Ice'.

3. B) Attempt **any two** of the following :

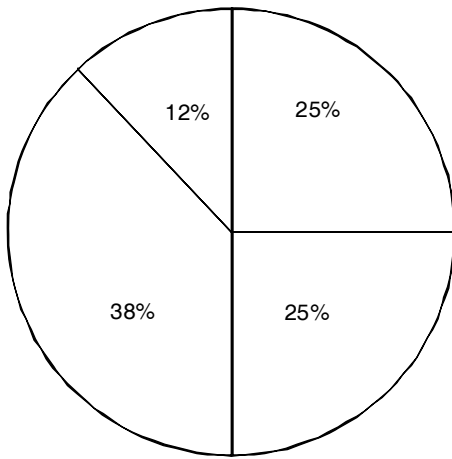
4

- 1) Write a paragraph about the reasons/ causes of road accidents :

<b>Road Accidents in the city during 1994/95</b>	
<b>Reasons</b>	<b>Number of accidents</b>
1. Brake failure	250
2. Overtaking	375
3. Drink Drivers	550
4. Bad Roads	500
5. Speeding	250
6. Ignorance of Rules	100
7. Lack of Visibility	75
<b>Total</b>	<b>2100</b>

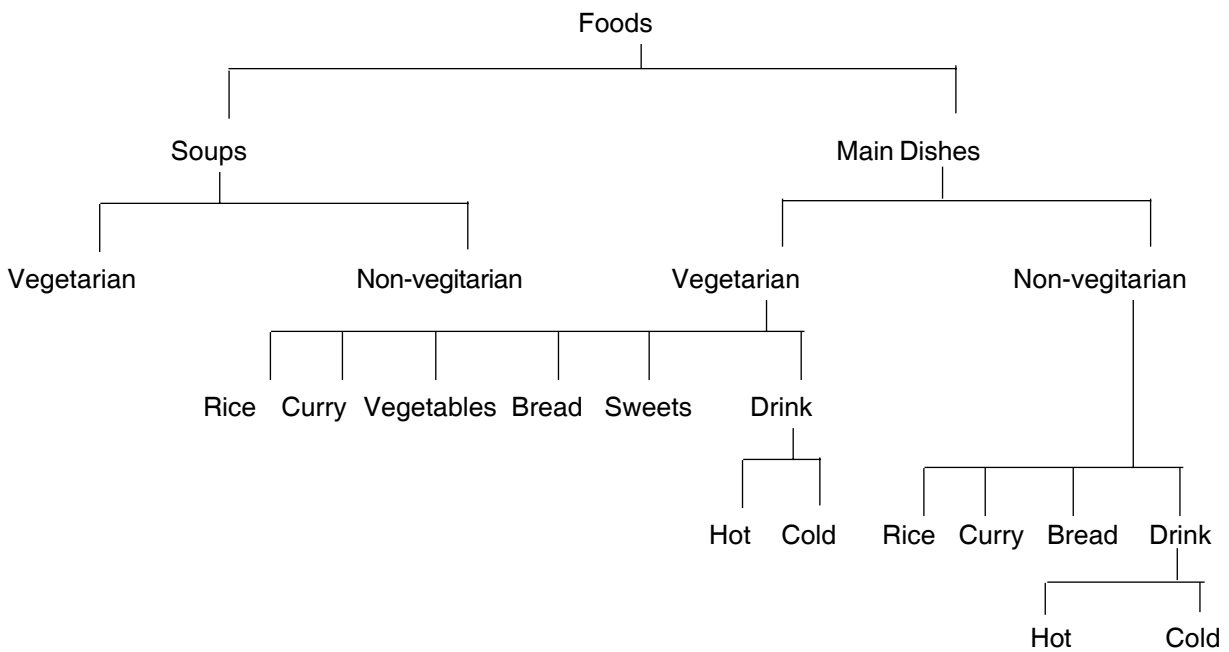


2) Narrate the information given in the circle about the distribution of patients in a hospital.



General ward – 38 %  
 Children's ward – 25 %  
 Maternity ward – 25 %  
 Accident ward – 12 %

3) Write a paragraph based on the information given below in the tree diagram :



4. Attempt **any one** of the following :

10

1) Write a summary of the passage given below :

A man or women makes direct contact with society in two way : as a member of some familial, professional or religious group or as a member of a crowd. Groups are capable of being as a moral and intelligent as the individuals who form them; a crowd is chaotic, has no purpose of its own and is capable of anything except intelligent action and realistic thinking. Assembled in a crowd, people lose their powers of reasoning and their capacity for moral choic.



Their suggestibility is increased to the point where they cease to have any judgement or will of their own. They become very excitable they lose their all sense of individual or collective responsibility, they are subject to sudden excesses of rage, enthusiasm and panic. In a word, a man in a crowd behaves as though he had swallowed a large dose of some powerful intoxicant.

2) Write a small paragraph with a proper sequence of events :

Education : M.A. Oxford University doctorate from the University of Paris.

Died : December 1, 1964

1962-64 : Director, Genetics and Biometry Laboratory, Bhubaneswar

1922-32 : Reader in Bio-chemistry, Cambridge University

1937-57 : Professor of Biometry, London University

1932 : Fellow of the Royal Society

1957-61 : Professor, Indian Statical Institute

Born : November 5, 1892.

5. Narrate your experience of the first day in the school/college.

10

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**B.Sc. (E.C.S.) – II (Semester – IV) Examination, 2014**  
**COMPUTER SCIENCE (Paper – I)**  
**Operating Systems – II**

Day and Date : Saturday, 3-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**Instructions:** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the correct alternatives. 10
- 1) \_\_\_\_\_ describes the state of the file system.  
a) Data block      b) Boot block      c) Super block      d) Inode block
  - 2) The free buffer block is added of free list at  
a) Starting      b) Middle      c) Ending      d) None of these
  - 3) Relocatable code is generated at  
a) load time      b) run time  
c) compile time      d) none of these
  - 4) A page table is used for  
a) converting logical address to physical address  
b) converting physical address to logical address  
c) searching a file  
d) looking at contents of a file
  - 5) A page fault occurs  
a) when the page is in memory  
b) when the page is not in memory  
c) when the process enters the blocked state  
d) when the process is in the ready state



- 6) When a deadlock occurs, the system has to be in
- a) safe state
  - b) unsafe state
  - c) any of the two states
  - d) none of these
- 7) Segmentation suffers from
- a) Internal fragmentation
  - b) External fragmentation
  - c) Both a & b
  - d) None of these
- 8) Physical memory is broken into fixed size blocks called
- a) document
  - b) pages
  - c) packets
  - d) frames
- 9) A virtual memory system is a combination of
- a) H/W and S/W techniques
  - b) Printer and CPU
  - c) I/P and O/P
  - d) Motherboard and CPU
- 10) The Unix architecture is divided into
- a) one level
  - b) two level
  - c) three level
  - d) four level

2. Answer **any five** of the following :

10

- 1) What is compaction ?
- 2) Give the disadvantages of contiguous file allocation.
- 3) Explain two level directory structure.
- 4) Distinguish between compile time and execution time.
- 5) Give the advantages of buffer cache.
- 6) What is virtual memory ?

3. A) Answer **any two** of the following :

6

- 1) What is dead lock ? Give one example.
- 2) Explain dynamic binding.
- 3) Give the different operations of a file.

B) Write note on paging.

4



4. Answer **any two** of the following : **10**

- 1) Compare linked, contiguous and indexed file allocation.
- 2) Explain Acyclic graph directory structure.
- 3) Write a note on recovery for dead lock.

