



Seat No.	
-------------	--

**B.Sc. I (Semester – I) (ECS) Examination, 2017**  
**Paper – I : ENGLISH (Compulsory) (CBCS Pattern) (New)**  
**‘On Track’ English Skills for Success**

Time : 2.30 Hours

Total Marks : 70

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

1. Complete the following statements by choosing the correct alternatives from those given below them.

14

- 1) Jimmy and Bob dined at \_\_\_\_\_ restaurant twenty years ago.
  - a) Big Brother’s
  - b) Big Boss Brandy’s
  - c) Big Joe’ Brady’s
  - d) John Bradly’s
- 2) The story, ‘After Twenty Years’ implies that ‘silky’ Bob is \_\_\_\_\_.
  - a) Private Detector
  - b) Restaurant Owner
  - c) Police Officer
  - d) Gangster or Criminal
- 3) The writer met Miss. Krishna \_\_\_\_\_.
  - a) at an art exhibition
  - b) at the hotel
  - c) in railway
  - d) in city bus
- 4) The narrator of the story ‘The Connoisseur’ is \_\_\_\_\_.
  - a) Nergis Dalal
  - b) Sarojini Naidu
  - c) O. Henry
  - d) Attila Narin
- 5) The essential part of intelligence, as the Latin word suggests, is \_\_\_\_\_.
  - a) the inability to neglect the simple facts
  - b) the ability to look beyond the simple the facts
  - c) the inability to look at nature
  - d) the ability to compete others
- 6) Mr. Binet developed \_\_\_\_\_.
  - a) IQ Test
  - b) GK Test
  - c) Aptitude Test
  - d) Computer software



- 7) Where are the bangle sellers carrying their wares ?  
a) to the temple fair                      b) to the roads  
c) to the garden                              d) to the married woman's house
- 8) The poem 'An Irish Airman Foresees His Death' is composed by \_\_\_\_\_  
a) W.B. Yeats                                  b) Robert Frost  
c) W.H. Auden                                  d) William Shakespeare
- 9) The speaker in the poem 'Bangle Sellers' is \_\_\_\_\_  
a) customers                                  b) bangle sellers  
c) married women                              d) young unmarried women
- 10) W.B. Yeats relates the plight of \_\_\_\_\_ soldiers.  
a) American              b) Irish              c) African              d) Indian
- 11) \_\_\_\_\_ Sangoli Rayanna was a great freedom fighter.  
a) An                      b) The                      c) A                      d) No article
- 12) This is the Dr. Bhujade who treated me for typhoid. The underlined word is \_\_\_\_\_  
a) proper noun      b) common noun      c) collective noun      d) abstract noun
- 13) Prarthana goes to \_\_\_\_\_ school. (for education)  
a) a                      b) the                      c) an                      d) no article
- 14) Soham went to America \_\_\_\_\_ plane.  
a) by                      b) from                      c) in                      d) at

2. Answer in brief **any seven** of the following :

14

- 1) Why did Bob decide to travel to west ?
- 2) What was the policeman constantly doing with his stick ?
- 3) What is the meaning of the title 'The Connoisseur' ?
- 4) What is the narrator's initial opinion about Miss. Krishna ?
- 5) How can you define 'Intelligence' ?
- 6) What is 'virtual reality' by Attila Narin ?
- 7) Why does Jimmy send another policeman to arrest Bob ?
- 8) Why can computers not 'think' in the same way as human beings ?



3. A) Write short answers on **any two** of the following : 8
- 1) Describe the different types of bangles which the bangle sellers carry.
  - 2) What is the theme of 'An Irish Airman Foresees His Death' ?
  - 3) The speaker in 'An Irish Airman Foresees His Death'.

- B) Write a paragraph on **any two** of the following : 6
- 1) Human values are Timeless and Eternal.
  - 2) Solar Energy.
  - 3) A Decision that Changed my life.

4. Write an essay on the impact of mobile on the lives of young people in the present day. 14

OR

Write an essay describing an exciting cricket match which you have seen.

5. Read the following passage and make notes of it. Use an appropriate title for your notes. 14

Drugs related health disorders are many and varied. Dirty needles and solutions used for injecting drugs can easily cause abscesses in the arms and veins, liver disease, venereal diseases and infection of the kidneys and brain. Sniffing cocaine and amphetamines can damage the tissue of the nose and Marijuana and tobacco smoking can cause lung diseases. Heavy users of alcohol, volatile solvents, amphetamines or Marijuana may find that their livers are permanently damaged. Babies of women addicted to opiates are likely to be born addicted and to suffer from withdrawal symptoms. Cocaine and amphetamines can cause hair loss. Recent research has indicated that Marijuana can damage cells. A drug user's way of life makes him more susceptible to pneumonia, tuberculosis, malnutrition and weight loss. Finally, an overdose of any of the sensual drugs can lead to respiratory or cardiac failure and death.

---



Seat No.	
----------	--

**B.Sc. (Entire Computer Science) – I (Semester – I) (CBCS Pattern)  
Examination, 2017  
Paper – II : FUNDAMENTAL OF COMPUTER (New)**

Time : 2½ Hours

Max. Marks : 70

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

1. A) Choose the correct alternative. 7
- 1) \_\_\_\_\_ is the extension of Microsoft Excel file.  
a) .xls                      b) .excel                      c) .exe                      d) all the above
  - 2) The secondary memory of computer is  
a) Volatile                      b) Non-volatile                      c) Temporary                      d) None of these
  - 3) Dot matrix printer is \_\_\_\_\_ type of printer.  
a) Impact                      b) Non-impact                      c) Pointing                      d) None of these
  - 4) MS Office is application software.  
a) True    b) False
  - 5) The brain of any computer system is  
a) ALU                      b) Memory                      c) CPU                      d) Control unit
  - 6) \_\_\_\_\_ is a not input device.  
a) Keyboard                      b) Printer                      c) Mouse                      d) Scanner
  - 7) DOS stands for  
a) Disk Operating System                      b) Data Operating System  
c) Data Operate System                      d) None of these
- B) **True/False:** 4
- 1) The word bit is the short form of Binary Digit.
  - 2) ROM is a volatile memory.
  - 3) DOS is an example of GUI.
  - 4) .document is the extension of Microsoft word document.



- C) Fill in the blank : 3
- 1) EDVAC stands for \_\_\_\_\_
  - 2) EEPROM stands for \_\_\_\_\_
  - 3) \_\_\_\_\_ printer is also called as a page printer.
2. Solve **any seven** from the following : 14
- 1) List out components of the computer systems.
  - 2) List out characteristics of computers.
  - 3) What is file and folder ?
  - 4) State any two internal and external DOS command.
  - 5) Define software.
  - 6) Define operating system.
  - 7) VLSI and ULSI stands for
  - 8) List out various input device.
  - 9) How to insert a table in Microsoft word ?
3. A) Attempt **any two** of the following : 10
- 1) Define computer. Explain characteristics of computer.
  - 2) Explain function of operating system.
  - 3) How we can formatting text in MS word ?
- B) What is software ? Explain various types of software. 4
4. Attempt **any two** of the following : 14
- 1) Explain computer organization in detail.
  - 2) Explain different types of operating system in detail.
  - 3) Explain primary and secondary memory.
5. Attempt **any two** of the following : 14
- 1) Explain mail merge process in detail.
  - 2) What is output device ? Explain monitor in detail.
  - 3) Explain android and windows operating system in detail.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – I) (New) (CBCS) Examination, 2017  
PROGRAMMING USING ‘C’ (Paper – III)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose correct alternatives : **14**
- 1) \_\_\_\_\_ data type is an integral type.  
a) char                      b) float                      c) double                      d) none of these
  - 2)  $96 \gg 4$  statement returns \_\_\_\_\_ result.  
a) 6                              b) 16                              c) 26                              d) 36
  - 3) puts () function belongs to \_\_\_\_\_ header file.  
a) stdio.h                      b) conio.h                      c) string.h                      d) math.h
  - 4) \_\_\_\_\_ is/are user defined related to array.  
a) Array name                      b) Size                              c) Data type                      d) All of these
  - 5) \_\_\_\_\_ is not user defined name.  
a) Variable                      b) Array                              c) Keyword                      d) Constant
  - 6) \_\_\_\_\_ is not keyword in ‘C’ language.  
a) if                              b) array                              c) struct                              d) while
  - 7) \_\_\_\_\_ is an application file of source file “MY.c”.  
a) MY.cpp                      b) MY.obj                              c) MY.exe                              d) MY.apk
  - 8) \_\_\_\_\_ is string terminator character.  
a) \0                              b) \n                              c) \t                              d) \a
  - 9) Single ‘C’ program may contain multiple  
a) variables                      b) constants                      c) main ()                      d) both a and b



- 10) `sizeof(53.64)` returns \_\_\_\_\_ bytes.  
 a) 1                      b) 2                      c) 4                      d) 8
- 11) \_\_\_\_\_ is unconditional branching statement in 'C' language.  
 a) while                      b) for                      c) do-while                      d) none of these
- 12) Preprocessor directive starts with \_\_\_\_\_ character.  
 a) {                      b) [                      c) \$                      d) #
- 13) String is \_\_\_\_\_ type of array.  
 a) int                      b) char                      c) float                      d) double
- 14) \_\_\_\_\_ is not relational operator in 'C' language.  
 a) <                      b) ==                      c) =                      d) >

2. Attempt **any seven** questions from the followings :

**14**

- 1) Write use of 'sizeof' operator.
- 2) What is the importance of void data type ?
- 3) What are the different tools used to improve program logic ?
- 4) Write difference between `putc()` and `printf()`.
- 5) Write advantages of array.
- 6) What are the different applications of 'C' language ?
- 7) Write Pseudo code to generate series like- 45 43 41 ----- 1
- 8) What is importance of Global declaration section ?
- 9) In 'C' statement: `P = 14&4` then 'P' stores which value ?

3. A) Attempt **any two** questions from the followings :

**10**

- 1) Explain *switch-case-default* statement with example.
- 2) Write a program that demonstrates the use of `strcmp()` function.
- 3) Write a program to find smallest number in an array.

B) Write a program that demonstrates use of bitwise operator.

**4**



4. Attempt **any two** questions from the followings : **14**

- 1) Write a program to check entered number is palindrome or not.
- 2) What is String ? Explain strcat() and strcpy() function with example.
- 3) Write a program that prints following pattern: (Use 'for' loop).

```
          5
        4 5
      3 4 5
    2 3 4 5
  1 2 3 4 5
```

5. Attempt **any two** questions from the followings : **14**

- 1) Write a menu driven program that finds addition, subtraction, multiplication, division of two numbers.
- 2) Write a program that prints following series: (Use any looping statement)  
34 21 13 8 5 3 2 1 1 0
- 3) Explain flowchart with one example.

---





Seat No.	
----------	--

**B.Sc. – I (Semester – I) (ECS) (New-CBCS) Examination, 2017**  
**LINEAR ELECTRONICS – I (Paper – IV)**

Time : 2½ Hours

Max. Marks : 70

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

1. Multiple choice questions :

14

- 1) \_\_\_\_\_ is rectifier device.
  - a) Diode
  - b) Capacitor
  - c) Resistor
  - d) Amplifier
- 2) Emitter-base junction of a transistor is always \_\_\_\_\_.
  - a) Forward biased
  - b) Reverse biased
  - c) Zero biased
  - d) None of these
- 3) Peak inverse voltage of half wave rectifier is \_\_\_\_\_.
  - a)  $2V_m$
  - b)  $3V_m$
  - c)  $V_m$
  - d)  $4V_m$
- 4) In N type semiconductor, the majority charge carriers are \_\_\_\_\_.
  - a) Holes
  - b) Electrons
  - c) Both
  - d) None of these
- 5) Transformer transfer energy as \_\_\_\_\_.
  - a) AC to AC
  - b) DC to AC
  - c) DC to DC
  - d) AC to DC
- 6) The increase in the power of signal is called \_\_\_\_\_.
  - a) Rectification
  - b) Amplification
  - c) Filtration
  - d) Regulation



- 7) In inverting mode of op-amp the non-inverting terminal is connected to \_\_\_\_\_
- a) Vcc
  - b) O/P
  - c) Ground
  - d) None of these
- 8) Unit of inductance is \_\_\_\_\_
- a) Farad
  - b) Henry
  - c) Ohm
  - d) Watt
- 9) RC coupled amplifier is used as \_\_\_\_\_ amplifier.
- a) Voltage
  - b) Current
  - c) Power
  - d) None of these
- 10) Zener diode conduct in \_\_\_\_\_ direction.
- a) Uni
  - b) Bi
  - c) Zero
  - d) None of these
- 11) BJT is a \_\_\_\_\_ terminal device.
- a) 3
  - b) 2
  - c) 4
  - d) 5
- 12) Op amp 741 is \_\_\_\_\_ pin IC.
- a) 8
  - b) 18
  - c) 16
  - d) 20
- 13) Capacitor block \_\_\_\_\_ current.
- a) AC
  - b) DC
  - c) Both
  - d) None
- 14) Voltage gain of CE amplifier is \_\_\_\_\_
- a) High
  - b) Unity
  - c) Low
  - d) Moderate

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

14

- 1) Explain op amp as adder.
- 2) Draw symbol of NPN and PNP transistor.
- 3) Define capacitor. Give classification of it.
- 4) Give application of amplifier.