5. Answer **any one** of the following. **10**

- 1) Explain structure of buffer header and buffer pool.
  - 2) Explain segmentation in detail.
-





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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014**  
**Computer Science**  
**OBJECT ORIENTED PROGRAMMING USING C++ – II (Paper – II)**

Day and Date : Monday, 5-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose correct alternatives. 10

- 1) A class can inherit the attribute of two more classes, this is known as
  - a) multiple inheritance
  - b) hybrid inheritance
  - c) multilevel inheritance
  - d) singal inheritance
- 2) The act of communicating with an object to get something done
  - a) message passing
  - b) polymorphism
  - c) inheritance
  - d) all
- 3) \_\_\_\_\_ file mode used to open a file in append mode.
  - a) ios :: in
  - b) ios :: out
  - c) ios :: trunc
  - d) ios :: app
- 4) A \_\_\_\_\_ class is one that is not used to create objects.
  - a) Abstract class
  - b) derived class
  - c) pure class
  - d) virtual base class
- 5) Virtual function implements one form of polymorphism.
  - a) True
  - b) False
- 6) Find the wrong statement
  - a)  $p = (\text{int } *) (p - q) - a ;$
  - b)  $p = p - b$
  - c)  $p = p - q - a$
  - d) all of above
- 7) Which function is used input stream ?
  - a) get ( )
  - b) put ( )
  - c) get line ( )
  - d) read ( )





- 8) A base class contains pure virtual function called  
a) derived  
b) abstract base class  
c) inheritance  
d) none of these
- 9) A base class may also be called as  
a) sub class  
b) child class  
c) derived class  
d) parent class
- 10) Which file stream of object used to write in a file ?  
a) ofstream  
b) ostream  
c) ifstream  
d) istream
2. Answer the following : **10**
- 1) Define inheritance.
  - 2) What is meant by polymorphism ?
  - 3) Define pure virtual function.
  - 4) List out stream classes.
  - 5) Define file.
3. a) Answer **any two** of the following : **6**
- 1) Explain stream classes with example.
  - 2) Differentiate run time polymorphism and compile time polymorphism.
  - 3) Explain multiple inheritance.
- b) Write a program to demonstrate the use of virtual function. **4**
4. Answer **any two** of the following : **10**
- 1) Explain any two stream state member function.
  - 2) Write a short note on 'Abstract base class'.
  - 3) Write a program in C++ to read a file and count the number of vowels in that file.
5. Answer **any two** of the following : **10**
- 1) Describe virtual base class with example.
  - 2) Explain the term 'constructor under inheritance'.
  - 3) Write a program in C++ to copy one file into another file.
-



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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014**  
**COMPUTER SCIENCE**  
**Paper – III : Data Structures and Algorithms – II**

Day and Date : Tuesday, 6-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose correct alternatives. 10
- 1) Which of the following data structure is suitable to represent hierarchical relationship between elements ?  
a) Tree                      b) Deque                      c) Linked List                      d) Stack
  - 2) Which of the following sorting algorithm is of divide and conquer type ?  
a) Bubble sort                      b) Insertion sort  
c) Quick sort                      d) All of these
  - 3) The number of possible binary trees with 3 nodes is  
a) 12                      b) 13                      c) 5                      d) 15
  - 4) \_\_\_\_\_ is useful for traversing a given graph by Breadth First Search (BFS) ?  
a) Stack                      b) Set                      c) List                      d) Queue
  - 5) The post order traversal of a binary tree is DEBFCA. Find out pre-order traversal.  
a) ABFCDE                      b) ABDECF                      c) ADBFEC                      d) ABDCEF
  - 6) A binary tree whose every node has either zero or two children is called  
a) Complete binary tree                      b) Binary search tree  
c) Extended binary tree                      d) All of these
  - 7) The searching technique that takes  $O(1)$  time to find a data is  
a) linear search                      b) binary search  
c) tree search                      d) hashing

P.T.O.



- 8) AOV network is useful for
- a) critical path
  - b) shortest path
  - c) topological sort
  - d) none of these
- 9) In B-tree we can access record
- a) randomly
  - b) sequentially
  - c) orderly
  - d) none of these
- 10) Finding location of the element with a given value is
- a) Traversal
  - b) Search
  - c) Sort
  - d) None of these

2. Answer **any five** of the following. **10**
- 1) What is the use of threaded binary tree ?
  - 2) Explain height of tree with example.
  - 3) What is sorting ? What are the types of sorting ?
  - 4) Define graph. What are the types of graph ?
  - 5) Give the applications of trees.
  - 6) What is Linear search ?
3. A) Answer **any two** of the following. **6**
- 1) Explain the representation of Binary tree.
  - 2) Write a function for pre-order tree traversals.
  - 3) Construct an AVL tree for the following data.  
67, 80, 75, 40, 35, 70, 5, 83, 99.
- B) Explain bubble sort with example. **4**
4. Answer **any two** of the following. **10**
- 1) Write an algorithm for BFS traversal.
  - 2) Explain adjacency matrix with suitable example.
  - 3) Explain B+ tree with example.
5. Answer **any two** of the following. **10**
- 1) Write an algorithm for insertion sort.
  - 2) Write a function to create a binary search tree.
  - 3) What is hashing ? Explain in detail.
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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014**  
**COMPUTER SCIENCE (Paper – IV)**  
**Software Engineering – II**

Day and Date : Monday, 26-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicates full marks.**

1. Choose the correct alternative. 10
- 1) In \_\_\_\_\_ every non-key element is transitively dependent on the primary key.  
a) 1 NF                      b) 2 NF                      c) 3 NF                      d) All of these
  - 2) Which of the following is not element of Data Dictionary (DD) ?  
a) Length                      b) Range                      c) Data type                      d) Data group
  - 3) A structure chart is a design tool that shows the relationship between program modules.  
a) True                                              b) False
  - 4) Conversion method in which users being used to an old system, continue to use an old system along with the new system is \_\_\_\_\_  
a) Multiprocessing                                              b) Parallel run  
c) Direct                                              d) Pilot approach
  - 5) \_\_\_\_\_ involves collection of modules testing.  
a) System testing                                              b) Sub-system testing  
c) Unit testing                                              d) Acceptance testing
  - 6) CASE tools help developers during the \_\_\_\_\_ phase of the process.  
a) requirement specification                                              b) planning  
c) design                                              d) all of these
  - 7) During the maintenance phase \_\_\_\_\_  
a) Programs are tested                                              b) System analysis is carried out  
c) Both a) and b)                                              d) None of these



- 8) The Data Flow Diagram (DFD) shows \_\_\_\_\_
  - a) the flow of data
  - b) the processes
  - c) the areas where data are stored
  - d) all of these
- 9) The first items defined for a new system are its \_\_\_\_\_
  - a) inputs
  - b) processes
  - c) storages
  - d) outputs
- 10) \_\_\_\_\_ applied to each field of a record to ensure that entered data is within predefined size.
  - a) Cross checks
  - b) Picture check
  - c) Limit check
  - d) Check digit

- 2. Answer **any five** of the following : **10**
    - 1) Define E-R diagram.
    - 2) Give the importance of data dictionary.
    - 3) What is the difference between adaptive and corrective maintenance ?
    - 4) What is testing ?
    - 5) Give the advantages of top-down incremental implementation.
    - 6) What is the concept of 1 NF.
  
  - 3. A) Answer **any two** of the following : **6**
    - 1) Give the advantages of normalization.
    - 2) What is data capture ? State its objectives.
    - 3) Give the benefits of CASE tools.

B) Explain different types of relationships. **4**
  
  - 4. Answer **any two** of the following : **10**
    - 1) Explain on-line versus real-time processing.
    - 2) Discuss different types of system maintenance.
    - 3) Explain white-box testing with suitable examples.
  
  - 5. Answer **any one** of the following : **10**
    - 1) Draw 0<sup>th</sup> level and 1<sup>st</sup> level DFD for Inventory control system.
    - 2) Explain bottom-up incremental implementation. State its advantages and disadvantages.
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**B.Sc. – II (E.C.S.) (Semester – IV) Examination, 2014**  
**ELECTRONICS**  
**Paper – V : Organization of PC – II**

Day and Date : Thursday, 8-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**Instructions :** i) **All questions are compulsory and carry equal marks.**  
ii) **Draw neat diagram wherever necessary.**

1. Fill in the blanks with correct alternative and rewrite : **10**

- 1) In a \_\_\_\_\_ topology data travels in a single direction around the circle from one computer to the next.  
a) Ring                      b) Bus                      c) Star                      d) Mesh
- 2) Intel pentium is \_\_\_\_\_ bit microprocessor.  
a) 8                              b) 16                              c) 32                              d) 64
- 3) A \_\_\_\_\_ is a set of rules for communication between computer.  
a) server                      b) client                      c) protocol                      d) none of these
- 4) The MMX technology of Intel offer \_\_\_\_\_ technique.  
a) SIMD                      b) SIDD                      c) SSMD                      d) SOMD
- 5) \_\_\_\_\_ connect computers is connected to all computer.  
a) Mesh                      b) Star                      c) Ring                      d) None of these
- 6) \_\_\_\_\_ cable has single thick copper wire.  
a) Twisted pair                      b) Co-axial cable  
c) Fibre optics cable                      d) Both a and b
- 7) In \_\_\_\_\_ network all computers are equal.  
a) server based      b) peer-to-peer      c) terminal                      d) none of these

**P.T.O.**



8) Radio wave are

- a) Omnidirectional
- b) Unidirectional
- c) Bidirectional
- d) Both a and b

9) In \_\_\_\_\_ there are set of AND gates.

- a) LDA
- b) PLA
- c) CPL
- d) APL

10) A \_\_\_\_\_ takes weakened or corrupted signal and regenerate it.

- a) Hub
- b) Switch
- c) Repeater
- d) Router

2. Answer **any five** of the following : **(5×2=10)**

- a) What is logic family ?
- b) Draw diagram of FPGA.
- c) Give four features of 80286.
- d) What is bridge and switch ?
- e) What is RISC ?
- f) Draw diagram of mesh topology.

3. A) Answer **any two** of the following : **(2×3=6)**

- 1) Give features of embedded system.
- 2) Explain Hub in brief.
- 3) Write note on pentium processor.

B) Explain Network Interface Card. **4**

4. Attempt **any two** of the following : **(2×5=10)**

- 1) Write short note on SMD.
- 2) Compare RISC and CISC processor.
- 3) Explain types of networking.

5. Attempt **any two** of the following : **(2×5=10)**

- 1) Write note on Fan-out concept.
- 2) Explain instruction and execution unit of 80286.
- 3) Write a note on transmission media.



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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014  
MICROPROCESSORS – II (Paper – VI)**

Day and Date : Friday, 9-5-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Neat diagrams must be drawn wherever necessary.**

1. Choose correct alternatives :

10

- 1) \_\_\_\_\_ is arithmetic instruction.  
a) RCL                      b) STC                      c) MOV                      d) AAA
- 2) \_\_\_\_\_ is program control instruction.  
a) JNAE                      b) ANI                      c) TEST                      d) CWD
- 3) XLAT is \_\_\_\_\_ instruction.  
a) Arithmetic              b) Data transfer      c) Logical                  d) String
- 4) In linear decoding \_\_\_\_\_ line is used to generate chip select.  
a)  $A_{14} - A_{19}$               b)  $A_{19}$                       c)  $A_{14}$                       d)  $A_{16}$
- 5) 8255 is \_\_\_\_\_ device.  
a) PIC                      b) PTC                      c) PPI                      d) PCI
- 6) 8253 has \_\_\_\_\_ no of modes.  
a) 8                      b) 4                      c) 3                      d) 6
- 7) 80286 is introduced in  
a) 1982                      b) 1972                      c) 1962                      d) 1992
- 8) Address bus of 80386 is \_\_\_\_\_ bit.  
a) 16                      b) 20                      c) 24                      d) 32
- 9) \_\_\_\_\_ is quad processor.  
a) 80486                      b) 80386                      c) 80286                      d) 80186
- 10) Pentium pro is introduced in  
a) 1994                      b) 1993                      c) 1995                      d) 1996





2. Attempt **any five** of the following : **10**
- 1) Explain LEA, LDS and LES of 8086.
  - 2) Explain features of 80486.
  - 3) Classify the instructions of 8086.
  - 4) Explain multiplication instruction of 8086.
  - 5) Explain read write logic of 8253.
  - 6) Explain concept of interfacing.
3. A) Attempt **any two** of the following : **6**
- 1) Explain bit manipulation instructions.
  - 2) Explain features of 80286.
  - 3) Compare pentium III and IV.
- B) Explain memory mapped I/O. **4**
4. Attempt **any two** of the following : **10**
- 1) Explain linear select decoding.
  - 2) Explain string instructions.
  - 3) Write program to arrange data in ascending and descending order.
5. Attempt **any two** of the following : **10**
- 1) Explain interfacing of LED display.
  - 2) Explain control word of 8255.
  - 3) Compare features of pentium I and II.
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**B.Sc. (E.C.S.) – (Sem. – I) Examination, 2014**  
**LINEAR ELECTRONICS – I (Paper – III)**

Day and Date : Friday, 25-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions :** 1) **All** questions are **compulsory**.  
2) Figures to the **right** indicate **full** marks.  
3) **Neat** diagram must be drawn **wherever** necessary.

1. Choose correct alternative : **(1×10=10)**
- 1) An n-type semiconductor is \_\_\_\_\_  
a) positively charged      b) negatively charged      c) electrically
  - 2) In semiconductor current conduction is due to \_\_\_\_\_  
a) holes  
b) free electrons  
c) holes and free electrons
  - 3) A forward biased p-n junction has resistance of the \_\_\_\_\_  
a) order of  $\Omega$       b) order of  $K\Omega$       c) order of  $M\Omega$
  - 4) A pn junction that radiates energy as light instead of as heat is called \_\_\_\_\_  
a) LED      b) Photodiode      c) Photocell
  - 5) The operating point is also called \_\_\_\_\_  
a) cutoff point      b) quiescent point      c) Saturation point
  - 6) Ceramic capacitor are preferable for use at \_\_\_\_\_ frequencies.  
a) lower      b) higher      c) none of these
  - 7) The color printed on resistor are brown, black, and brown the value of resistor is \_\_\_\_\_  
a)  $100\ \Omega$       b)  $10\ \Omega$       c)  $101\ \Omega$
  - 8) Super position theorem can be applied only to circuit having \_\_\_\_\_ elements.  
a) non linear      b) passive      c) linear bilateral



- 9) The transistor  $\beta$  is much \_\_\_\_\_ the  $\alpha$  .  
 a) larger than                      b) equal to                      c) zero
- 10) Ripple factor of half wave rectifier is \_\_\_\_\_  
 a) 121                                  b) 1.21                                  c) 0.121

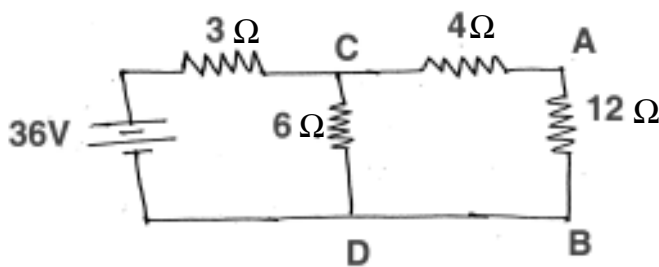
2. Attempt **any five** of the following : **(5×2=10)**

- 1) Define valence band and conduction band.
- 2) Define rectifier and uses of rectifier.
- 3) Draw I-V characteristics of zener diode.
- 4) Write any two semiconductor material names used in LED.
- 5) State Norton's theorem.
- 6) Draw diagram of common cathode seven segment display.

3. A) Attempt **any two** of the following : **(3×2=6)**

- 1) Explain Avalanche effect with diagram.
- 2) Explain working of P-N-P transistor.
- 3) Explain common emitter configuration.

B) Apply Thevenin's theorem to find current through the  $12\Omega$  resistor of the ckt. given below : **(4×1=4)**



4. Solve **any two** of the following : **(5×2=10)**

- 1) Explain N-type semiconductor with diagram.
- 2) Explain working of LED.
- 3) Explain the working of bridge rectifier.

5. Solve **any two** of the following : **(5×2=10)**

- 1) Define Inductor. Explain air core, iron core and ferrite core inductor.
- 2) State and explain maximum power transfer theorem.
- 3) Explain function of  $\pi$  filter in the rectifier with diagram.



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**B.Sc. (ECS) – II (Semester – IV) Examination, 2014**  
**ENGLISH – II (Paper – VII)**  
**English for Communication**

Day and Date : Saturday, 10-5-2014

Max. Marks : 50

Time : 11.00 a.m. to 1.00 p.m.

**Instructions:** I) **All** questions are **compulsory**.  
II) Figures to the **right** indicate **full** marks.

1. A) Fill in the blanks in the following sentences by choosing the correct alternatives :

6

- 1) Bill kept worrying \_\_\_\_\_
  - a) because the machine would do him harm
  - b) because Mary Ann would find out that it was a machine which told him to propose to her
  - c) because he did not know what the machine would do
  - d) because Mary Ann would marry Cliff.
  
- 2) The Swamiji could not perform the feat of driving the road engine over his chest as \_\_\_\_\_
  - a) The Muncipal Chairman did not allow him to do so
  - b) The talkative man did not allow the Swamiji to use his engine
  - c) The Magistrate did not permit him to perform the feat there
  - d) The people of the town were not ready to pay the Swamiji for the yoga feat
  
- 3) Aminocentesis technology, originally develop to \_\_\_\_\_
  - a) sex determination
  - b) detect skin problem
  - c) detect foetal abnormalities
  - d) none

P.T.O.



- 4) The tree is very dear to the soul because \_\_\_\_\_
- a) under it she played with her companions
  - b) cows were sleeping under it
  - c) birds were singing in it
  - d) monkeys were sitting in it
- 5) A Waytail came near ford for \_\_\_\_\_
- a) play with water
  - b) wandering
  - c) drinking
  - d) to meet the baby
- 6) \_\_\_\_\_ book contain ideas on medicine and surgery.
- a) Sulabh Sutra
  - b) Charak and Sushruta Samhitas
  - c) Brihad Vimanshastra
  - d) Puranas and epic

B) Study the following verbal phrases and use them in the following sentences [cling to, provide with, put off, dispose of] 4

- 1) Every shopkeeper should \_\_\_\_\_ the needs of the customer.
- 2) He doesn't want to \_\_\_\_\_ his property.
- 3) The child wanted to \_\_\_\_\_ its mother.
- 4) You should \_\_\_\_\_ your doubts and fears.