- 5) Draw diagram of bridge rectifier.
  - 6) Compare N type and P type semiconductor.
  - 7) Define feedback and types of feedback.
  - 8) State and explain Kirchhoff's law.
  - 9) List specification of resistor.
3. A) Answer **any two** of the following : **10**
- 1) Explain parameters of op amp.
  - 2) Explain zener diode as voltage regulator.
  - 3) Explain charging and discharging of capacitor.
- B) Explain colour coding system of resistor. Write color code for
- i)  $270\ \Omega$
  - ii)  $5.6\ \Omega$
- 4**
4. Answer **any two** of the following : **14**
- 1) Explain op amp as inverting amplifier.
  - 2) Explain classification of solids on the basis of energy band.
  - 3) What is transistor ? Explain construction of NPN transistor.
5. Answer **any two** of the following : **14**
- 1) List types of coupling amplifiers. Explain direct coupled amplifier.
  - 2) Explain half wave rectifier.
  - 3) What is meant by mutual inductance ? Define following terms.
    - i) Turn ratio
    - ii) Current ratio
    - iii) Efficiency.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – I) (New) (CBCS) Examination, 2017  
(Paper – V) DIGITAL ELECTRONICS – I**

Time : 2½ Hours

Max. Marks : 70

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

1. Choose the correct alternatives : **14**
- 1) The Radix of Binary system is  
a) 2                      b) 10                      c) 8                      d) 16
  - 2) \_\_\_\_\_ Gate is called inverter Gate.  
a) AND                      b) OR                      c) NOT                      d) EX-OR
  - 3) 7408 is \_\_\_\_\_ logic Gate.  
a) OR                      b) EX-OR                      c) AND                      d) None of these
  - 4) Excess-3 code of 6 is  
a) 1001                      b) 1010                      c) 1011                      d) None of these
  - 5) IC 74150 has  
a) Multiplexer                      b) Demultiplexer  
c) Encoder                      d) Decoder
  - 6) Flip-Flop is a \_\_\_\_\_ circuit.  
a) Unistable                      b) Bistable                      c) Unstable                      d) None of these
  - 7) \_\_\_\_\_ is a Ripple counter.  
a) Synchronous                      b) Asynchronous  
c) Parallel                      d) None of these
  - 8) In J-K flip flop if J=K=1 then its output goes in \_\_\_\_\_ state.  
a) Set                      b) Reset                      c) Toggle                      d) Previous
  - 9) In K-Map group of 2 adjacent ones form a  
a) Quad                      b) Pair                      c) Octet                      d) Single



- 10) IC 7495  
a) Counter  
b) Flip-Flop  
c) Shift Register  
d) None of these
- 11)  $\bar{A} + 1 =$   
a)  $\bar{A}$                       b) 0                      c) A                      d) 1
- 12) NAND Gate is equivalent to  
a) Bubbled OR    b) NOR                      c) AND                      d) None of these
- 13)  $\overline{A + B} =$   
a)  $A+B$                       b)  $\bar{A}\bar{B}$                       c)  $\overline{\bar{A} + \bar{B}}$                       d) None of these
- 14) \_\_\_\_\_ code is use in k-map for identifying cells.  
a) Binary                      b) Gray                      c) BCD                      d) None of these

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

**14**

- 1)  $1011 + 1100$ .
- 2) Write Laws of Binary Arithmetics.
- 3) Convert following :
  - a) 110101 Gray to Binary.
  - b) 1111101 Binary to Gray.
- 4) Draw the table of decimal to Binary number system 1 to 15.
- 5) Write note on T flip flop.
- 6) Perform the Binary Multiplication  $11.01 * 11.10$ .
- 7) Prove the Boolean algebra  $\bar{A} + AB = \bar{A} + B$ .
- 8) Write short note on Half Adder.
- 9) Draw pin diagram of IC 7495 ?

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

**10**

- 1) State and Prove Demorgans Theorem.
- 2) Explain action of R-S Flip Flop with logic diagram and truth table.
- 3) Draw K-map for following equation.

$$\bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC$$



- B) Convert the following : 4
- a) Convert 125 Decimal to Binary.
  - b) Convert 1A2 Hexadecimal to Decimal.

4. Attempt **any two** : 14

- 1) Define Multiplexer. Explain Tree Multiplexer with example.
- 2) Define Logic Gate. Explain Basic Gates with symbol and truth table.
- 3) Explain with diagram working of 3 bit shift Register.

5. Attempt **any two** : 14

- 1) Explain with examples Binary to Decimal and Decimal to Binary Conversion.
  - 2) Define Counter. Explain in detail its type.
  - 3) Explain error detection and correction method.
-



Seat No.	
-------------	--

**B.Sc. (E.C.S.) – I (Semester – I) (New) (CBCS Pattern) Examination, 2017**  
**MATHEMATICS (Paper – VI)**  
**Discrete Structures**

Time : 2½ Hours

Max. Marks : 70

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

1. Choose the correct alternative : 14
- 1) The order of the recurrence relation  $a_n - 8a_{n-1} = -16a_{n-2}$  is  
a)  $n$     b) 1    c) 2    d)  $n - 1$
  - 2)  $K_6$  is \_\_\_\_\_ regular graph.  
a) 5    b) 6    c) 0    d) 3
  - 3)  $N_7$  is \_\_\_\_\_ regular graph.  
a) 7    b) 6    c)  $n$     d) 0
  - 4) Let  $G$  be a connected graph. Let  $T$  be its spanning tree then the edges of  $G$  which are not included in spanning tree  $T$  are called as \_\_\_\_\_ w.r.t. spanning tree  $T$ .  
a) branches    b) chords    c) adjacent edges    d) leaves
  - 5) In a binary tree with 'n' vertices, the number of pendant vertices are  
a)  $n$     b)  $n + 1$     c)  $\frac{n(n+1)}{2}$     d)  $\frac{n+1}{2}$
  - 6) A closed trail is called as  
a) Eulerian trail    b) Tour  
c) Hamiltonian circuit    d) Eulerian circuit
  - 7) The edge connectivity of a tree having 7 vertices and 6 edges is  
a) 1    b) 7    c) 5    d) 6
  - 8) A simple graph  $G$  is called self complementary graph if  $G$  is \_\_\_\_\_ to its own complement.  
a) equal    b) not isomorphic  
c) isomorphic    d) identical
  - 9) A walk in which no vertex is repeated is called as  
a) path    b) trail    c) circuit    d) tour
  - 10) If a simple graph  $G_1$  has ' $p_1$ ' number of vertices and ' $q_1$ ' number of edges and a simple graph  $G_2$  has ' $p_2$ ' number of vertices and ' $q_2$ ' number of edges then their product graph  $G = G_1 \times G_2$  has \_\_\_\_\_ number of edges.  
a)  $p_1q_2 + q_1p_2$     b)  $p_1q_1 + p_2q_2$     c)  $p_1p_2 + q_1q_2$     d)  $p_1q_2 - q_1p_2$

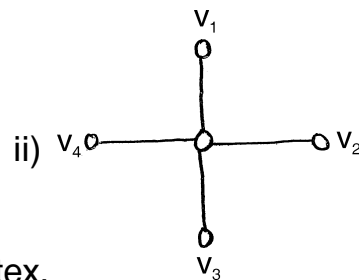
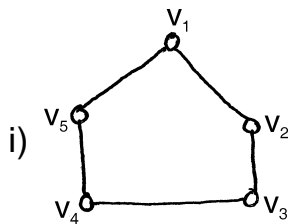


- 11) The order of incidence matrix of a graph G containing 4 vertices and 7 edges is
  - a)  $4 \times 4$
  - b)  $7 \times 7$
  - c)  $4 \times 7$
  - d) none of these
- 12) For any graph G, the graph  $G \oplus G$  is
  - a) G
  - b)  $G'$
  - c)  $G \cup G$
  - d) null graph
- 13) If  $|A| = 25$ ,  $|B| = 14$  and  $|A \cap B| = 7$  then  $|A \cup B| =$ 
  - a) 32
  - b) 46
  - c) 18
  - d) none of these
- 14) Total degree of  $K_{m,n}$  is
  - a)  $m \cdot n$
  - b)  $m + n$
  - c)  $\frac{m + n}{2}$
  - d)  $2m \cdot n$

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

14

- 1) Find the number of edges in a complete graph having 7 vertices.
- 2) Draw complement of the following graphs :

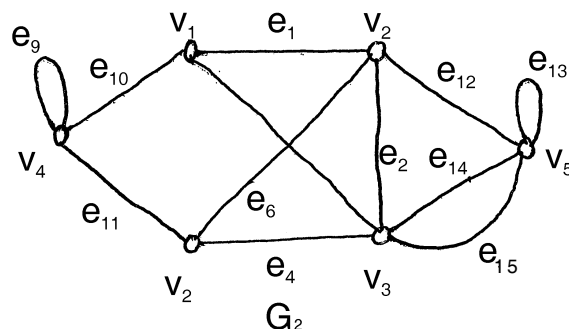
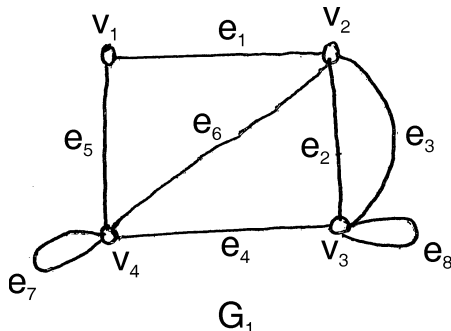


- 3) Define pendant vertex and isolated vertex.
- 4) Draw a graph which is both Eulerian and Hamiltonian.
- 5) Define vertex connectivity of a connected graph.
- 6) Which algorithms are used to find shortest path and to find shortest spanning tree respectively ?
- 7) Define tree with suitable example.
- 8) Find characteristic roots of the characteristic equation of the recurrence relation  $a_n - 7a_{n-1} + 10a_{n-2} = 0$ .
- 9) Draw the graphs  $K_{2,3}$  and  $K_4$ .

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

10

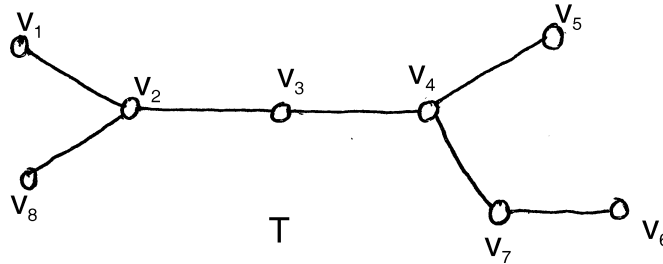
- 1) From the following graphs  $G_1$  and  $G_2$ , draw the graph  $G = G_1 \oplus G_2$ .







- 2) Let  $G$  be a graph with 'n' vertices and  $(n - 1)$  edges. Prove that graph  $G$  has either a vertex of degree 1 or an isolated vertex.
- 3) Find eccentricity of every vertex of following tree. Also find its centre and radius.



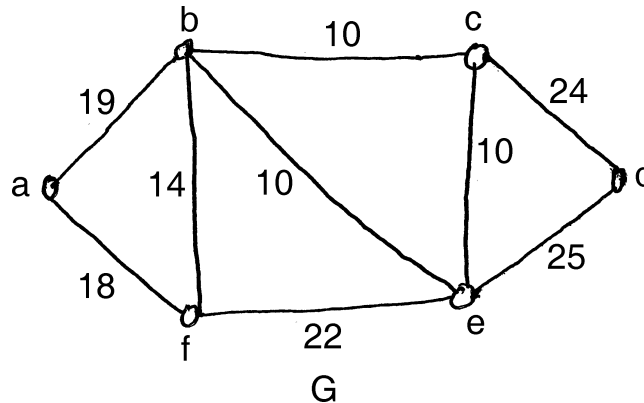
- B) Define :
- i) Spanning subgraph
  - ii) Eulerian graph
  - iii) Total degree of a graph
  - iv) Null graph.

4

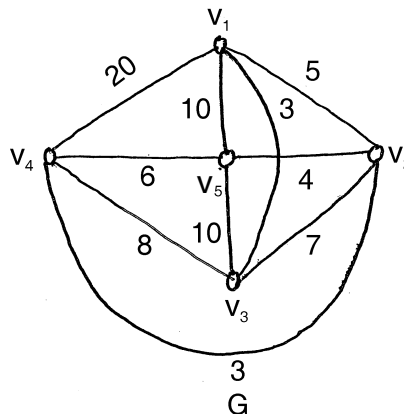
4. Attempt **any two** of the following :

14

- 1) Define shortest spanning tree. Hence find shortest spanning tree  $T$  for the following graph  $G$ , by using Kruskal's algorithm.

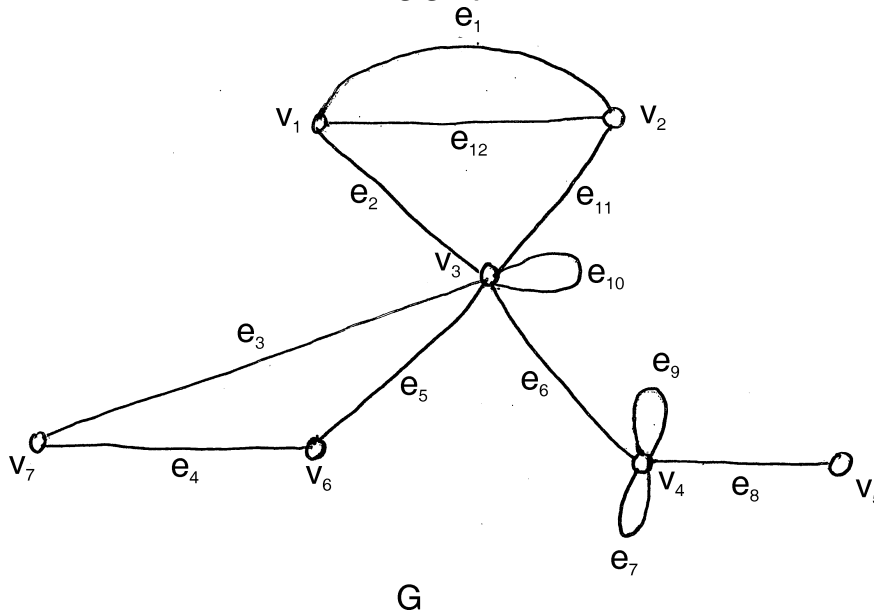


- 2) Solve the following Traveling Salesman problem based at vertex  $v_1$ .





3) Define adjacency and incidence matrix. Hence write the adjacency and incidence matrix for the following graph G.



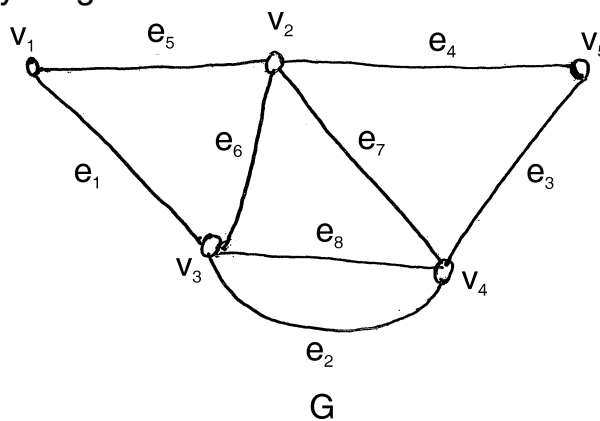
5. Attempt **any two** of the following :

14

1) Define the following with suitable example :

- i) Vertex deleted subgraph
- ii) Edge disjoint subgraphs
- iii) Hamiltonian graph.

2) Show that the graph given below is Eulerian. Hence find Eulerian circuit in it by using Fleury's algorithm.



3) State and prove principle of mutual inclusion – exclusion for three sets.

\_\_\_\_\_



Seat No.	
----------	--

**B.Sc. (ECS) – I (Semester – I) (New – CBCS Pattern) Examination, 2017**  
**MATHEMATICS (Paper – VII)**  
**Numerical Methods**

Time : 2.30 Hours

Max. Marks : 70

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

1. Choose the correct alternative :

14

- 1) Order of column matrix is \_\_\_\_\_
  - a)  $1 \times n$
  - b)  $n \times n$
  - c)  $m \times n$
  - d)  $n \times 1$
- 2)  $0.9694 E_5 \div 0.1105 E_{-98} =$  \_\_\_\_\_
  - a)  $0.87728 E_{104}$
  - b)  $0.87728 E_{105}$
  - c)  $0.87728 E_{103}$
  - d)  $0.87728 E_{-98}$
- 3) While doing subtraction of two numbers in normalised floating point form, the mantissa's should be \_\_\_\_\_
  - a) Added
  - b) Subtracted
  - c) Made equal
  - d) None of these
- 4) The equation  $7\sin x - 5x^3 = 0$  is \_\_\_\_\_ equation.
  - a) Polynomial
  - b) Algebraic
  - c) Transcendental
  - d) None of these
- 5) Simpson's  $\frac{3}{8}$  rule is obtain by putting  $n =$  \_\_\_\_\_ in general quadrature formula.
  - a) 1
  - b) 2
  - c) 3
  - d) 4





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

14

1) Write augmented matrix for the following system of equations.

$$x + y - 3z = 4 ; 2x + 3y - 7z = -5 ; x + y + z = 2$$

2) Write Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule.

3) State the formula for  $k_1$  and  $k_2$  for Runge-Kutta II order method.

4) Show that the matrix  $A = \begin{bmatrix} 3 & 2 & 6 \\ 1 & 1 & 2 \\ 2 & 2 & 5 \end{bmatrix}_{3 \times 3}$  is invertible.

5) Write the formula to find  $x_1$  by Regula Falsi (False-position) method.

6) Prepare the forward difference table for following data :

<b>x</b>	5	10	15	20	15
<b>f(x)</b>	50	70	100	145	192

7) State Newton's backward difference interpolation formula.

8) Define Absolute Error ( $E_A$ ) and Relative Error ( $E_R$ ).

9) Find  $1.761 E_7 - 44.13 E_5$ , write your answer in normalised floating form.

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

10

1) Explain the method to find inverse of matrix by row reduction method.

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

3) Use Euler's method to find value of  $y$  at  $x = 1.3$  for the differential equation

$$\frac{dy}{dx} = x + y + 1, \text{ given that, } x_0 = 2, y_0 = 2.2 \text{ and } h = 0.1.$$

B) Find  $A^{-1}$  by using row reduction method, if exist

$$A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}_{3 \times 3} .$$

4



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

14

1) Evaluate  $\int_0^{10} x^2 dx$  by dividing interval into 10 equal sub-intervals by Simpson's  $\frac{1}{3}$ rd rule.

2) Find  $f(15)$  by Newton's forward difference interpolation formula, by using following data.

<b>x</b>	10	20	30	40	50
<b>y=f(x)</b>	4	8	16	32	48

3) Derive Newton Rapsons method formula to find square root of given number. Hence find  $\sqrt{22}$  correct upto three decimal places.

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

14

1) Use the Runge-Kutta IV order method find  $y$  when  $x = 0.1$  given that  $x_0 = 0$ ,  $y_0 = 1$ ,  $h = 0.1$  and  $\frac{dy}{dx} = x + y$ .

2) Derive Simpson's  $\frac{1}{3}$ rd rule.

3) Find the approximate value of root of equation  $x^3 - 4x - 9 = 0$  by bisection method take only four iterations.

---



Seat No.	
----------	--

**B.Sc. (E.C.S.) (Part – I) (Semester – I) (New) (CBCS-Pattern) Examination, 2017  
DESCRIPTIVE STATISTICS – I (Paper – VIII)**

Time : 2½ Hours

Max. Marks : 70

- Instructions:** i) *All questions are compulsory.*  
ii) *Figures to **right** indicates **full** marks.*  
iii) *Use of any type of calculator is allowed.*  
iv) *Graph paper will be supplied on request.*

1. Select most correct alternative. 14
- 1) Sampling is the only method
    - a) For testing blood
    - b) If population is infinite
    - c) If results are required in short time
    - d) All of these
  - 2) In SRSWOR method
    - a) Same item may be selected more than once
    - b) Same item may not be selected more than once
    - c) Same item may be selected again and again
    - d) None of these
  - 3) To draw greater than ogive g.c.f. is plotted against \_\_\_\_\_ of respective classes.
    - a) Upper limit
    - b) Lower limit
    - c) Mid-points
    - d) None of these
  - 4) Classification
    - a) Condense the data
    - b) Simplifies complex nature of data
    - c) Helps in drafting the report
    - d) All of these
  - 5) The measure of central tendency that affected by extreme observations is
    - a) A.M.
    - b) Median
    - c) Mode
    - d) All of these
  - 6) Less than ogive is used to determine
    - a) A.M.
    - b) Quartiles
    - c) Mode
    - d) None of these
  - 7) The measure of dispersion that based on extreme observations is
    - a) S.D.
    - b) Q.D.
    - c) Range
    - d) All of these



- 8) If each observation is multiplied by 10, then range becomes  
a) As it is    b) Increased by 10%  
c) Increased by 10 times                          d) None of these
- 9) For a positively skewed distribution  
a) A.M. = Median = Mode                      b) A.M. > Median > Mode  
c) A.M. < Median < Mode                      d) None of these
- 10) First order moment about origin is  
a) Always zero                                      b) A.M.  
c) Independent of change of origin              d) None of these
- 11) Let A : A group of individuals under study is the population  
    B : A part of population under study is the sample  
a) A and B both true                              b) A and B both false  
c) A is true, B is false                              d) None of these
- 12) Let A : The second quartile is the median  
    B : The median is the measure of skewness.  
a) A and B both true                              b) A and B both false  
c) A is true, B is false                              d) None of these
- 13) The measures of central tendency that based on maximum frequency is  
a) A.M.    b) Median    c) Mode    d) All of these
- 14) Range is  
a) Based on all observations                      b) Simple to calculate  
c) Measure of kurtosis                              d) None of these

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

**14**

- 1) Define class-frequency.
- 2) Define Q.D. and coefficient of Q.D.
- 3) State any two demerits of mode.
- 4) State empirical relation between mean, median and mode.
- 5) Find range and coefficient of range for : 17, 22, 40, 28, 33, 12, 29.
- 6) The first 2 moments about 4 are 9 and 109 respectively. Find variance.
- 7) Find  $Q_1$  for : 20, 27, 18, 13, 30, 22, 24.
- 8) Given : mean = 14, median = 20 and s.d. = 15. Find coefficient of skewness.
- 9) The mean and variance of score of batsman A are 55 and 29 respectively. Find c.v.





3. A) Attempt **any two** of the following : 10

- 1) The A.M. of marks of 210 students is 72. If mean marks of 85 students is 75 and that of next 75 is 62, then find mean marks of remaining students.
- 2) The mean and S.D. of wages of 50 workers in factory – A are Rs. 125 and 117 per day and that of 65 workers in factory – B are Rs. 143 and 154, 5 respectively. Find which factory is more consistent in paying wages.
- 3) Define classification and state its objectives.

B) Define – symmetric distribution and state its properties. 4

4. Attempt **any two** of the following : 14

- 1) Draw less than ogive to represent the following data and hence obtain  $Q_3$  (third quartile).

<b>Class</b>	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
<b>Frequency</b>	13	27	32	29	18	7

- 2) Find range, coefficient of range, Q.D. and coefficient of Q.D. for the data given below.

<b>X</b>	17	20	23	26	31	34	37
<b>Frequency</b>	4	9	13	20	15	11	6

- 3) Explain concept of measures of central tendency.

5. Attempt **any two** of the following : 14

- 1) Explain construction of pie-diagram.
- 2) The first 4 moments about 10 are 1, 21, 51 and 319. Find coefficient of skewness and kurtosis and comment on result.
- 3) For the data given below find missing frequency of the class 30 – 40 if A.M. is 25.4.

<b>Class</b>	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
<b>Frequency</b>	2	6	9	–	3

---



Seat No.	
-------------	--

**B.Sc. (E.C.S.) (Part – I) (Semester – I) (CBCS – Pattern) Examination, 2017  
PROBABILITY THEORY – I (Paper – IX) (New)**

Time : 2½ Hours

Total Marks : 70

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

1. Select most correct alternative :

14

- 1) In  ${}^n C_r = \frac{n!}{r!(n-r)!}$ , then \_\_\_\_\_
- a) 'n' is total number of distinct things  
b) 'r' is number of things to be selected  
c) both a) and b)  
d) none of these
- 2) Number of ways by which a committee of 5 members is to be formed out of 'n' men and 'm' women such that exactly 2 women are must be on committee is \_\_\_\_\_
- a)  ${}^n C_3 {}^m C_2$       b)  ${}^n C_2 {}^m C_3$       c)  ${}^{n+m} C_5$       d)  ${}^n C_3 + {}^m C_2$
- 3) Number of different ways by which 5 persons A, B, C, D and E are to be sited in a row such that 'A' must be at first position is \_\_\_\_\_
- a) 5!      b) 4!      c)  ${}^5 P_5$       d) None of these
- 4) Arrangement of some or all of given things in a sequence is known as \_\_\_\_\_
- a) Permutations      b) Combinations  
c) Permutations with restriction      d) Combinations with Restriction
- 5) The probability of a complementary event of an impossible event is \_\_\_\_\_ always.
- a) 1      b) 0  
c) Lies between 0 and 1      d) None of these



- 6) If A and B are equally likely events, then \_\_\_\_\_
- a)  $P(A) = P(B)$                                       b)  $P(A) + P(B) = 1$   
 c)  $P(A \cap B) = 0$                                       d) All of these
- 7) If A and B are independent events, then \_\_\_\_\_
- a)  $P(A/B) = P(A)$                                       b)  $P(\overline{A} / \overline{B}) = P(\overline{A})$   
 c)  $P(\overline{A} / B) = P(\overline{A})$                                       d) All of these
- 8) Two balls are drawn one by one without replacement from a box containing 9 white and 1 black balls. If first ball drawn is black then probability of getting second ball black is \_\_\_\_\_
- a) 1                                      b) 0                                      c) 1/9                                      d) 1/10
- 9) A discrete r.v. takes \_\_\_\_\_ values.
- a) Countable infinite                                      b) Infinite  
 c) Uncountable infinite                                      d) None of these
- 10) For a discrete r.v.  $X$   $E(X) = 20$  and  $E(X - 20)^2 = 25$ , then S.D. of  $X$  is \_\_\_\_\_
- a)  $\sqrt{20}$                                       b)  $\sqrt{5}$                                       c) 5                                      d) None of these
- 11) The c.d.f. of a discrete r.v.  $X$  is  $F(X)$ , then  $F(b) - F(a) =$  \_\_\_\_\_
- a)  $P(a < X < b)$                                       b)  $P(a \leq X \leq b)$   
 c)  $P(a < X \leq b)$                                       d)  $P(a \leq X < b)$
- 12) \_\_\_\_\_ distribution does not have additive property.
- a) Binomial                                      b) Poisson  
 c) Hyper Geometric                                      d) Uniform
- 13) If mean and variance of binomial distribution are 10 and 6 respectively, then the parameter 'n' is \_\_\_\_\_
- a) 25                                      b) 20                                      c) 15                                      d) None of these
- 14) A sample of two balls is drawn from a box containing 5 black and 3 white balls. If  $X$  denotes number of white balls in the sample, then r.v.  $X$  takes values \_\_\_\_\_
- a) 0, 1, 2, 3                                      b) 0, 1, 2                                      c) 1, 2, 3                                      d) None of these



2. Attempt **any seven** of the following : 14

- 1) State multiplication principle of counting.
- 2) Define – expectation of discrete r.v.
- 3) Define – exhaustive events.
- 4) Given :  $P(A) = 0.3$ ,  $P(B) = 0.5$  find  $P(A/B)$  if events A is sub-set of event B.
- 5) If  $X \rightarrow B(8, 0.6)$ , state  $V(3X + 5)$ .
- 6) Find value of k if following is the p.m.f. of discrete r.v.X.

<b>X</b>	10	20	30	40
<b>P(x)</b>	2k	0.1	3k	0.2

- 7) Find value of n if  ${}^n P_2 + {}^m C_2 = 45$ .
- 8) If  $X \rightarrow H(18, 6, 3)$  state variance of X.
- 9) Find parameter of Poisson distribution if  $P(X = 1) = 2 P(X = 3)$ .