2. Give brief answers to the following questions (attempt **any five**) : 10

- 1) Who moved the road engine finally ?
- 2) When was Shukra Neeti written ? What is the subject of the book ?
- 3) What is amniocentesis ? What was it developed for originally ?
- 4) Who is watching the sunrise ?
- 5) What was the reaction of the bird when an angry bull went wading through ?
- 6) What does the phrase 'beating of the drums of the human heart' suggest ?



3. A) Write short notes on **any two** of the following : 6
- 1) Write the theme of 'Wastail and Baby'.
  - 2) Write in a brief about the talkative man represented by R.K. Narayan in his work Engine Trouble.
  - 3) Write in brief about 'Going Back in Time'.
- B) Attempt **any one** of the following : 4
- 1) Frame a set of questions that you would like to ask a candidate applying for the post of clerk in a bank.
  - 2) Interpret the following rule answering the questions given below :  

In order to be licensed by the state to operate a motor vehicle, a driver must achieve a score of at least 90% on a twenty-item. Fill in examination covering traffic signs; and 80% on a practical driving examination administered and scored by a state highway patrolman.

    - a) What are the two tests for getting a driving license ?
    - b) What percentage of score should a driver achieve in each test ?
    - c) Who administers and scores the practical examination ?
    - d) What should a driver identify in these tests ?
4. Attempt **any one** of the following : 10
- 1) Write a formal report on following topic.
    - 1) The course which you joined in summer vacation.
  - 2) Express your agreement, disagreement and partial agreement with the statement given below. Give your reasons also.
    - 1) Newspapers are responsible for creating public opinion.
5. Write a letter to M/s Natwarlal and Sons, Laxmi Road, Pune-2 complaining that the T.V. bought by you from them shows only two colours and sound system also does not work properly. Mention the model of the T.V. and guarantee period etc. 10
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**B.Sc. (E.C.S.) (Sem. – V) Examination, 2014**  
**DATA COMMUNICATION AND NETWORKING – I (Paper – I)**

Day and Date : Wednesday, 23-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to **right** indicate **full** marks.*

1. Choose the correct alternative and rewrite the answer. **10**
- 1) \_\_\_\_\_ represents agreement between communicating device.  
a) Link b) Semantics  
c) Protocol d) None
  - 2) Performance is evaluated by \_\_\_\_\_ and \_\_\_\_\_ in n/w metrics.  
a) Speed, security b) Throughput, delay  
c) Security, delay d) None
  - 3) \_\_\_\_\_ is responsibility of data link layer.  
a) logical addressing b) physical addressing  
c) port addressing d) specific address
  - 4) \_\_\_\_\_ layer of OSI acts as interface with the user.  
a) Data link b) Network  
c) Session d) Application
  - 5) The \_\_\_\_\_ of errors is more difficult than the \_\_\_\_\_  
a) detection, correction b) correction, detection  
c) creation, correction d) creation, detection
  - 6) In CRC the divisor is \_\_\_\_\_ the CRC.  
a) same size as b) one bit less than  
c) one bit more than d) none
  - 7) Hamming distance between equal codeword is \_\_\_\_\_  
a) 0 b) 1  
c) n d) none





- 8) \_\_\_\_\_ have single communication channel that is shared by all the users on the network.
  - a) point to point
  - b) broad cast
  - c) protocol
  - d) all
- 9) \_\_\_\_\_ is an example of analog communication.
  - a) Laser beam
  - b) Microwave
  - c) Voicegrade telephone
  - d) All
- 10) \_\_\_\_\_ converts high speed signal into frequency bands.
  - a) switch
  - b) modem
  - c) frequency division multiplexing
  - d) time division multiplexing

- 2. Answer **any five** of the following : **10**
  - 1) List the components of communication.
  - 2) Define Bandwidth.
  - 3) What is Routing ?
  - 4) Explain the term ALOHA.
  - 5) What is error control ?
  - 6) List different types of network and explain their need.
- 3. A) Answer **any two** of the following : **6**
  - 1) What is digital transmission ?
  - 2) List different types of transmission medias.
  - 3) Explain uses of Network.B) Explain stop and wait protocol. **4**
- 4. Answer **any two** of the following : **10**
  - 1) Difference between bus and star topology.
  - 2) Difference between connection oriented and connectionless services.
  - 3) Write a note on packet switching.
- 5. Answer **any two** of the following : **10**
  - 1) Write a note on CSMA/CD.
  - 2) Write a note on OSI model.
  - 3) Write a note on congestion control algorithms.



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**B.Sc. (ECS) – III / Semester – V Examination, 2014**  
**COMPUTER SCIENCE (Paper – III)**  
**Core Java**

Day and Date : Friday, 25-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

***N.B. : 1) All questions are compulsory.***  
***2) Figures to the right indicate full marks.***

1.A) Choose the correct alternatives :

7

- 1) Class written in another class is known as
  - a) Sealed class
  - b) Inner class
  - c) Both a) & b)
  - d) None of these
- 2) Super can be used for
  - a) Accessing super class variable
  - b) Calling super class method
  - c) Both a) & b)
  - d) None of these
- 3) Two or more methods in same class with same name and different signature is called
  - a) Method overloading
  - b) Method overriding
  - c) Both a) & b)
  - d) None of these
- 4) Method without a method body is called as \_\_\_\_\_
  - a) Empty method
  - b) Blank method
  - c) Abstract method
  - d) None of these
- 5) \_\_\_\_\_ is a variable that tells the Java Compiler where to look for class files to import.
  - a) Class path
  - b) Abstract path
  - c) Path
  - d) All of these



- 6) Exceptions checked by JVM are called \_\_\_\_\_
- a) Checked exceptions
  - b) Unchecked exceptions
  - c) Both a) & b)
  - d) None of these
- 7) To raise exceptions explicitly we have to use \_\_\_\_\_
- a) Throws clause
  - b) Try clause
  - c) Throw clause
  - d) All of these

B) State **True** or **False** : **3**

- 1) Interface can contain instance variable.
- 2) Java supports only character streams.
- 3) Serialization is a process by which we can store object contents into a file.

2. Solve **any five** : **10**

- a) Byte code
- b) TreeSet class
- c) Method overriding
- d) Inner classes
- e) Assertion usage
- f) Properties class

3. A) Solve **any two** : **6**

- 1) Differentiate interface with inheritance.
- 2) Explain any two character streams.
- 3) Explain Hash map with example.

B) Write a program to demonstrate method overriding technique. **4**

4. Solve **any two** : **10**

- 1) Write a program that will demonstrate explicit exception raising mechanism.
- 2) What is abstract class ? Explain the advantages of abstract class with example.
- 3) Explain wait ( ) and notify ( ) method by considering inter thread communication.

5. Solve **any two** : **10**

- 1) Write a program in such a way that it will overcome Java's lackness of multiple inheritance.
  - 2) What is garbage collection ? Explain it detail by considering finalize ( ).
  - 3) Explain Java's run-time polymorphism mechanism.
-



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**B.Sc. (ECS) – III (Semester – V) Examination, 2014**  
**COMPUTER SCIENCE (Paper – IV)**  
**Theory of Computer Science**

Day and Date : Saturday, 26-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) **All questions are compulsory.**  
2) **Figures to the right indicates full marks.**

1. Choose the correct alternative : 10
- 1)  $L = \{a^p \mid p \text{ is prime, is } \underline{\hspace{2cm}} \}$ 
    - a) regular
    - b) not regular
    - c) accepted by DFA
    - d) accepted by PDA
  - 2) A PDM behaves like a TM, when the number of auxiliary memory it has, is                     
    - a) 0
    - b) 1 or more
    - c) 2 or more
    - d) none of these
  - 3) Any given transition graph has an equivalent                     
    - a) regular expression
    - b) deterministic FSM
    - c) non-deterministic FSM
    - d) all of these
  - 4) Context-sensitive grammar can be recognized by a                     
    - a) DPDM
    - b) NPDM
    - c) FSM
    - d) Linearly bounded memory machine
  - 5) Which of the following is not accepted by DPDM, but accepted by DPDM ?
    - a) strings end with a particular alphabet
    - b) all strings in which a given symbol is present atleast twice
    - c) even palindromes
    - d) none of these



6) The major difference between a Moore and Melay machine is that

- \_\_\_\_\_
- a) the output of the former depends on the present state and present input
  - b) the output of the former depends on the only on the present state
  - c) the output of the former depends only on the present input
  - d) all of these

7) A PDM behaves like FSM, when the number of auxiliary memory it has, is

- \_\_\_\_\_
- a) 0
  - b) 1
  - c) 2
  - d) none of these

8) Consider the following regular expression  $R = (ab \mid abb)^* bba b$

which of the following string is not in the set denoted by R ?