3. A) Attempt **any two** of the following : 10

- 1) Find number of possible arrangements of 8 boys and 6 girls in a row for the photograph such that no 2 girls are sit together.
- 2) Two cards are drawn from a pack of 52 playing cards one by one without replacement. Find probability of getting first card of club and second card is of heart.
- 3) Following is the p.m.f. of discrete r.v.X. Find
  - i) Median of X
  - ii)  $P(|X| < 2)$

<b>X</b>	-3	-2	-1	0	1	2
<b>P(X)</b>	0.1	0.05	0.25	0.3	0.15	0.15

B) Define – Hyper geometric distribution. Give two real life situations where it is applicable.



4. Attempt **any two** of the following : **14**

- 1) Define pair wise independence, mutual independence. If A, B and C are mutually independent then show that  $P[A/(B \cap C)] = P(A)$ .
- 2) A fair coin is tossed 3 times. A person receives Rs.  $X^2$  if he got X number of heads in all. Find expected gain of person.
- 3) Find probability that a person will get at least 2 books with loose binding if he randomly selects 5 books among 13 books of which 6 are of loose binding.

5. Attempt **any two** of the following : **14**

- 1) Define Poisson distribution. State the conditions under which Poisson distribution is limiting case of binomial distribution. Give two real life situations where it is applicable.
  - 2) A coin is tossed 3 times. Let A, B and C are the events that getting head on first, second and third toss respectively. Discuss independence of the events A, B and C.
  - 3) Show that :
    - i)  ${}^n C_r + {}^n C_{r-1} = {}^{n+1} C_r$
    - ii)  ${}^{n+2} C_r = {}^n C_r + 2 \cdot {}^n C_{r-1} + {}^n C_{r-2}$ .
-



Seat No.	
-------------	--

**B.Sc. – I (Semester – I) (ECS) Examination, 2017**  
**Paper – I : ENGLISH – I (Compulsory) (CGPA Pattern) (Old)**  
**‘On Track’ English Skills for Success**

Time : 2.30 Hours

Total Marks : 70

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

1. Complete the following statements by choosing the correct alternatives from these given below **each**.

14

- 1) Bob and Jimmy were \_\_\_\_\_
  - a) brothers
  - b) enemies of each others
  - c) colleagues
  - d) friends
- 2) The word ‘avenue’ means \_\_\_\_\_
  - a) a narrow street
  - b) a wide street
  - c) a room
  - d) a restaurant
- 3) Miss. Krishna’s mother left \_\_\_\_\_ to her.
  - a) a big building
  - b) a huge property
  - c) a tiny cottage
  - d) nothing
- 4) The writer and Miss. Krishna \_\_\_\_\_
  - a) were at school together
  - b) met at an art exhibition
  - c) were neighbours
  - d) met at a tea party
- 5) IQ Test was developed by \_\_\_\_\_
  - a) Mr. Binet
  - b) Mr. Bennet
  - c) Ms. Benet
  - d) Mrs. Binet
- 6) Some experts say that \_\_\_\_\_ intelligence will soon come into existence.
  - a) a scientific
  - b) an artificial
  - c) a technical
  - d) a natural
- 7) The bangle sellers carry the load of shining bangles to the \_\_\_\_\_
  - a) village fair
  - b) city fair
  - c) temple fair
  - d) none of the above



- 8) The term 'virtual reality' means \_\_\_\_\_  
a) an environment produced by a computer  
b) a building built by an engineer  
c) a viral reality  
d) an environment destroyed by a man
- 9) W. B. Yeats expresses his \_\_\_\_\_ with the war.  
a) satisfaction  
b) discontent  
c) willingness  
d) none of the above
- 10) Sarojini Naidu speaks about lack of freedom for \_\_\_\_\_ in 'Bangle sellers'.  
a) married men  
b) unmarried boys  
c) married women  
d) none of the above
- 11) The plural form of the word 'wolf' is \_\_\_\_\_  
a) wolfs  
b) wolfes  
c) wolves  
d) wolf
- 12) The man \_\_\_\_\_ the car is Gopichand.  
a) into  
b) of  
c) at  
d) in
- 13) Let's go on \_\_\_\_\_ picnic today.  
a) a  
b) the  
c) an  
d) No article
- 14) The word 'Teacher' is a \_\_\_\_\_ noun.  
a) proper  
b) common  
c) abstract  
d) collective

2. Answer in brief **any seven** of the following :

14

- 1) Why did Bob decide to travel to the west ?
- 2) What had happened to 'Big Joe Brady's restaurant ?
- 3) What is the profession of narrator in 'The Connoisseur' ?
- 4) What do you mean by the title 'Connoisseur' ?
- 5) How can you define 'intelligence' ?
- 6) What are the many facets of intelligence ?
- 7) What was the policeman constantly doing with his stick ?
- 8) What did Mr. Binet develop ?

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

8

- 1) What is the theme of the poem 'Bangle sellers' ?
- 2) Describe the different types of bangles which the bangle-sellers carry.
- 3) What is the stand of an Irish airman towards the war ?



B) Write paragraphs on **any two** of the following. **6**

- 1) A craze of fashions in the youth.
- 2) The greenhouse effect.
- 3) The performance of Indian players in 2016 Olympic.

4. Write an essay on 'Machine Civilisaiton'. **14**

OR

Write an essay on 'A Meaningful Life'.

5. Read the following passage and make notes of it. Use an appropriate title for your notes. **14**

There are different forms of environmental pollution. Air pollution is caused by the burning coal and oil. It can damage the earth's vegetation and cause respiratory problems in humans. A second type of pollution is noise pollution. It is the result of the noise of aircraft and heavy traffic. Further, loud music is also a cause of noise pollution, which had been seen to affect people's hearing and give them severe headaches and high blood pressure. Another source of pollution is radioactivity, which occurs when there is a leak from a nuclear power station. Radioactivity is a deadly pollutant, which kills and causes irreparable harm to those exposed to it. Land and water pollution is caused by the careless disposal of huge quantities of rubbish, sewage and chemical wastes. Pollution of rivers and seas kills fishes and other marine life and also becomes the cause of water-borne diseases. Land pollution, on the other hand, poisons to soil, making the food grown in it unfit for consumption.

---





<b>Seat No.</b>	
-----------------	--

**B.Sc. [ECS] – I (Semester – I) (Old CGPA) Examination, 2017  
COMPUTER FUNDAMENTALS AND PROGRAMMING  
USING C – I (Paper – II)**

Time : 2½ Hours

Max. Marks : 70

**SECTION – I  
(Computer Fundamentals)**

1. Multiple choice questions :

**5**

- i) Printer is a \_\_\_\_\_ Device.
  - a) Input
  - b) Output
  - c) Both a) and b)
  - d) None of these
- ii) The brain of any computer system is
  - a) ALU
  - b) CPU
  - c) Control Unit
  - d) Memory
- iii) An optical input device that interprets pencil marks on paper media is
  - a) O.M.R.
  - b) Punch card reader
  - c) Optical scanners
  - d) Magnetic tape
- iv) The term MIPS refers to
  - a) Millions of instructions per second
  - b) Multiple instructions per second
  - c) Megabytes of instructions per seconds
  - d) Millions input processor set
- v) \_\_\_\_\_ DOS command is used to displays directory paths and (optionally) files in each subdirectory.
  - a) view
  - b) tree
  - c) dir
  - d) path



2. Answer **any five** of the following : 10
- i) Serial and Parallel ports.
  - ii) Magnetic tape.
  - iii) Single user operating system.
  - iv) Computer language – high level and low level.
  - v) SMPS.
  - vi) Plotters.
  - vii) Define BCD.
3. A) Write short notes on **any two** of the following : 10
- i) Explain MICR and OMR input Devices.
  - ii) What is the difference between EPROM, PROM and ROM ?
  - iii) What is DOS ? Explain any five DOS-command.
- B) Answer **any one** of the following : 10
- i) What is computer ? Explain the application and limitation.
  - ii) What are the mechanism of LaserJet and Dot-matrix printer ? Explain in detail various types of Dot-matrix printer.

SECTION – II  
(Programming Using C – I)

1. Multiple choice questions : 5
- i) void main()  
{  
    int a=5;  
    printf(“%d,%d,%d,%d”, a,a+=10,++a,a--);  
}
- a) 15, 15, 5, 5      b) 151555      c) 5, 15, 6, 4      d) error
- ii) void main()  
{  
    printf(“%d”, strlen(“welcome”));  
}
- a) 7      b) welcome  
c) strlen (“welcome”)      d) 0



- iii) Diagrammatic representation of algorithm known as
  - a) algorithm
  - b) program
  - c) flowchart
  - d) loop
- iv) % operator is used to calculate
  - a) percentage
  - b) division
  - c) remainder
  - d) addition
- v) While is \_\_\_\_\_ controlled conditional loop.
  - a) Exit
  - b) Entry
  - c) One line
  - d) Loop

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

- i) Primary Data types.
- ii) Break and goto statement.
- iii) Logical && and || operator.
- iv) Definition and declaration of one dimensional array.
- v) Explain strcpy() and strcat().
- vi) Syntax of Switch statement.
- vii) Ternary operator.

3. A) Write short notes on **any two** of the following : **10**

- i) Keywords.
- ii) Nested loop.
- iii) Bitwise operators.

B) Answer **any one** of the following : **10**

- i) What are control statement ? Explain loop control statement.
  - ii) Write an algorithm and program, which display loss and profit of sales.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – I) Examination, 2017  
(CGPA (Old))  
LINEAR AND DIGITAL ELECTRONICS – I (Paper – III)**

Time : 2.30 Hours

Max. Marks : 70

SECTION – I

**(Linear)**

1. Choose and write the correct alternative from following. 5

1) The colour bands printed on the body of the resistor are brown, black and orange, the value of resistance is \_\_\_\_\_

- a) 10 k                      b) 100k                      c)  $10\Omega$                       d)  $100\Omega$

2) In an ideal constant voltage source resistance is \_\_\_\_\_

- a) zero                      b) infinity                      c) very large                      d) medium

3) The current gain of \_\_\_\_\_ is very large

- a) Common collector                      b) Common base  
c) Common emitter                      d) None of these

4) Ripple factor of half wave rectifier diode is

- a) 1.21                      b) 0.48                      c) 0.50                      d) 100

5) Silicon has \_\_\_\_\_ eV energy band gap.

- a) 0.3                      b) 0.7                      c) 1.2                      d) 4.0

2. Attempt **any five** of the following. 10

- 1) State the KCL and KVL.
- 2) What is capacitor ? Explain the capacitance.
- 3) What is transistor ?
- 4) Write a note on photo diode.



- 5) What is resistor ? Explain it.
- 6) State the different biasing methods.
- 7) What is an intrinsic semiconductor ?
3. A) Solve **any two** of the following. **10**
- 1) Explain the working of the half wave rectifier.
  - 2) Write a note on inductor.
  - 3) Explain P-type semiconductor.
- B) Solve **any one** of the following. **10**
- 1) Explain working of transistor in detail.
  - 2) Explain super position and maximum power transfer theorem.

## SECTION – II

### (Digital Electronics – I)

1. Choose and write the correct alternative from following. **5**
- 1) The decimal number 4 in Excess-3 code is \_\_\_\_\_  
a) 0000                      b) 1010                      c) 0111                      d) 0001
  - 2) IC 74138 is \_\_\_\_\_ decoder.  
a) Octal to BCD                      b) Octal to Binary  
c) Binary to Octal                      d) BCD to Octal
  - 3) \_\_\_\_\_ code is self complementary code.  
a) Excess-3                      b) Gray                      c) Octal                      d) Binary
  - 4) The base of binary system is \_\_\_\_\_  
a) 8                      b) 2                      c) 10                      d) 16
  - 5) 0.0110 have 2s complement is \_\_\_\_\_  
a) 0.0110                      b) 0.1010  
c) 1.1101                      d) None of the above



2. Attempt **any five** of the following. **10**
- 1) Write the two statement of De-Morgans theorem.
  - 2) Draw the symbols of universal gates.
  - 3) What is decoder ?
  - 4) Write a note on ASCII codes.
  - 5) What is multiplexer and De-multiplexer ?
  - 6) Explain weighted codes.
  - 7) Convert  $(22)_8$  in to binary.
3. A) Solve **any two** of the following. **10**
- 1) Explain logic families and their characteristics.
  - 2) Explain the working of half adder with truth table.
  - 3) Explain IC 74154.
- B) Solve **any one** of the following. **10**
- 1) Explain inter conversion of gates using NAND gate.
  - 2) What is multiplexer ? Explain working of 16 : 1 Multiplexer.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – I) (CGPA Pattern) Examination, 2017**  
**MATHEMATICS (Paper – IV) (Old)**  
**Graph Theory and Numerical Methods**

Time : 2½ Hours

Max. Marks : 70

- Instructions :** 1) Write answers of Section – I and Section – II on **separate** answer books.  
2) **All** questions are **compulsory**.  
3) **Use** of scientific calculator is allowed.  
4) Figures to the **right** indicate **full** marks.

SECTION – I  
(Graph Theory)

1. Choose the correct alternative :

5

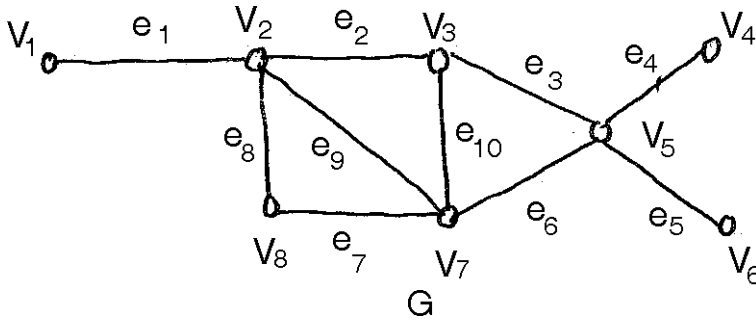
- 1) In adjacency matrix of G if all the diagonal elements are 0 and all the non-diagonal elements are either 1 or 0 then graph G is \_\_\_\_\_ graph.  
a) multi                      b) pseudo                      c) simple                      d) regular
- 2) A connected graph G in which there exists exactly one path between every pair of vertices is called as  
a) Complete graph                      b) Tree  
c) Regular graph                      d) Null graph
- 3) A simple graph G is called as self complementary graph if  
a)  $G \cong G$                       b)  $G \cong \bar{G}$                       c)  $G = \bar{G}$                       d)  $G = N$
- 4) A connected graph G is Eulerian if degree of each vertex is  
a) even                      b) odd                      c) same                      d) not same
- 5) A walk in which no vertex is repeated is called as  
a) trail                      b) tour                      c) cycle                      d) path



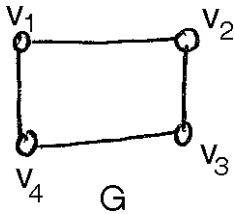
2. Attempt **any five** from the following :

10

- 1) Define complete graph. Give one example.
- 2) Define spanning subgraph.
- 3) Draw the graph  $K_{3,2}$ .
- 4) Find all the isthmus (cut edges) in the following connected graph G.



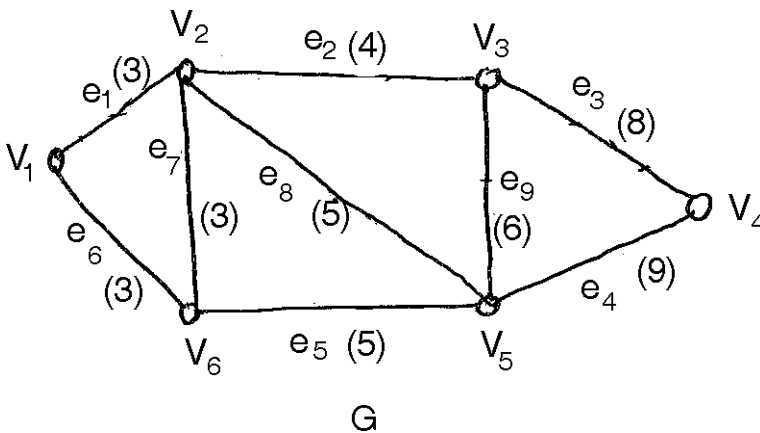
- 5) Draw a Eulerian graph and a Hamiltonian graph.
- 6) Define tree. Give one example.
- 7) Draw complement of the following graph G.



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

10

- 1) Write a brief note on Koningberg's Seven Bridge Problem.
- 2) By using Kruskal's algorithm, find the shortest spanning tree and its weight for the following weighted connected graph G.



- 3) Let G be a graph with 'n' vertices and (n – 1) edges. Then prove that graph G has either a vertex of degree 1 or an isolated vertex.

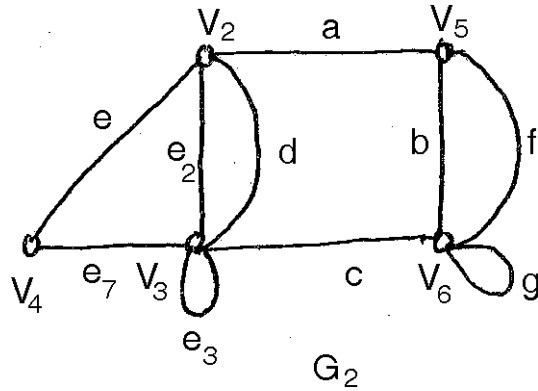
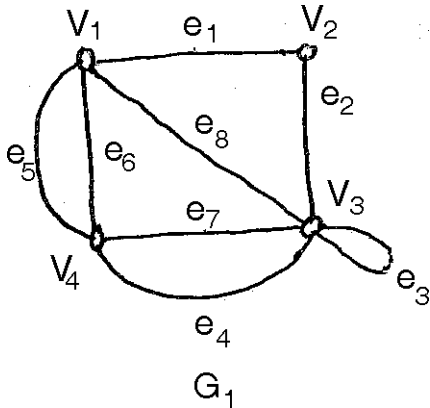




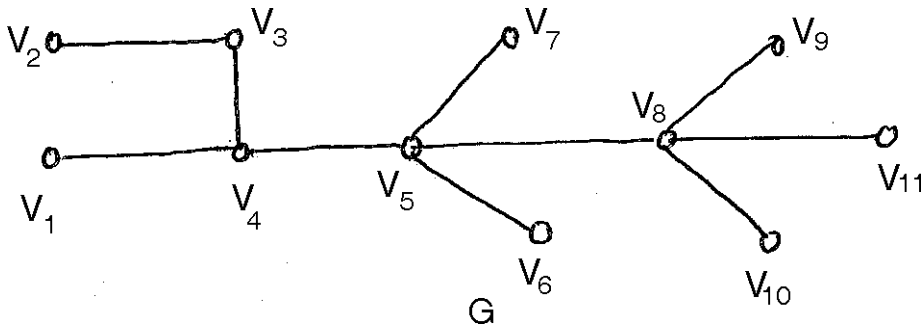
B) Attempt **any one** from the following :

10

- From the following graphs  $G_1$  and  $G_2$ , draw the graph (a)  $G_1 \cap G_2$  and (b)  $G_1 \oplus G_2$ .



- Define vertex connectivity and edge connectivity of a connected graph. Find eccentricity of all vertices in the following graph  $G$ . Hence find its centre, radius and diameter of  $G$ .



**SECTION – II**  
**(Numerical Methods)**

1. Choose the correct alternative :

5

- Homogeneous system of linear equations is never
  - Inconsistent
  - Consistent
  - Trivial
  - None of these
- The equation  $\tan x + 2e^x = 0$  is of \_\_\_\_\_ type.
  - Linear
  - Homogeneous
  - Transcendental
  - Invertible
- While doing subtraction of two numbers in normalised floating point notation \_\_\_\_\_ are made equal.
  - Mantissa
  - Exponents
  - Numbers
  - Normals
- $E \nabla = \nabla E =$ 
  - $E$
  - $\Delta$
  - $\nabla$
  - $E^{-1}$
- \_\_\_\_\_ rule is obtained by putting  $n = 3$  in the general quadrature formula for equidistant ordinates.
  - Trapezoidal
  - Simpson's  $(1/3)^{rd}$
  - Simpson's  $(3/8)^{th}$
  - Taylor's



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

10

- 1) Evaluate (a)  $0.6985 \text{ E}7 \times 0.9887 \text{ E}9$  (b)  $5.6332 \text{ E}4 \div 0.7893 \text{ E}2$
- 2) Show that  $(E \nabla) f(x) = \Delta f(x)$ .
- 3) State Trapezoidal rule to evaluate  $\int_a^b f(x) \cdot dx$ .
- 4) State the formula for  $K_3$  and  $K_4$  in Runge-Kutta IV order method.
- 5) Write Regula Falsi method formula and Bisection method formula to find root of the equation  $f(x) = 0$  in the interval  $[x_0, x_1]$ .
- 6) Write augmented matrix for the following system of linear equations :  
 $3x - 2y + 5z - 6w = 7$ ;  $-x + 3z + 5w = -5$ ;  $2y + 3z + 2w = 6$ .
- 7) Define absolute error.

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

10

- 1) Evaluate  $\int_0^{\pi/2} \sin x \cdot dx$  by using Simpson's  $(1/3)^{\text{rd}}$  rule, by dividing the interval  $\left[0, \frac{\pi}{2}\right]$  into 6 equal sub-intervals.
- 2) Write an algorithm to solve system of m-linear equations in n-variables by using Gauss Elimination method.
- 3) By using Euler's method find approximate value of  $y(1.8)$ . Given that  $\frac{dy}{dx} = x^2 + y$ ,  $x_0 = 1.2$ ,  $y_0 = 1.4$  and  $h = 0.2$ .

B) Attempt **any one** of the following :

10

- 1) Write an algorithm to find root of the equation  $f(x) = 0$  by using Bisection method. Hence find root of the equation  $f(x) = x^3 - 4x - 7 = 0$  by using Newton-Raphson Method by taking initial approximation  $x_0 = 2.4$ , correct up to four decimal places.
- 2) From the following data, estimate  $f(250)$  by using Newton's forward difference interpolation formula and estimate  $f(360)$  by using Newton's backward difference interpolation formula.

<b>x</b>	225	275	325	375
<b>y = f(x)</b>	20.53	24.53	37.20	40.20



Seat No.	
----------	--

**B.Sc. (ECS) – I (Semester – I) (CGPA) (Old) Examination, 2017**  
**STATISTICS (Paper – V)**  
**Descriptive Statistics and Probability Theory – I**

Time : 2 ½ Hours

Max. Marks : 70

- N.B. :** i) **All questions are compulsory.**  
ii) **Figures to right indicate full marks.**  
iii) **Use of any type of calculator is allowed.**  
iv) **Graph-paper will be supplied on request.**

SECTION – I  
**(Descriptive Statistics)**

1. Choose the most correct alternative. 5
- 1) In \_\_\_\_\_ sampling method, the total population is divided into different sub-groups such that units within a group are homogeneous but units between any two groups are heterogeneous.  
a) systematic    b) stratified    c) SRSWOR    d) SRS
  - 2) If lower limit of lowest class is not specified, then the classes are known as \_\_\_\_\_ classes.  
a) exclusive    b) inclusive    c) open-end    d) none of these
  - 3) \_\_\_\_\_ divides the data in the ratio 1:1, when data is arranged in ascending order.  
a)  $Q_1$     b)  $Q_2$     c)  $Q_3$     d) None of these
  - 4) \_\_\_\_\_ measure of dispersion is based on extreme observations only.  
a) S.D.    b) Q.D.    c) Range    d) None of these
  - 5) If a frequency distribution is symmetric then  
a)  $\mu_2 = 0$     b)  $\mu_3 = 0$     c)  $\mu_4 = 0$     d) None of these
2. Attempt **any five**. 10
- 1) Define – Relative frequency.
  - 2) Define – Mode.
  - 3) State any two objectives of classification.
  - 4) Find  $Q_1$  for the observations, 23, 20, 17, 28, 24, 25, 30, 32.



- 5) Given :  $Q_1 = 33, Q_2 = 42, Q_3 = 48$ . Comment on skewness of distribution.  
 6) Given : C.V. = 40, variance = 256, find A. M.  
 7) The first two moments about origin are 15 and 300 respectively. Find S.D.

3. A) Attempt **any two**. 10

- 1) Explain simple random sampling method.
- 2) Explain construction of Pie-diagram.
- 3) Find Karl Pearson's coefficient of skewness and interpret the result.

<b>x :</b>	2	5	9	11	13	15
<b>f :</b>	3	7	11	8	5	2

B) Attempt **any one** : 10

- 1) Write a note on Weighted Arithmetic Mean. State merits and demerits of A. M.
- 2) Draw Histogram to represent the following data and hence obtain mode.

<b>Class</b>	:	6 – 12	12 – 18	18 – 24	24 – 30	30 – 36	36 – 42	42 – 48	48 – 54
<b>Frequency</b>	:	10	14	23	25	20	18	11	5

### SECTION – II (Probability Theory)

4. Choose the most correct alternative : 5

- 1) Number of ways in which 7 persons out of 10 are invited to attend welcome function are  
 a)  ${}^{10}C_7$                       b)  ${}^{10}P_7$                       c) Both a) and b)                      d) None of these
- 2) If  $x \rightarrow B(n; p = 0.6)$  and  $E(x) = 15$  then  $n =$   
 a) 25                      b) 15                      c) 50                      d) None of these
- 3) Variance of a constant is always  
 a) One                      b) Zero                      c) Constant itself                      d) None of these
- 4) Any subset of sample space is called  
 a) Event                      b) Null event                      c) Sure event                      d) None of these
- 5) If two unbiased coins are tossed simultaneously then probability of getting atleast one head is  
 a) 1                      b)  $\frac{1}{4}$                       c)  $\frac{3}{4}$                       d)  $\frac{1}{2}$



5. Solve **any five** : 10

- 1) Define mutually exclusive events.
- 2) Define pmf of discrete r.v. X.
- 3) State multiplication principle of counting.
- 4) If  $P(A) = 0.8$ ,  $P(B) = 0.7$  and  $P(A \cap B) = 0.7$ . Find  $P(A \cup B)$ .
- 5) Define Poisson distribution.
- 6) Calculate mathematical expectation if pmf of r.v. X is given below.

<b>X</b>	1	3	5	6
<b>P(X)</b>	0.10	0.20	0.40	0.30

7) Find total number of permutations of the letters of the word “STATISTICS”.

6. A) Solve **any two** : 10

1) The probability distribution of r.v. X is below.

<b>X</b>	1	2	3	4	5
<b>P(X)</b>	K	2K	3K	4K	K

Calculate mean and variance of X.

- 2) Define Binomial distribution of r.v. X. State its mean and variance.
- 3) Let X be a Poisson variate with parameter  $\lambda$ . If  $P(X = 5) = \frac{3}{10} P(X = 4)$ . Find  $P(X > 3)$ .

B) Solve **any one**. 10

- a) i) Define distribution function of discrete r.v. X. State properties of it.  
ii) Show that  $P(\bar{A}) = 1 - P(A)$  where  $\bar{A}$  denotes complement of event A.
- b) i) If A and B are two independent events then show that  $\bar{A}$  and  $\bar{B}$  are also independent.  
ii) A box contains 4 white and 6 black and 5 red balls. Two balls are drawn at random without replacement. What is the probability of getting second ball of colour white ?