- a) ababab
- b) ababbabbbab
- c) abbab
- d) abbabbbab

9) The following CFG,

$S \rightarrow aS \mid bS \mid a \mid b$  is equivalent to regular expression \_\_\_\_\_

- a)  $(a + b)$
- b)  $(a + b) (a + b)^*$
- c)  $(a + b) (a + b)$
- d) All of these

10) The set  $\{a^n b^n \mid n = 1, 2, 3, \dots\}$  can be generated by CFG is \_\_\_\_\_

- a)  $S \rightarrow ab \mid aSb$
- b)  $S \rightarrow ab \mid aaSab$
- c) both a) and b)
- d) none of these

2. Answer **any five** of the following :

10

1) Let  $A = \{x \mid x \in \mathbb{N} \text{ and } 6 \leq x \leq 10\}$

$B = \{x \mid x \in \mathbb{N} \text{ and } x < 8\}$

Find :

- 1)  $n(A)$
- 2)  $n(A \cap B)$ .



- 2) Draw a NFA to accept strings over alphabet {0, 1} such that third symbol from right end is 0.
- 3) Represent the following sets by the regular expression :
  - 1)  $\{w \in \{a, b\}^* \mid w \text{ has only one } a\}$
  - 2) The set of all strings over {0, 1} which has atmost two zero's.
- 4) Construct the CFG accepting the following set  
 $L = \{0^n 1^m \mid n, m \geq 0\}$ .
- 5) How many ways a language L can be accepted by PDA ?
- 6) Obtain an instantaneous description (ID) for TM.

3. A) Answer **any two** of the following :

6

- 1) Show that  $(a + b)^* = (a + b)^* + (a + b)^*$ .
- 2) State equivalence of DFA and NFA.
- 3) Find CFG for each of the following regular expression
  - 1)  $ab^*$
  - 2)  $a^*b^*$
  - 3)  $(baa + abb)^*$

B) Let  $U = \{1, 2, 3, \dots, 8\}$

$A = \{1, 2, 3, 4\}$  and  $B = \{2, 4, 6, 8\}$  and  $C = \{3, 4, 5, 6\}$ . Find (1)  $(A \cup B)'$   
(2)  $(B' \cap C')$ , (3)  $(A \cap C)'$ , (4)  $(B - C)'$ .

4

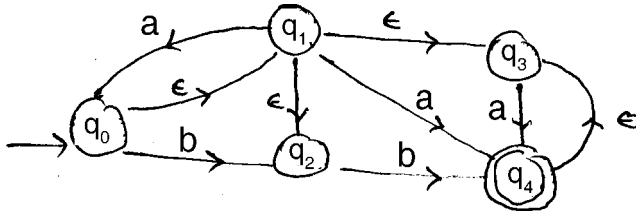
4. Answer **any two** of the following :

10

- 1) Convert the following grammar equivalent to CNF.  
 $S \rightarrow PQP$   
 $P \rightarrow OP \mid \epsilon$   
 $Q \rightarrow IQ \mid \epsilon$ .
- 2) Construct CFG to PDA  
 $S \rightarrow aB \mid bA \quad A \rightarrow a \mid aS \mid bAA \quad B \rightarrow b \mid bS \mid aBB$



3) Find an equivalent DFA for the following the  $\epsilon$ -NFA given in figure.



5. Answer **any two** of the following :

10

1) Check whether the following grammar is ambiguous or not; if found ambiguous remove the ambiguity and write an equivalent unambiguous grammar.

$$E \rightarrow E + E \mid E * E \mid id.$$

2) Construct FA for the regular expression,  $a (ba)^* a + a (ba)^* bb$ .

3) Construct TM accepting the following language

$$L = \{ 0^i 12^{i+2} \mid i \geq 0 \}.$$

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**B.Sc. (ECS) – III (Semester – V) Examination, 2014**  
**COMPUTER SCIENCE**  
**Web Technology and E-Commerce – I (Paper – V)**

Day and Date : Monday, 28-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) **All questions are compulsory.**  
2) **All questions carry equal marks.**

1. Choose the correct alternative : 10
- 1) By default event for TextBox is \_\_\_\_\_
    - a) Checked change
    - b) Click
    - c) Text changed
    - d) None of these
  - 2) Web controls support CSS
    - a) True
    - b) False
  - 3) \_\_\_\_\_ property of calendar control is used to change behaviour to allow select entire week.
    - a) Week
    - b) Select week
    - c) Selection mode
    - d) All of these
  - 4) User can control the behaviour of ASP.Net page by using \_\_\_\_\_ types of directives.
    - a) 9
    - b) 10
    - c) 11
    - d) 12
  - 5) \_\_\_\_\_ displays all the error messages from the validators in one specific spots on the page.
    - a) Validation summary
    - b) Validation errors
    - c) Validation group
    - d) None of these
  - 6) By default ASP.Net store session Id in \_\_\_\_\_
    - a) Cache
    - b) Cookies
    - c) Global variable
    - d) Url
  - 7) Is Post Back property return value in \_\_\_\_\_ data type.
    - a) int
    - b) string
    - c) char
    - d) boolean





8) All content page events except load event are executed first than master page events.

a) True

b) False

9) \_\_\_\_\_ event is fired when unhandled exception is encountered within the application.

a) Page-error

b) Application error

c) System-error

d) None of these

10) IIS is must to develop web application in ASP.Net.

a) True

b) False

2. Answer the following (**any five**) :

10

a) IIS

b) App-browser

c) Themes

d) Client side validation

e) IsPostBack

f) File upload control.

3. a) Answer **any two** of following :

6

i) What is used of App-code folder ? Explain with example.

ii) What is use of validation groups ? Explain in detail.

iii) Explain hidden field state management technique.

b) Design web page for image map control by using runtime method.

4

4. Answer **any two** of following :

10

a) Explain session state with example.

b) Explain different services provided by CLR.

c) Explain need of master pages. How master pages are added dynamically ?

5. Answer **any two** of following :

10

a) Explain App-Global Resources and App-Local Resources with example.

b) Explain website locations in detail.

c) Design web page which shows 10 event in calendar control.

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**B.Sc. (ECS) – III (Semester – V) Examination, 2014  
COMPUTER SCIENCE (Paper – VI)  
Visual Programming and Application Software – I**

Day and Date : Tuesday, 29-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose the correct alternatives : 10
- 1) Which of the following cannot belong to a .Net namespace ?  
a) Class                      b) Struct                      c) Data                      d) Interface
  - 2) An object reference refers to a value type is known as \_\_\_\_\_  
a) Boxing                      b) Unboxing                      c) Indexing                      d) Clustering
  - 3) The \_\_\_\_\_ is the core of the .Net framework and its responsible for loading and running the programs.  
a) CTS                      b) CLS                      c) CLR                      d) MSIL
  - 4) \_\_\_\_\_ is predefined reference type.  
a) Structure                      b) Object                      c) Enumeration                      d) Class
  - 5) The default value of integer type is \_\_\_\_\_  
a) 0                      b) 1                      c) Garbage value                      d) Null
  - 6) Which of the following method is used to remove the element at the specified place in Array List ?  
a) Remove( )                      b) Delete( )                      c) Drop( )                      d) Remove At( )
  - 7) Override method overrides an inherited virtual method.  
a) True                      b) False
  - 8) A local variable \_\_\_\_\_  
a) can be used any where in the program  
b) represent a class object  
c) is declared within a method  
d) none of these



9) A method \_\_\_\_\_ an exception when that method detects that a problem has occurred.

- a) try                      b) catch                      c) throws                      d) all of these

10) Which of the following operator cannot be overloaded ?

- a) true                      b) ==                      c) &                      d) +=

2. Answer **any five** of the following : **10**

- 1) When use finally block ?
- 2) What are reference parameters ? When do we use them ?
- 3) What is the use of ToString method ?
- 4) Give the differences between mutable and immutable string.
- 5) What is the use of read-only fields ?
- 6) What is the advantage of multithreading ?

3. A) Answer **any two** of the following : **6**

- 1) What is a for each statement ? Give one example.
- 2) What is the meaning of virtual and abstract keyword ?
- 3) Give the important characteristics of inheritance.

B) Write a note on CTS. **4**

4. Answer **any two** of the following : **10**

- 1) What is enumeration ? How is it useful ?
- 2) Write a program for overloading binary + operator.
- 3) What is Hashtable ? Explain in brief.