---



Seat No.	
-------------	--

**B.Sc. – I (Semester – II) (ECS) (CBCS) (New) Examination, 2017**  
**ENGLISH (Comp.) (Paper – I)**  
**On Track : English Skills for Success**

Time : 2½ Hours

Max. Marks : 70

1. Complete the following sentences by choosing the correct alternatives from those given below them :

14

- 1) The V-2 missile became the first missile to exceed the
  - a) speed of motor
  - b) speed of sound
  - c) speed of computer
  - d) none
- 2) \_\_\_\_\_ is the denominator among all successful men and women.
  - a) Partial interest
  - b) Total discipline
  - c) Total commitment
  - d) Partial commitment
- 3) The Parliament of Religions was to be held in
  - a) America
  - b) Canada
  - c) Singapore
  - d) India
- 4) Who represented the Jains at the Parliament of Religions ?
  - a) Swami Vivekananda
  - b) Annie Besant
  - c) Gandhi
  - d) Pratap Chunder Mozoomdar
- 5) According to Nani A. Palkhivala human rights may be summed up in one word
  - a) survival
  - b) fraternity
  - c) freedom
  - d) none
- 6) The main reason for serious economic problems of the majority is
  - a) famine
  - b) negligence
  - c) drought
  - d) ignorance
- 7) Nani A. Palkhivala's ultimate aim was to establish \_\_\_\_\_ as a social mandate.
  - a) Dharma
  - b) Constitution
  - c) Secularism
  - d) None



- 8) Ralph Emerson's 'Brahma' speaks about the relationship between
- the soul and surrounding world
  - the body and surrounding world
  - the soul and body
  - the poet and soul
- 9) Robert Hayden \_\_\_\_\_ mankind's relationship with the moon.
- ponders on
  - rejects
  - prays
  - none
- 10) Ralph Emerson is an advocate of
- transcendentalism
  - all religions
  - west philosophy
  - none
- 11) That is the \_\_\_\_\_ important thing of all for Kisan.
- list
  - least
  - lest
  - little
- 12) The \_\_\_\_\_ congratulated the best student of the college.
- principle
  - principal
  - prencipal
  - principles
- 13) Mr. Kokane cannot drink \_\_\_\_\_ coffee without your company.
- her
  - his
  - their
  - your
- 14) The correct antonym of 'expensive' is
- cheap
  - chief
  - poor
  - best

2. Answer in brief **any seven** of the following :

14

- 1) What happened to the first V-2 missile when it was first tested ?
- 2) What is 'flow' according to Dr. A. P. J. Abdul Kalam ?
- 3) Describe Vivekananda's meeting with J. H. Wright.
- 4) What kind of personality was Wernher von Braun according to Dr. Kalam ?
- 5) How was Vivekananda's speech at the Parliament of Religions different from those of the other speakers ?
- 6) Why does Palkhivala say that the world continues to be 'less than half free' ?
- 7) Enumerate the signs of hope for a better world that Palkhivala sees.
- 8) How did Vivekananda begin his speech in Parliament of religion ?



3. A) Write short answers on **any two** of the following : **8**
- 1) What is the message of the poem 'Brahma' by Emerson ?
  - 2) How does Hayden Lament the Moon's Fate ?
  - 3) What is Emerson's concept of 'Brahma' ?
- B) Write short answers on **any two** of the following : **6**
- 1) As the Principal of college, write a notice informing students about Annual Social Gathering. Mention day, date and events.
  - 2) What is an agenda ?
  - 3) What do you mean by minutes ?
4. Answer **any one** of the following questions : **14**
- A) You are Dr. Tanaji Bhand, Secretary of Prabodhan Academy. The well known speaker has been called to deliver lecture on M.P.S.C. examinations. Write a notice and agenda informing members of the academy. Imagine necessary details.
- OR
- B) You have received an email letter of appointment for the post of Assistant Manager at Spark Consulting Company, Pune. Write an email letter accepting the offer.
5. Prepare the curriculum vitae of a science graduate who has applied for the post Sales Executive. **14**
-





Seat No.	
----------	--

**B.Sc. (E.C.S.) – I (Semester – II) (New-CBCS) Examination, 2017**  
**COMPUTER SCIENCE**  
**Introduction to Web Designing (Paper – II)**

Time : 2 $\frac{1}{2}$  Hours

Max. Marks : 70

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

1. A) Choose correct alternatives : 10
- 1) What should be the first tag in any HTML document ?  
A) <head>      B) <title>      C) <html>      D) <document>
  - 2) How can you make a bulleted list with numbers ?  
A) <dl>      B) <ol>      C) <list>      D) <ul>
  - 3) What tag is used to display a picture in a HTML page ?  
A) picture      B) image      C) img      D) src
  - 4) HTML uses \_\_\_\_\_  
A) User defined tags  
B) Pre-specified tags  
C) Fixed tags defined by the language  
D) Tags only for linking
  - 5) What are variables used for in JavaScript Programs ?  
A) Storing numbers, dates or other values  
B) Varying randomly  
C) Causing high-school algebra flashbacks  
D) None of the above
  - 6) \_\_\_\_\_ tag is an extension to HTML that can enclose any number of JavaScript statements.  
A) <SCRIPT>      B) <BODY>  
C) <HEAD>      D) <TITLE>



- 7) What is the correct JavaScript syntax to write “Hello World” ?
- A) System.out.println (“Hello World”)
  - B) println (“Hello World”)
  - C) document.write(“Hello World”)
  - D) response.write(“Hello World”)
- 8) In a table, the CSS \_\_\_\_\_ property can be used to specify the amount of space between the borders of each cell.
- A) border-padding
  - B) padding
  - C) spacing
  - D) border-spacing
- 9) The common element which describe the web page is \_\_\_\_\_
- A) Heading
  - B) Paragraph
  - C) List
  - D) All of these
- 10) HTML stands for \_\_\_\_\_
- A) Hyper Text Markup Language
  - B) High Text Markup Language
  - C) Hyper Tabular Markup Language
  - D) None of these

1. B) State the following statements **true/false** :

4

- 1) HTML tags are surrounded by curly type of brackets.
- 2) JavaScript is a case-sensitive language.
- 3) CSS, is a simple design language intended to simplify the process of making web pages presentable.
- 4) HTML5 is the latest and most enhanced version of HTML.

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

14

- 1) List out new features of HTML5.
- 2) What is the long form of CSS and DOM ?
- 3) Explain CSS syntax.
- 4) Define Internet.
- 5) List out operators in JavaScript.



- 6) What are the different types of tag ?
  - 7) Explain heading tag.
  - 8) What is DOCTYPE ?
  - 9) List out different types of CSS.
3. A) Answer **any two** of the following : **10**
- 1) Explain types of CSS in detail.
  - 2) Explain input tag in HTML5.
  - 3) Explain table tag in detail.
- B) Explain structure of HTML. **4**
4. Answer **any two** of the following : **14**
- 1) Explain LAN, MAN, WAN in detail.
  - 2) Explain different data types of JavaScript.
  - 3) Write a JavaScript program to find given number is prime or not.
5. Answer **any two** of the following : **14**
- 1) What is topology ? Explain different types of topology in detail.
  - 2) Explain different CSS properties.
  - 3) Write a JavaScript program to find given number is palindrome or not.
-



Seat No.	
----------	--

**B.Sc. (ECS) (Part – I) (Semester – II) (New CBCS)  
Examination, 2017  
COMPUTER SCIENCE (Paper – III)  
Introduction to Programming Using C – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternatives.

14

- 1) Which of the following cannot be a structure member ?  
A) Another structure                      B) Function  
C) Array                                      D) None of the mentioned
- 2) If there is any error while opening a file, fopen will return ?  
A) Nothing                                      B) EOF  
C) NULL                                        D) Depends on compiler
- 3) What is the output of this C code ?  

```
int main()
{
    int *ptr, a = 10 ;
    ptr = & a;
    *ptr += 1 ;
    printf(“%d,%d/n”, *ptr, a);
}
```

  
A) 10, 10                      B) 10, 11                      C) 11, 10                      D) 11, 11
- 4) Structure contains related information of the same data type.  
A) True                                        B) False
- 5) \_\_\_\_\_ function used to obtain block of memory dynamically.  
A) calloc                                      B) malloc  
C) Both A and B                              D) free



6) What is the default return type if it is not specified in function definition ?  
A) void                      B) int                      C) double                      D) short int

7) In function free(p), p is a  
A) int    B) Pointer returned by malloc()  
C) Pointer returned by calloc()              D) Both B & C

8) The calling function must pass parameters to the called function.  
A) True    B) False

9) \_\_\_\_\_ the following is a storage specifier.  
A) Enum                      B) Union                      C) Auto                      D) Volatile

10) Which of the following is correct syntax to send an array as a parameter to function ?  
A) func(&array);                                      B) func(array);  
C) func(\*array);                                      D) func(array[size])

11) We can define more than two main() in 'C' program.  
A) True    B) False

12) The parameters in a function are called as \_\_\_\_\_ parameters.  
A) Actual                      B) Formal                      C) Dummy                      D) Copy

13) The value of EOF is \_\_\_\_\_  
A) - 1                      B) 0                      C) 1                      D) 10

14) Functions can return structure in c'.  
A) True    B) False

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

14

- 1) Write syntax for function prototyping.
- 2) What is the use of sizeof() operator ?
- 3) What are the different file opening modes ?
- 4) Write an syntax for fseek().
- 5) What is pointer ? How it is declared and initialize ?
- 6) What is self-referential structure ?



- 7) Write syntax for malloc() and calloc().
- 8) What are the advantages of pre-processor ?
- 9) What is the use of typedef ?

3. A) Answer **any two** of the following : **10**

- 1) Write a program to pass an array to function.
- 2) Explain use of getc() and putc().
- 3) Write short note on nested structure.

B) Explain the chain of pointer with example. **4**

4. Answer **any two** of the following : **14**

- 1) Write a program to implement copy command in file.
- 2) Explain the types of function according to return type and argument accepted.
- 3) Write a program to illustrate the difference between structure and union.

5. Answer **any two** of the following : **14**

- 1) Explain different file modes with example.
  - 2) Illustrate the difference between call by value and call by reference.
  - 3) Write a program to illustrate the concept array of structure.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – II) (New CBCS) Examination, 2017**  
**Paper – IV : LINEAR ELECTRONICS – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives. **14**

- 1) \_\_\_\_\_ is voltage controller.
  - a) FET
  - b) BJT
  - c) Capacitor
  - d) Inductor
  
- 2) Measurement system consists \_\_\_\_\_
  - a) Input
  - b) Output
  - c) Processing device
  - d) All of the above
  
- 3) \_\_\_\_\_ circuit are called free running multivibrator.
  - a) Astable
  - b) Bistable
  - c) Monostable
  - d) None
  
- 4) \_\_\_\_\_ device is used to convert non electrical signal into electrical.
  - a) Transducer
  - b) Oscillator
  - c) FET
  - d) BJT
  
- 5) Total phase shift for oscillation is \_\_\_\_\_
  - a) 60
  - b) 90
  - c) 180
  - d) 360
  
- 6) \_\_\_\_\_ consists programmable AND & OR.
  - a) PLA
  - b) PROM
  - c) SMT
  - d) PAL



- 7) Fan out of CMOS is \_\_\_\_\_  
a) 3-10                      b) 7-12                      c) 12-19                      d) 10-18
- 8) \_\_\_\_\_ is self generating transducer.  
a) Active                      b) Passive  
c) Both                      d) None
- 9) For positive feedback feedback energy is \_\_\_\_\_ with input signal.  
a) In phase                      b) Out of phase  
c) Zero                      d) None
- 10) Input impedance of mosfet is \_\_\_\_\_  
a) Less                      b) Very less  
c) More                      d) Very high
- 11) In \_\_\_\_\_ component mounting is two side of PCB.  
a) SMT                      b) PTH                      c) ETH                      d) None of these
- 12) In measurement system the primary sensing element is \_\_\_\_\_  
a) Sensor                      b) Transducer  
c) Converter                      d) None
- 13) SMD stands for \_\_\_\_\_  
a) Surface Mount device                      b) Surface Mount Detector  
c) Surface Material Device                      d) None of these
- 14) Transconductance (gm) = \_\_\_\_\_  
a)  $\Delta I_D / \Delta V_{GS}$                       b)  $V_{DS} / V_{GS}$   
c)  $V_{DS} / I_{DS}$                       d)  $V_{GS} / V_{DS}$

2. Answer the following (**any 7**) :

14

- 1) Explain Barkhausen criteria.
- 2) Define Sensor and transducer.
- 3) List MOS family.





- 4) Define oscillator and List their types.
  - 5) Give application of FET.
  - 6) Explain SMD & SMT.
  - 7) Write application of Motors.
  - 8) Draw symbol of MOSFET.
  - 9) Define term Astable multivibrator and Bistable multivibrator.
3. A) Answer the following (**any 2**) : **10**
- 1) Give difference between FET & BJT.
  - 2) Explain block diagram of measurement system.
  - 3) Write a note on PLA.
- B) Compare MOS & TTL Family. **4**
4. Answer the following (**any 2**) : **14**
- 1) Explain drain characteristics of JFET.
  - 2) Explain Thermocouple transducer.
  - 3) Explain characteristics of IC Family's.
5. Answer the following (**any 2**) : **14**
- 1) Explain phase shift oscillator.
  - 2) Explain construction of DEMOSFET with diagram.
  - 3) Explain Astable multivibrator using IC555.
-

Seat  
No.

**B.Sc. (ECS) – I (Semester – II) (New CBCS) Examination, 2017**  
**ELECTRONICS (Paper – V)**  
**Digital Electronics and Microprocessor – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Multiple choice questions.

14

- 1) Which interrupt has the highest priority ?
  - a) INTR
  - b) TRAP
  - c) RST6.5
  - d) None
- 2) \_\_\_\_\_ memory is a permanent memory.
  - a) RAM
  - b) ROM
  - c) Both
  - d) None
- 3) A dynamic RAM consists of \_\_\_\_\_
  - a) 4 transistor
  - b) 4 capacitor
  - c) 1 transistor and 1 capacitor
  - d) 2 transistor and 2 capacitor
- 4) A/D converter is usually considered as a \_\_\_\_\_
  - a) Transistor
  - b) Decoder
  - c) Encoder
  - d) Counter
- 5) \_\_\_\_\_ converter changes analog voltage to binary data.
  - a) A/D
  - b) D/A
  - c) Both
  - d) None
- 6) Memory size is indicated in \_\_\_\_\_
  - a) GB
  - b) KHz
  - c) HB
  - d) K cycles
- 7) 8085 is \_\_\_\_\_ bit Microprocessor.
  - a) 9
  - b) 8
  - c) 6
  - d) 4



- 8) The stack pointer in 8085 is \_\_\_\_\_ bit.
- a) 10
  - b) 8
  - c) 16
  - d) 14
- 9) MVI instruction used in \_\_\_\_\_ addressing mode.
- a) Register
  - b) Implied
  - c) Immediate
  - d) Direct
- 10) After Addition the result is stored in \_\_\_\_\_
- a) B Register
  - b) A Register
  - c) C Register
  - d) H Register
- 11) For 16 immediate loading \_\_\_\_\_ instruction is used.
- a) LDA
  - b) MVI
  - c) LXI
  - d) LHLD
- 12) CMC Instruction stands for \_\_\_\_\_
- a) Complement machine carry
  - b) Complement Carry Flag
  - c) Carry machine complement
  - d) None
- 13) What is ALE \_\_\_\_\_
- a) Address latch enable
  - b) Address leave enable
  - c) Both
  - d) None
- 14) In ADC SOC means \_\_\_\_\_
- a) Start over conversion
  - b) Start of conversion
  - c) Start other conversion
  - d) None

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

14

- 1) Explain RLC and RCR instruction.
- 2) Explain DAA instruction.
- 3) Give any two parameters of memory.
- 4) Explain resolution.
- 5) What is conversion time in ADC ?



- 6) Load 05 in A reg and 07 in B reg using 8085 instruction.
- 7) Identify addressing mode of instruction LDA 2000 and MVI A,20.
- 8) Explain HOLD and HLDA pin of 8085.
- 9) Explain ALE pin of 8085.

3. A) Answer **any two** of the following : **10**
- 1) Explain SAR ADC with neat diagram.
  - 2) Explain Static RAM with neat diagram.
  - 3) Explain Arithmetic Instruction of 8085.
- B) Explain Flag Register of 8085. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain architecture of 8085 Microprocessor with neat diagram.
  - 2) Explain R-2R ladder DAC.
  - 3) Write a program for addition & Subtraction of two 8 bit.
5. Attempt **any two** of the following : **14**
- 1) Explain Characteristics of ADC.
  - 2) Explain Dual Slope ADC.
  - 3) Explain Addressing modes and any two data transfer instructions.
-



Seat No.	
-------------	--

**B.Sc. (E.C.S.) (Part – I) (Semester – II) (New-CBCS Pattern)  
Examination, 2017  
MATHEMATICS (Paper – VI)  
Mathematical Algebra**

Time : 2½ Hours

Max. Marks : 70

***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 alternative : 14

- 1) The least positive number for which the statement  $n! \geq 2^n$  is true is \_\_\_\_\_
  - a) 4
  - b) 3
  - c) 2
  - d) 1
  
- 2) A relation R which is reflexive, symmetric and transitive is called as \_\_\_\_\_ relation.
  - a) Partial ordering
  - b) Equivalence
  - c) Special
  - d) Universal
  
- 3) If a function 'f' is a onto function then \_\_\_\_\_
  - a) range of 'f' is a subset of its co-domain
  - b) co-domain of 'f' is a subset of it's range
  - c) range of 'f' is equal to co-domain of 'f'
  - d) none of these
  
- 4) Imaginary part of the complex number  $Z = (1 + 4i) - (2 + 5i)$  is \_\_\_\_\_
  - a) 9
  - b) 9i
  - c) -1i
  - d) -1
  
- 5) If p and s are true statements and q and r are false statements then the truth value of the compound statement  $(p \rightarrow \sim q) \leftrightarrow (r \wedge s)$  is \_\_\_\_\_
  - a) T
  - b) F
  - c) T and F
  - d) Can not be determined



- 6) If  $x * y = y * x = e$ , where 'e' is the identity element then the element 'y' is called as \_\_\_\_\_ w.r.t. Binary operation \* .
- Second identity element
  - Inverse of itself
  - Inverse of 'x'
  - None of these
- 7) If every element of a set A is related to unique element of the set B then the relation is called as \_\_\_\_\_
- Universal relation
  - Function
  - Void relation
  - Identity relation
- 8) If no element of set A is related to any element of the set B then the relation is called as \_\_\_\_\_
- Void relation
  - Universal relation
  - Anti symmetric relation
  - Function
- 9) The converse of the conditional statement  $q \rightarrow p$  is \_\_\_\_\_
- $\sim q \rightarrow \sim p$
  - $\sim p \rightarrow \sim q$
  - $p \rightarrow q$
  - $p \leftrightarrow q$
- 10) If  $z_1$  and  $z_2$  are the two complex numbers in the polar form then  $\arg.(z_1 \cdot z_2) =$  \_\_\_\_\_
- $\arg.z_1 \cdot \arg.z_2$
  - $|z_1| \cdot |z_2|$
  - $|z_1| + |z_2|$
  - $\arg.z_1 + \arg.z_2$
- 11) Complex conjugate of the complex number  $z = -3 + 2i$  is \_\_\_\_\_
- $-3 - 2i$
  - $3 - 2i$
  - $3 + 2i$
  - $-2 + 3i$
- 12) Let  $A = \{a, b, c\}$  and  $B = \{p, q, r, s\}$ . Let  $f : A \rightarrow B$  be a function given by  $f = \{(a, p), (b, r), (c, r)\}$  then range of function f is \_\_\_\_\_
- $\{p, q, r\}$
  - $\{p, q, r, s\}$
  - $\{a, b, c\}$
  - $\{p, r\}$



- 13) Which of the following is not a statement ?
- a)  $5 + 6 = 12$
  - b)  $x + 2 = 4$
  - c) 4 is a perfect square number
  - d)  $x + 3 = 6$ , for  $x = 4$
- 14) Binary operation  $*$  is said to be \_\_\_\_\_ if  $a * b = b * a$ .
- a) Commutative
  - b) Associative
  - c) Reflexive
  - d) Anti symmetric

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

14

- 1) Define symmetric relation and transitive relation.
- 2) Define bijective function.
- 3) If  $f(x) = x^2 + 3x - 9$  then find  $f(x - 4)$ .
- 4) Define modulus and argument of the complex number  $z = x + iy$ .
- 5) Prepare the truth table for the statement  $(p \wedge q) \rightarrow (p \vee q)$ .
- 6) Determine whether the operation  $*$  defined on the set  $Q$  by  $a * b = a.b + 3$  is associative or not. Where  $a, b \in Q$ .
- 7) State the first principle of finite induction.
- 8) Let  $R$  be the relation defined on the set  $A = \{1, 2, 3, 4\}$  given by  $R = \{(1, 1), (1, 4), (2, 1), (2, 3), (2, 4), (3, 2), (3, 3), (4, 1), (4, 2)\}$ . Draw digraph of relation  $R$ .
- 9) State both distributive laws in logic.

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

10

- 1) State both the DeMorgan's laws. Prove any one of them by preparing truth table.
- 2) Show that the function  $f : a \rightarrow Q$  defined by  $f(x) = 50x + 27$ , for all  $x \in Q$  is both injective and surjective.
- 3) Determine whether the operation  $*$  defined on  $Q$  by  $a * b = \frac{a.b}{4}$ ,  $a, b \in Q$  is commutative, associative ? Also find identity element w.r.t.  $*$  if exists.

B) Find real and imaginary part of the complex number  $z = \frac{2 + 3i}{4 + 6i}$ .

4



4. Attempt **any two** of the following : **14**
- 1) Let R be the relation defined on the set Z by  $xRy$  if and only if  $5x + 6y$  is divisible by 11,  $x, y \in z$ . Show that R is an equivalence relation on Z.
  - 2) By using principle of mathematical induction, show that  $2 \times 7^n + 3 \times 5^n - 5$  is divisible by 24, for all  $n \geq 1$ .
  - 3) Test the validity of the following argument by preparing truth table  
 $p \vee q, \sim r, \sim p \rightarrow q, \sim q \leftrightarrow q \vdash q \rightarrow p$ .
5. Attempt **any two** of the following : **14**
- 1) Let  $z_1 = a + ib$  and  $z_2 = c + id$  be the two complex numbers, the find real part and imaginary part of the complex numbers  $z_1 \cdot z_2$  and  $\frac{z_1}{z_2}$ .
  - 2) Define inverse of a function. Let  $f : R \rightarrow R$  be a function defined by  
 $f(x) = \frac{5x - 2}{3}$ , for all  $x \in R$ . Show that function 'f' is invertible function.
  - 3) Define transitive closure of a relation R. Let R be the relation defined on the set  $A = \{a, b, c, d\}$  given by  $R = \{(a, b), (a, d), (b, a), (b, d), (c, c), (d, c), (d, d)\}$ . Find transitive closure of relation R by using Warshall's algorithm.
-





Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – II) (New CBCS) Examination, 2017**  
**MATHEMATICS (Paper – VII)**  
**Operations Research**

Time : 2½ Hours

Max. Marks : 70

- N.B. :** 1) **All questions are compulsory.**  
2) **Use of scientific calculator is allowed.**  
3) **Figures to the right indicates full marks.**  
4) **Graph paper will be provided if necessary.**

1. Choose the correct alternative :

14

- 1) In canonical form of L.P.P., the objective function is of \_\_\_\_\_ type.
  - a) maximise
  - b) minimise
  - c) stabilize
  - d) either maximize or minimize
- 2) If in T.P. number of occupied cells are equal to  $m + n - 1$  then solution under test is \_\_\_\_\_ solution.
  - a) degenerate
  - b) non-degenerate
  - c) optimum
  - d) IBFS
- 3) Hungarian method is used to solve
  - a) L.P.P.
  - b) T.P.
  - c) A.P.
  - d) Dual L.P.P.
- 4) In balanced A.P. No. of jobs is \_\_\_\_\_ to No. of facilities.
  - a) not equal
  - b) less
  - c) greater
  - d) equal
- 5) In MODI method if all  $d_{ij} \geq 0$  then at that stage the solution is
  - a) optimum
  - b) unbalanced
  - c) alternate optimum
  - d) none of these
- 6) The coefficient of surplus variable in the objective function of maximization type is
  - a) + M
  - b) - M
  - c) Zero
  - d) One
- 7) If feasible region does not exist in graphical method of LPP then LPP has \_\_\_\_\_ solution.
  - a) unique
  - b) many
  - c) unbounded
  - d) no

P.T.O.



- 8) Every LPP is associated with another LPP is called as \_\_\_\_\_ of the problem.  
 a) Dual                      b) Duel                      c) Primal                      d) None of these
- 9) If a constraint in given LPP is ' $\leq$ ' type then in order to make it an equation it requires addition of \_\_\_\_\_ variable on the left hand side of such constraint.  
 a) surplus                      b) slack                      c) artificial                      d) none of these
- 10) The objective of assignment problem is to be \_\_\_\_\_ the total assignment cost.  
 a) maximize                      b) minimize                      c) optimize                      d) none of these
- 11) An A.P. is special type of  
 a) L.P.P.                      b) T.P.                      c) A.P.                      d) None of these
- 12) \_\_\_\_\_ method is better to find IBFS of T.P.  
 a) Least cost                      b) North-west                      c) VAM                      d) MODI
- 13) If primal of 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
- 14) The opportunity cost of occupied cells is  
 a) infinity                      b) positive                      c) zero                      d) negative

2. Attempt **any seven** of following :

14

- 1) Define surplus variable.
- 2) Define decision variable in LPP.
- 3) Define balanced A.P.
- 4) Write the standard form of LPP.  
 Maximize  $z = 5x_1 + 3x_2$   
 subject to,       $x_1 - 4x_2 \leq 3$   
                      $- 2x_1 + 3x_2 \leq 1$   
                     with  $x_1, x_2 \geq 0$
- 5) Write the tabular form of T.P. with 3 factories and 4 warehouses.
- 6) Define unbalanced T.P.
- 7) Write the formula to find opportunity cost  $d_{ij}$  of un-occupied cell.
- 8) Give the difference between A.P. and T.P. (two points).
- 9) How we can convert a A.P. of maximization type to minimization type ?



3. A) Attempt **any two** of the following : 10

1) Write the dual of following L.P.P.

Minimize,  $z = 4x - 2y + 3z$   
 subject to,  $3x + y \geq 2$   
 $2x + 5y - 3z \geq 6$   
 $x, y, z \geq 0$

2) Find IBFS by North-west corner method

	P	Q	R	ai
A	50	30	20	1
B	90	45	170	3
C	250	200	50	4
bj	4	2	2	

3) Solve the A.P. to minimize the cost

	P	Q	R	S	T
A	8	4	2	6	1
B	0	9	5	5	4
C	3	8	9	2	6
D	4	3	1	0	3
E	9	5	8	9	5

B) Write the note on degeneracy in T.P. 4

4. Attempt **any two** of the following : 14

1) Solve the following LPP by graphical method

Maximize,  $z = 160x + 100y$ ,  
 subject to  $2x + y \leq 60$ ,  
 $x \leq 20$ ,  
 $y \leq 30$ ,  
 $x, y \geq 0$

2) Find IBFS of following T.P. by matrix minima method

	P	Q	R	S	ai
A	1	2	1	4	30
B	3	3	2	1	50
C	4	2	5	9	20
bj	20	40	30	10	



3) Solve the following A.P. for maximize the profit

	P	Q	R	S
A	35	27	28	37
B	28	34	29	40
C	35	24	32	33
D	24	32	25	82

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

14

1) Solve the following LPP by Simplex Method.

$$\text{Max. } z = 3x + 2y$$

$$\text{subject to } x + y \leq 4$$

$$x - y \leq 2$$

$$x, y \geq 0$$

2) Find optimum solution of following IBFS of T.P. by MODI method

	P	Q	R	S		ai
A	(5) 19	30	50	(2) 10		7
B	70	30	(7) 40	(2) 60		9
C	40	(8) 8	70	(10) 20		18
bj	5	8	7	14		

3) Write Hungarian method Algorithm to solve A.P.