5. Answer **any two** of the following : **10**

- 1) What is method overloading ? Give one example where method overloading is applied.
  - 2) Explain the functions of FileInfo and DriveInfo classes.
  - 3) What is property ? Explain with suitable example.
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**B.Sc. (ECS) – III (Semester – VI) Examination, 2014**  
**COMPUTER SCIENCE (Paper – I)**  
**Data Communication and Networking – II**

Day and Date : Wednesday, 23-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks :50

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the correct alternative and rewrite answer : **10**
- 1) \_\_\_\_\_ is an application layer service of TCP/IP.  
a) File transfer  
b) N/w virtual terminal  
c) Mail service  
d) All
  - 2) Router \_\_\_\_\_  
a) Forwards a packet to all outgoing links  
b) Forwards a packet to next free outgoing links  
c) Forwards packet to all outgoing links except original link  
d) Determine on which outgoing link packet to be forward
  - 3) \_\_\_\_\_ server allows windows to access LINUX system.  
a) Samba                      b) Apache                      c) CUPS                      d) TUX
  - 4) A \_\_\_\_\_ provides privacy for LANs that must communicate through a global Intranet.  
a) VPN                      b) VNN                      c) VNP                      d) VPP
  - 5) SSL provides \_\_\_\_\_  
a) Message integrity                      b) Confidentiality  
c) Compression                      d) All
  - 6) Bluetooth n/w is called a \_\_\_\_\_  
a) Bluenet                      b) Scatternet                      c) Piconet                      d) None
  - 7) HTTP is \_\_\_\_\_ protocol.  
a) Connectionless                      b) Stateless                      c) Both                      d) None



- 8) \_\_\_\_\_ is responsible for authentication, registration of mobiles.  
a) SGSN                      b) GGSN                      c) BSC                      d) MSC
- 9) \_\_\_\_\_ is a computer program that has ability to replicate or make copies of itself and spread to other files.  
a) Trojan                      b) Worm                      c) Virus                      d) Macro
- 10) \_\_\_\_\_ is a process of transforming plain text into cipher text.  
a) Firewall                      b) Antivirus                      c) SSL                      d) All

2. Answer **any five** of the following : **10**
- 1) List different N/w devices.
  - 2) What is system profile ?
  - 3) Use of proxy server.
  - 4) Explain login script.
  - 5) Explain POP.
  - 6) Applications of Bluetooth.
3. A) Answer **any two** of the following : **6**
- 1) Explain video compression.
  - 2) Explain message authentication.
  - 3) Explain advantages of Wi-Fi Network.
- B) Write a note on firewall. **4**
4. Answer **any two** of the following : **10**
- 1) Explain Web and Mail server.
  - 2) Explain user and group management in LINUX.
  - 3) Explain GPRS.
5. Answer **any two** of the following : **10**
- 1) Explain elements of transport layer protocol.
  - 2) Explain roles and responsibilities of N/w administrator.
  - 3) Discuss encryption and decryption. Explain digital signature.
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**B.Sc. (E.C.S.) – III (Semester – VI) Examination, 2014  
DATABASE MANAGEMENT SYSTEM – II (Paper – II)**

Day and Date : Thursday, 24-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**N.B. :** 1) **All questions are compulsory.**  
2) **Figure to the right indicate full marks.**

1. Choose the correct alternative : 10
- 1) Two actions on same data object are conflict if one of them  
a) read                      b) write                      c) read/write                      d) none of them
  - 2) The major fact for concurrency control is \_\_\_\_\_  
a) granularity                      b) locking  
c) time stamping                      d) none of the above
  - 3) The point in the schedule where transaction has obtained its final lock is  
a) dead lock                      b) commit point  
c) lock point                      d) none of above
  - 4) The block's residing on the disk are called  
a) physical blocks                      b) buffer blocks  
c) disk buffer                      d) none of the above
  - 5) A transaction must be  
a) atomic and concurrent                      b) isolated  
c) durable                      d) all of above
  - 6) Group of procedures, functions, variables constants, cursors and sql statements are put in single unit called \_\_\_\_\_  
a) class                      b) package                      c) namespace                      d) header file
  - 7) When the users request for the connection has been denied then \_\_\_\_\_ exception.  
a) DUP\_VAL\_ON\_INDEX                      b) LOGIN\_DENIED  
c) VALUE\_ERROR                      d) ZERO\_DIVIDE



- 8) \_\_\_\_\_ is buffer which will store the results of the recent query.  
a) cursor                      b) table                      c) view                      d) all
- 9) Shadowing maintain \_\_\_\_\_  
a) 2 tables                      b) 3 tables                      c) 4 tables                      d) none of above
- 10) Raw is used to store ASCII data  
a) true                      b) false

2. Solve **any five** : **10**
- 1) binary lock
  - 2) while loop in pLsql
  - 3) dead lock detection
  - 4) data types in plsql
  - 5) shadow paging
  - 6) consistency of transaction.
3. A) Answer **any two** : **6**
- 1) Explain exception in plsql
  - 2) Explain serial and non-serial schedule
  - 3) Explain shared and exclusive locks.
- B) Write a plsql function to check given no. is palindrome or not. **4**
4. Answer **any two** : **10**
- 1) Explain view serializability.
  - 2) What is transaction ? Explain ACID property.
  - 3) Explain parameterized cursor.
5. Answer **any two** : **10**
- 1) Explain log based recovery.
  - 2) Explain looping and branching in pL/sql.
  - 3) Write a trigger on emp table which shows the old and new value of ename after any updation on ename of emp table.
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**B.Sc. (ECS) – III (Semester – VI) Examination, 2014**  
**COMPUTER SCIENCE**  
**Advanced Java (Paper – III)**

Day and Date : Friday, 25-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**N. B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose correct alternatives : 10
- 1) \_\_\_\_\_ is the immediate super class of the JApplet class  
a) JComponent    b) JFrame    c) JPanel    d) JContainer
  - 2) HTTP is a communication \_\_\_\_\_ used to transfer information on the Internet.  
a) Protocol    b) Component    c) Resource    d) Request
  - 3) Which of the following is not related with servlet ?  
a) init ()    b) service ()    c) destroy ()    d) load ()
  - 4) \_\_\_\_\_ generates events.  
a) Source    b) Event handler    c) Event listener    d) All of these
  - 5) \_\_\_\_\_ class implements an event listener interface and defines all methods with empty body.  
a) Adapter    b) Object    c) Event    d) None of these
  - 6) Which of the following class is responsible for loading the driver specific classes ?  
a) Driver    b) JDBC    c) Driver Manager    d) All of these
  - 7) The service () is invoked only when \_\_\_\_\_ method is invoked.  
a) destroy ()    b) init ()    c) start ()    d) all of these
  - 8) \_\_\_\_\_ is the higher class in delegation event model.  
a) Event object    b) Event AWT    c) Both a) and b)    d) Event source





- 9) \_\_\_\_\_ component creates space for single line text.  
a) Text Area      b) Text Field      c) Text Space      d) All of these
- 10) \_\_\_\_\_ are the small programs written in Java which are loaded and executed by web server ?  
a) Servlet      b) Applet      c) JApplet      d) Both b) and c)

2. Answer **any five** of the following : **10**

- 1) Define anonymous inner class.
- 2) Difference between doGet () and doPost ().
- 3) What is servlet context ?
- 4) Explain callable statement.
- 5) Where you have to use action listeners ?
- 6) Explain different types of Result Set.

3. A) Answer **any two** of the following : **6**

- 1) What is Java Beans ?
- 2) Explain response object.
- 3) Explain 3 methods of list class.

B) Explain JSP life cycle. **4**

4. Answer **any two** of the following : **10**

- 1) Write a program to establish connection and retrieve data from employee database (Assume oracle database).
- 2) Write a program to create an applet where left mouse button click displays your name.
- 3) What is JDBC statement ? Explain different types of statements.

5. Answer **any two** of the following : **10**

- 1) Write a program to create simple servlet for handling HTTP GET request.
  - 2) Explain any five event listeners.
  - 3) Explain implicit objects of JSP.
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**B.Sc. (E.C.S.) – III (Semester – VI) Examination, 2014**  
**COMPUTER SCIENCE (Paper – IV)**  
**Compiler Construction**

Day and Date : Saturday, 26-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

- Instructions:** 1) **All** questions are **compulsory**.  
2) **Each** question carries **equal** marks.  
3) Figures to the **right** place indicate **full** marks.

1. Multiple choice questions.

10

- 1) \_\_\_\_\_ analysis, in which the stream of characters making up the source program is read from left-to-right and grouped into the tokens.
  - a) Linear
  - b) Hierarchical
  - c) Semantic
  - d) All
- 2) \_\_\_\_\_ produce collections of routines that walk the parse tree, generating intermediate code.
  - a) Parser generators
  - b) Scanner generators
  - c) Syntax-directed translation engines
  - d) All
- 3) The relation \_\_\_\_\_ is a short hand for  $r / \epsilon$ .
  - a)  $r ?$
  - b)  $r^+$
  - c)  $r^*$
  - d) None of them
- 4) A \_\_\_\_\_ over some alphabet is a finite sequence of symbols drawn from that alphabet.
  - a) language
  - b) character class
  - c) alphabet
  - d) string
- 5) Left factoring is a grammar transformation i.e. useful for producing a grammar suitable for \_\_\_\_\_ parsing.
  - a) Non-recursive
  - b) Operator-precedence
  - c) Shift-reduce
  - d) Predictive



- 6) A general style of bottom-up syntax analysis, known as \_\_\_\_\_ parsing.
- a) Non-recursive
  - b) Operator-precedence
  - c) Shift-reduce
  - d) Predictive
- 7) In a \_\_\_\_\_ action, the next input symbol is shifted onto the top of the stack.
- a) accept
  - b) error
  - c) shift
  - d) reduce
- 8) An abstract syntax tree is a condensed form of \_\_\_\_\_ tree useful for representing language constructs.
- a) derivation
  - b) parse
  - c) syntax
  - d) all
- 9) Space left unused due to alignment consideration is referred to as \_\_\_\_\_
- a) padding
  - b) dangling reference
  - c) static notion
  - d) activation record
- 10) \_\_\_\_\_ is a linearized representation of a syntax tree or a dag in which explicit names correspond to the interior nodes of the graph.
- a) Three-address code
  - b) Intermediate code
  - c) Code generator
  - d) Semantic code

2. Answer **any five** of the following :

10

- 1) How to detect an errors in lexical and semantic analysis ?
- 2) What is role of lexical analyzer ?
- 3) Differentiate between static and dynamic notions.
- 4) How Boolean expressions are composed with Boolean variables or relational expressions ?
- 5) What is the use of register allocation and register assignment ?
- 6) What is the use of algebraic identities ?

3. A) Answer **any two** of the following :

6

- 1) What is the difference between one-pass and multi-pass compiler ?
- 2) Define the following with example :
  - 1) Token
  - 2) Lexeme
  - 3) Pattern.
- 3) Explain Handle and handle pruning with example.



B) Construct the sequence of moves made by the parser on input  $3*5+4n$ , using the following productions : 4

- $L \rightarrow E_n$
- $E \rightarrow E_1 + T$
- $E \rightarrow T$
- $T \rightarrow T_1 * F$
- $T \rightarrow F$
- $F \rightarrow (E)$
- $F \rightarrow \text{digit}$

4. Answer **any two** of the following : 10

- 1) Explain the notational conventions for grammars.
- 2) Construct the syntax tree for expression  $3 * 5 + 4$  according to the following syntax directed definition :

Productions	Semantic rules
$E \rightarrow E_1 + T$	$E.nptr := \text{mknode}('+', E_1.nptr, T.nptr)$
$E \rightarrow E_1 * T$	$E.nptr := \text{mknode}('*', E_1.nptr, T.nptr)$
$E \rightarrow T$	$E.nptr := T.nptr$
$T \rightarrow (E)$	$T.nptr := E.nptr$
$T \rightarrow \text{num}$	$T.nptr := \text{mkleaf}(\text{num}, \text{num.val})$

3) Discuss dynamic storage strategies.

5. Answer **any two** of the following : 10

- 1) Translate the arithmetic expression –  
 $a := b * -c + b * -c$  into
    - 1) Graphical representation of syntax tree and dag
    - 2) Tree address code for syntax tree and dag.
  - 2) Explain the characteristics of peephole optimization.
  - 3) Define dominator and immediate dominator. Explain with example.
-



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**B.Sc. (ECS) – III (Sem. – VI) Examination, 2014**  
**COMPUTER SCIENCE (Paper – V)**  
**Web Technology and E-Commerce – II**

Day and Date : Monday, 28-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max. Marks : 50

**Instructions:** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the correct alternative. 10
- 1) Currency can be replaced with \_\_\_\_\_ in e-commerce transaction for payment.  
a) Credit card    b) Password    c) Login    d) Barcode
  - 2) Reduced search cost is the advantage of  
a) Trade market    b) Internet market  
c) E-market    d) All of these
  - 3) Default value for Edit Index is \_\_\_\_\_ in Grid view.  
a) – 1    b) 0    c) 1    d) None of these
  - 4) Execution and settlement phases are combined in \_\_\_\_\_ transaction in trade cycle.  
a) Repeat    b) Credit    c) Cash    d) None of these
  - 5) \_\_\_\_\_ element is used to allow or deny access to users under windows authentication.  
a) Authorization    b) Credentials    c) Forms    d) Users
  - 6) \_\_\_\_\_ name space is used to connect asp. Net page to SQL server.  
a) System. Data    b) System. Data. Sqlclient  
c) System. Data. Oracleclient    d) System. Sqlserver
  - 7) For arranging records in page wise in GridView, \_\_\_\_\_ property is used.  
a) Allow Paging    b) Allow sorting  
c) Page size    d) Allow page wise



- 8) Default value for parameter direction in paramert. is \_\_\_\_\_
- a) Input
  - b) Output
  - c) Input Output
  - d) None of theses

- 9) EDI requires printed orders and invoices
- a) True
  - b) False

- 10) In E-commerce, \_\_\_\_\_ is done via credit card.
- a) Purchase card
  - b) Sales order
  - c) Invoice
  - d) Payment

2. Answer the following (**any five**) : **10**
- a) Future of e-market
  - b) e-bookshop
  - c) loginstatus control
  - d) e-auctions
  - e) ODBC class
  - f) Connection string.
3. a) Answer **any two** of the following : **6**
- i) Explain online share dealing.
  - ii) Explain ExecuteNonQuery method.
  - iii) Explain Data Row.
- b) Explain website evaluation model in detail. **4**
4. Answer **any two** of the following : **10**
- a) Write a code to insert record in a table using stored procedure in Asp. Net.
  - b) Explain value chain system for super market.
  - c) Explain trade cycle document exchange.
5. Answer **any two** of the following : **10**
- a) Explain System. Data oracleclient namespace in detail.
  - b) Explain Porter's value chain model in detail.
  - c) What are different factor's affecting for business strategy ? Explain in detail.
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**B.Sc. (ECS) – III (Semester – VI) Examination, 2014**  
**COMPUTER SCIENCE (Paper – VI)**  
**Visual Programming and Application Software – II**

Day and Date : Tuesday, 29-4-2014  
Time : 11.00 a.m. to 1.00 p.m.

Max Marks : 50

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose correct alternative : 10
- 1) Which of the following statement is incorrect about delegate ?
    - a) Delegates are reference types
    - b) Delegates are type safe
    - c) Delegates are object oriented
    - d) Only one method can be called using delegate
  - 2) Radio buttons allow the user to choose one of several options
    - a) True
    - b) False
  - 3) \_\_\_\_\_ letter is used for underline in the button control.
    - a) –
    - b) \*
    - c) %
    - d) &
  - 4) The load event occurs before object instantiation.
    - a) True
    - b) False
  - 5) MDI stands for
    - a) Many Document Information
    - b) Many Data Information
    - c) Multiple Document Interface
    - d) Multiple Data Interface
  - 6) The default event of button is \_\_\_\_\_
    - a) Paint
    - b) Leave
    - c) Click
    - d) Paint
  - 7) In LINQ query \_\_\_\_\_ clause arranges the data in an ascending order.
    - a) Order By
    - b) Order
    - c) Both a) and b)
    - d) None of these



- 8) An assembly contains \_\_\_\_\_
- a) Assembly name
  - b) Version number
  - c) Strong name information
  - d) All of these
- 9) Shared assembly is installed in the GAC.
- a) True
  - b) False
- 10) Which of the following control is derived from the List Control Class ?
- a) Combo Box
  - b) List Box
  - c) Checked List Box
  - d) All of these

2. Answer **any five** of the following : 10
- 1) How to add controls dynamically to the form ?
  - 2) List the various components in crystal reports.
  - 3) What is GAC ?
  - 4) Give the list of keyboard events.
  - 5) Differentiate between delegate and event.
  - 6) Give the syntax of delegate declaration.
3. A) Answer **any two** of the following : 6
- 1) Explain the concept of deployment.
  - 2) Give the difference between SDI and MDI.
  - 3) Explain Combo Box.
- B) Write note on filtering operator in LINQ. 4
4. Answer **any two** of the following : 10
- 1) How do we pass parameters to crystal reports ?
  - 2) Define event. Describe how to implement of an event.
  - 3) Explain the main properties of text box.
5. Answer **any one** of the following : 10
- 1) Explain the features and types of assemblies.
  - 2) What is LINQ ? Explain the concept of LINQ to SQL.
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**B.Sc. (Entire Computer Science) (Part – I) (Semester – I) Examination, 2014  
Paper – VII : DESCRIPTIVE STATISTICS – I**

Day and Date : Wednesday, 30-4-2014  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions :** i) **All questions are compulsory.**  
ii) **Use of simple or scientific calculator is allowed.**  
iii) **Figures to the right indicate full marks.**

1. Select most correct alternative : 10

- i) An attribute is  
a) a qualitative characteristic                      b) a quantitative characteristic  
c) a measurable characteristic                      d) all of these
- ii) In case of an even number of observations which of the following is median ?  
a) Any of the two middle most value  
b) The simple average of the two middle values  
c) The weighted average of the two middle values  
d) Any of these
- iii) If a constant 15 is subtracted from each observation of a set, the mean is  
a) increased by 15                                      b) decreased by 15  
c) 15 times the original mean                      d) not affected
- iv) The measure of dispersion that is free from unit in which data is expressed is  
a) Range                      b) Q.D.                      c) S.D.                      d) C.V.
- v) If the coefficient of variation and mean of a distribution are 4 % and 400 respectively, then the variance of the distribution is  
a) 1024                      b) 256                      c) 16                      d) 4
- vi) Second order central moment is always  
a) zero                                                      b) S.D.  
c) arithmetic mean                                      d) variance



- vii) The value of coefficient of Kurtosis  $\beta_2$  can be
- a) less than 3
  - b) greater than 3
  - c) equal to 3
  - d) all of these
- viii) Drinking habit of a person is
- a) an attribute
  - b) a discrete variable
  - c) a continuous variable
  - d) a variable
- ix) Mode can be obtained from
- a) Pie diagram
  - b) Histogram
  - c) Less than ogive
  - d) More than ogive
- x) For a symmetric distribution
- a) mean < median < mode
  - b) mode < median < mean
  - c) median = mean = mode
  - d) median < mode < mean

2. Answer **any five** of the following :

10

- i) Define data.
- ii) Define mode.
- iii) Define standard deviation.
- iv) State the relation between 4<sup>th</sup> central moment and first four raw moments.
- v) Define Karl Pearson's coefficient of skewness.
- vi) Define Statistics.

3. A) Answer **any two** of the following :

6

- i) The average salary of a group of unskilled workers is Rs. 10,000 and that of skilled workers is Rs. 15,000. If the combined average salary is Rs. 12,000, then what is the percentage of number of skilled workers ?
- ii) Following are the marks of the 7 students : 56, 48, 65, 35, 42, 82, 75. Find quartile deviation and its coefficient.
- iii) A distribution has mean 30, coefficient of variation 20 % and coefficient of skewness 0.3. Find its mode.

B) Write a note on Kurtosis.

4



4. Answer **any two** of the following : **10**

- i) Define population and sample and state various sampling methods.
- ii) Write a note on classification of data.
- iii) Write the procedure for constructing histogram.

5. Answer **any two** of the following : **10**

- i) Given that  $\beta_1 = 0.19, \beta_2 = 2.6, \mu_2 = 1.2$ , find  $\mu_3$  and  $\mu_4$ .
- ii) From the following data of the height of persons in a certain company find coefficient of variation.

**Heights (inches) :** 60 61 62 63 64

**No. of persons :** 5 7 10 7 5

iii) Draw a pie diagram from the following data :

Item	A	B	C	D
Value	10	20	30	40

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**B.Sc. (E.C.S.) (Part – I) (Semester – I) Examination, 2014  
PROBABILITY THEORY – I (Paper – VIII)**

Day and Date : Friday, 2-5-2014  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) *All questions are compulsory.*  
2) *Use of any type of calculator is allowed.*  
3) *Figures to the right indicates full marks.*

1. Choose most correct alternative : **10**

1) In  ${}^nC_x$  : n and x are always such that  $D \geq r$  and are \_\_\_\_\_ numbers.

- a) Real b) Non-negative integers  
c) Non-negative real d) None of these

2) Addition principle of counting provides number of ways in which \_\_\_\_\_ operations can be done.

- a) one of the b) all of the  
c) some of the d) all of these

3) Number of ways in which 2 persons out of 3 are invited to attend welcome function

- a)  ${}^3C_2$  b)  ${}^3P_2$   
c) a and b both d) None of these

4) A Non-deterministic experiment resulted in to \_\_\_\_\_ outcomes.

- a) only one b) unique  
c) more than one d) None of these

5) If A and B are exhaustive events, then \_\_\_\_\_

- a)  $P(A \cup B) = 1$  b)  $P(A \cap B) = 1$   
c)  $P(A \cup B) \leq 1$  d) None of these



- 6) If  $P(A \cap B) = 0.4$ ,  $P(A) = 0.6$ ,  $P(B) = 0.7$ , then  $P(A/B) =$  \_\_\_\_\_
- a)  $2/3$                                               b)  $4/7$   
c)  $6/7$                                               d) None of these
- 7) A random variable always takes values
- a) real numbers                                              b) positive real numbers  
c) negative real numbers                                              d) integers numbers
- 8) Expected value of a constant is always \_\_\_\_\_
- a) zero                                              b) 1  
c) constant itself                                              d) None of these
- 9) A discrete r.v.x. takes its all possible values equally-likely, then X has \_\_\_\_\_ distribution.
- a) Binomial                                              b) Poisson  
c) Hypergeometric                                              d) discrete uniform
- 10) If  $X \rightarrow B(n, 0.4)$  and  $E(X) = 12$ , then  $n =$  \_\_\_\_\_
- a) 30                                              b) 25  
c) 20                                              d) None of these

2. Attempt **any five** :

10

- 1) State addition principle of counting.
- 2) Define – Impossible event.
- 3) Define – c.d.f. of discrete r.v.x.
- 4) Find value of  $\lambda$ , of  $8P_x = 20 \cdot 8P_{x-2}$ .
- 5) Given :  $P(A) = 0.5$ ,  $P(B) = 0.6$ ,  $P(A \cap B) = 0.25$  Find  $P(A \cup B)$ .
- 6) Let  $X \rightarrow B(10, 0.45)$ ,  $Y \rightarrow B(6, 0.45)$  of  $X, Y$  are independent r.v.s., then state p.m.f. of  $(X + Y)$ .



3. A) Attempt **any two** : 6

1) The p.m.f. of r.v.x is as follows :

**X** : 1 2 3 4 5

**p(x)** : k 2k 3k k AK

Find value of k and hence obtain  $P(X \leq 3)$ .

2) A box contains 10 tomatoes of which 6 are rotten, a sample of size 4 is drawn at random without replacement. Find prob of getting 2 rotten tomatoes.

3) Define – Axiomatic definition of probability.

B) Two dice are rolled at a time. Let X and Y denotes number on upper faces of 1<sup>st</sup> and II<sup>nd</sup> dice respectively.

Find  $P(X + Y > 6 | x = 6)$ . 4

4. Attempt **any two** : 10

1) Define – Binomial distribution, state its mean and variance, give one real life example where it is applicable.

2) Find value of  $\lambda$ , If

$${}^{14}C_2 + {}^{14}C_3 + {}^{15}C_4 + {}^{16}C_5 + {}^{17}C_6 = {}^{18}C_x$$

3) If  $P(A) = 0.4$ ,  $P(B) = 0.5$  and A, B are mutually exclusive events.

Find : i)  $P(\bar{A} / B)$     ii)  $P(A / \bar{B})$

5. Attempt **any two** : 10

1) State and prove Addition law of probability.

2) The c.d.f of r.v.x is as follows :

**X** : 0 2 4 6 8

**F(x)** : 0.2 0.5 0.7 0.8 1

Obtain p.m.f. and hence find  $E(X^2)$

3) A discrete r.v. X has poison distribution such that  $P(X = 1) = P(X = 2)$ . Find  $P(X \geq 4)$ .

---









9) The tag used in HTML to link it with other URL's is \_\_\_\_\_

- a) <A>                      b) <H>                      c) <U>                      d) <L>

10) If in formula bar of EXCEL we type =(B:E) it will give effect \_\_\_\_\_

- a) Selects all columns B to E      b) adds columns B to E  
c) Gives error                      d) None

2. Answer the following (**any five**) : 10

- a) Define the term Menu. List the different types of Menus in Windows.
- b) What is thread ?
- c) Define the term Topology.
- d) What are the goals of Network ?
- e) What is word processor ?
- f) List the components of Control Panel.

3. A) Answer the following (**any two**) : 6

- a) What is the use of CSS ?
- b) List the various features of MS Word.
- c) Which errors may occur in the formulas of Excel ?

B) Write a short note on Time Sharing. 4

4. Answer the following (**any two**) : 10

- a) What is Internet ? Discuss different facilities provided by Internet.
- b) What is Multiprocessing ? What are the different types of Multiprocessing ?
- c) What is Javascript ? What are the advantages and disadvantages of Javascript ?

5. Answer the following (**any two**) : 10

- a) Which are the various elements of Windows O.S. ?
  - b) What is editor ? What are the different types of editors ?
  - c) Explain ordered and unordered lists in HTML.
-