---

Seat  
No.

**B.Sc. (E.C.S.) (Part – I) (Semester – II) (CBCS – Pattern)**  
**Examination, 2017**  
**Paper – VIII : DESCRIPTIVE STATISTICS – II (New)**

Time : 2½ Hours

Max.Marks : 70

- Instructions :** i) **All questions are compulsory.**  
ii) Figures to the **right** indicates **full** marks.  
iii) **Use of any type of calculator is allowed.**

1. Select most correct alternative :

14

- 1) If all the points in scatter diagram are lie on a rising straight line, then there is \_\_\_\_\_ correlation.  
a) +ve                                      b) perfect +ve  
c) high degree +ve                      d) none of these
- 2) Correlation coefficient between X and Y is 0.2, the correlation coefficient between 2X and 2Y is  
a) 0.2                      b) 0.4                      c) -0.2                      d) -0.4
- 3) Karl Pearson's coefficient of correlation gives magnitude and direction of \_\_\_\_\_ relationship between two variables.  
a) linear                                      b) non-linear  
c) both a) and b)                      d) none of these
- 4) If  $u = 4x + 10$  and  $v = 8y + 20$ , then  
a)  $r_{xy} = r_{uv}$                       b)  $r_{xy} > r_{uv}$                       c)  $r_{xy} < r_{uv}$                       d) none of these
- 5) Equation of line of regression Y on X  
a) is used to estimate Y for known value of X  
b) here Y is dependent and X is independent variable  
c) a) and b) both  
d) none of these
- 6) If  $r_{xy} = 1$ , then  
a)  $b_{yx} = b_{xy}$                       b)  $b_{yx} > b_{xy}$                       c)  $b_{xy} > b_{yx}$                       d)  $b_{xy}b_{yx} = 1$

P.T.O.



- 7) Let A : Both regression coefficients may not be greater than 1 simultaneously.  
B : Both regression coefficients may be less than 1 simultaneously.
- a) only A is true                      b) only B is true  
c) both A and B are true              d) none of these
- 8) A multiple regression equation is  $X_1 = 15 + 3X_2 - 4X_3$ . As  $X_2$  increased by 1 unit (keeping  $X_3$  constant)  $X_1$  will be
- a) increased by 3 units                  b) decreased by 3 units  
c) increased by 4 units                  d) decreased by 4 units
- 9) In multiple regression, the value of dependent variable is depends up on
- a) one independent variable  
b) more than one independent variables  
c) more than one dependent variables  
d) none of these
- 10) \_\_\_\_\_ is not a component of time series.
- a) seasonal variation                      b) cyclical variation  
c) random variation                        d) coefficient of variation
- 11) Increase in number of patients in the hospital due to heat stroke is
- a) secular trend                              b) seasonal variation  
c) cyclical variation                        d) irregular variation
- 12) Price relatives is the ratio of price in
- a) current period to base period expressed in percentage  
b) base period to current period expressed in percentage  
c) current period to base period  
d) base period to current period
- 13) Index number is an application of
- a) averages                                      b) dispersion  
c) regression                                    d) correlation
- 14) Method of moving averages is the method of estimating
- a) trend    b) seasonal variation  
c) cyclical variation                            d) irregular variation



2. Attempt **any seven** of the following : 14

- 1) Define positive correlation.
- 2) Define time series.
- 3) State formula for  $R_{1.23}$  in terms  $r_{12}$ ,  $r_{13}$  and  $r_{23}$ .
- 4) Define regression.
- 5) Given :  $\sum (X - \bar{X}) \cdot (Y - \bar{Y}) = -40$ ,  $\sum (X - \bar{X})^2 = 50$ ,  $\sum (Y - \bar{Y})^2 = 60$ . Find  $r_{xy}$ .
- 6) Given :  $r_{xy} = 0.75$ ,  $\text{Var}(X) = 81$ ,  $\text{Var}(Y) = 100$ . Find  $b_{yx}$ .
- 7) Given :  $\sum p_1q_1 = 120$ ,  $\sum p_0q_1 = 85$  and  $\sum p_1q_0 = 95.5$ , find appropriate price index number.
- 8) The equations of lines of regression are  $3Y + 2.5X = 205$  and  $2X + Y = 105$ . Find A.M. of X and Y.
- 9) Given :  $r_{12} = r_{13} = r_{23} = 0.5$  find  $r_{12.3}$ .

3. A) Attempt **any two** of the following : 10

- 1) Find Spearman's rank correlation coefficient between x and y

<b>X</b>	60	67	72	51	44	58
<b>Y</b>	45	48	43	33	30	31

- 2) Find price index number for 2005 by simple aggregate method. Interpret the result.

<b>Price in 2004</b>	120	150	75	60
<b>Price in 2005</b>	150	125	100	80

- 3) Given :  $\bar{X} = 20$ ,  $\bar{Y} = 25.5$ ,  $r_{xy} = 0.7$ ,  $\sigma_x = 14$ ,  $\sigma_y = 18$  estimate Y for X = 35.

B) Explain concept of multiple regression. 4

4. Attempt **any two** of the following : 14

- 1) Given :  $\bar{X}_1 = 50$ ,  $\bar{X}_2 = 60$ ,  $\bar{X}_3 = 70$ ,  $\sigma_1 = 4$ ,  $\sigma_2 = 5$ ,  $\sigma_3 = 6$ ,  $r_{12} = 0.5$ ,  $r_{13} = 0.6$ ,  $r_{23} = 0.55$ .  
Obtain equation of plane of regression  $X_2$  on  $X_1$  and  $X_3$ , estimate  $X_2$  for  $X_1 = 55$  and  $X_3 = 75$ .

- 2) Compute 3 yearly moving averages for the following time series :

<b>Year</b>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<b>Sale</b>	50	54	55	53	60	65	58	62	70	74

- 3) Define index number. State various problems in construction of index number and explain any one of it.



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

14

1) Find Laspeyre's price and quantity index numbers for the year 2011.

Commodity	2010		2011	
	Price (Rs./Kg.)	Quantity (100 Kg.)	Price (Rs.)	Quantity (100 Kg.)
A	14	10	20	12
B	20	4.5	25	6
C	70	3	65	4
D	125	1.5	120	2.5

2) Fit exponential curve  $Y = a.b^x$  to the following data and hence estimate Y for X = 14.

<b>X</b>	2	4	6	8	10
<b>Y</b>	400	1600	6400	25600	102400

3) Define correlation. Interpret and draw scatter diagram for  $r = +1, -1, 0$ .

---





Seat No.	
----------	--

**B.Sc. (E.C.S.) (Part – I) (Semester – II) (New) (CBCS – Pattern)  
Examination, 2017  
PROBABILITY THEORY – II**

Time : 2½ Hours

Total Marks : 70

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

1. Select most correct alternative :

14

- 1) The normal probability curve is \_\_\_\_\_  
a) Symmetric                      b) Mesokurtic                      c) Asymmetric                      d) Both a) and b)
- 2) The p.d.f. of continuous r.v. Y is  $f(y) = ky$ , if  $0 \leq y < 2$ , then value of k is \_\_\_\_\_  
a) 3/4                                      b) 4/3                                      c) 1/4                                      d) 1/2
- 3) For testing the equality of two population proportions if the alternative hypothesis  $H_1 : P_1 \neq P_2$  then critical region at 5% level of significance is \_\_\_\_\_  
a)  $|Z| > 1.96$                       b)  $|Z| > 2.58$                       c) 1.64                                      d) none of these
- 4) If a continuous r.v. X has exponential distribution, then \_\_\_\_\_  
a)  $X \geq 0$                                       b)  $a < X < b$                                       c)  $-\infty < X < \infty$                                       d) none of these
- 5) The pdf of continuous r.v. is  $f(X) = 1$  if  $0 \leq X \leq 1$ . Then mean of X is \_\_\_\_\_  
a) 1    b) 0.5    c) 0    d) 1
- 6) If  $X \rightarrow U [3, 15]$  then variance of r.v. X is \_\_\_\_\_  
a) 144    b) 12    c)  $\sqrt{12}$     d) 0
- 7) Let (X, Y) be the two dimensional discrete r.v.'s with joint p.m.f.  $P(x, y) = \frac{X^2 + Y^2}{20}$ , if  $X = -1, 1$  and  $Y = -2, 2$  then  $P(X = -1, Y = 2)$  is \_\_\_\_\_  
a) 1/4    b) -1/4    c) 1    d) 1/20
- 8) The maximum height of normal probability curve is \_\_\_\_\_  
a)  $\frac{1}{2\pi}$     b)  $\frac{1}{\sigma\pi}$     c)  $\frac{1}{\sigma\sqrt{2\pi}}$     d) 1

P.T.O.



- 9) Let  $(X, Y)$  be the two dimensional discrete r.v.'s with  $P(X = 3, Y = 2) = 0.15$ ,  $P(Y = 2) = 0.2$  and  $P(X = 3) = 0.3$ , then  $P(X = 3 | Y = 2)$  is \_\_\_\_\_
- a) 0.75                      b) 0.075                      c) 0.5                      d) 1
- 10) Testing  $H_0 : \mu = 0$  against  $H_1 : \mu \neq 0$  is \_\_\_\_\_
- a) one sided left tailed test                      b) one sided right tailed test  
c) two sided test                      d) all of these
- 11) A continuous r.v.  $X$  has exponential distribution with mean 1, then  $P(X > 2)$  is \_\_\_\_\_
- a)  $e^2$                       b)  $e^{-2}$                       c)  $1 - e^2$                       d)  $1 - e^{-2}$
- 12) Random variables  $X$  and  $Y$  are said to be independent if \_\_\_\_\_
- a)  $E(X.Y) = E(X) E(Y)$                       b)  $E(X.Y) = 1$   
c)  $E(X.Y) \neq E(X) E(Y)$                       d) All of these
- 13) If p.d.f. of continuous r.v.  $X$  is  $f(X) = 1$  if  $0 < X < 1$  then  $P(X > 2)$  is \_\_\_\_\_
- a) 0                      b) + 1                      c) 1                      d) None of these
- 14) If  $X \rightarrow N(\mu, \sigma^2)$ , then \_\_\_\_\_
- a)  $\frac{X - \mu}{\sigma} \rightarrow N(0, 1)$                       b)  $-\infty < X < \infty$   
c)  $P(X > \mu) = P(X < \mu)$                       d) all of these

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

14

- 1) Define null hypothesis and alternative hypothesis.
- 2) The joint p.m.f. of  $(X, Y)$  is  $P(x, y) = \frac{2x + 3y}{71}$ , if  $X = 0, 1, 2$  and  $Y = 1, 2, 3$ .  
Find  $P(X > 1, Y > 1)$ .
- 3) Suppose r.v.  $X$  has uniform distribution over  $[2, 10]$  calculate  $P(3 \leq X \leq 9)$ .
- 4) Define marginal p.m.f.
- 5) Define variance of continuous r.v.  $X$ .
- 6) Define p.d.f.
- 7) The joint pmf of  $(X, Y)$  is ,  $P(x, y) = k(x + 2y)$  if  $X = 1, 3, 5$  and  $Y = 0, 1, 2$ .  
Find value of  $k$ .
- 8) If  $X \rightarrow \text{Exp}(\theta = 1)$ , then calculate  $P(X \leq 2)$ .
- 9) State the additive property of normal distribution.



3. A) Attempt **any two** of the following : 10

- 1) The p.d.f. of continuous r.v.  $X$  is  $f(x) = cx^3$ , if  $0 \leq x \leq 1$ . Find constant 'c' and obtain  $E(X)$ .
- 2) If  $X \rightarrow U[a, 10]$  if  $P(3 \leq X \leq 7) = \frac{1}{2}$  find value of 'a' and obtain c.d.f. of  $X$ .
- 3) Define exponential distribution with mean  $\theta$ . State and interpret lack of memory property.

B) The joint pmf of  $(X, Y)$  is  $P(x, y) = \frac{5x + 3y}{117}$ , if  $X = 1, 2, 3$  and  $Y = 0, 1, 2$ . Find marginal p.m.f. of  $X$  and  $Y$ . 4

4. Attempt **any two** of the following : 14

- 1) Define normal distribution. State its important properties.
- 2) In a hospital, 138 female babies and 162 male babies were born. Do this figures confirms to the hypothesis that male and female are born in equal proportion. Test at 5% level of significance.
- 3) If  $X \rightarrow U[-\alpha, \alpha]$  where  $\alpha > 0$  find 'α' if  $P(X > 1) = \frac{1}{3}$  hence find mean and variance of  $X$ .

5. Attempt **any two** of the following : 14

- 1) How do you test the hypothesis  $H_0 : \mu_1 = \mu_2$  against  $H_1 = \mu_1 \neq \mu_2$  for large sample at  $\alpha\%$  level of significance ?
- 2) A r.v.  $X$  has p.d.f.  $f(x) = \frac{3}{2} x^2$ , if  $-1 \leq X \leq 1$   
 $= 0$  otherwise

Calculate :

- i)  $P(|X| < \frac{1}{2})$
  - ii)  $P(-\frac{1}{4} < X < \frac{2}{3})$
  - 3) The life time of electronic component has exponential distributed with mean life time 1500 hours.
    - i) Find the probability that a component services between 800 to 1200 hours.
    - ii) Find the probability that a component services up to 2400 hours.
    - iii) State the S.D. of component life time.
-



SLR-CZ – 24

Seat No.	
-------------	--

**B.Sc. (Part – I) (Semester – II) (ECS) Examination, 2017  
ENGLISH – II (Compulsory) (CGPA Pattern) (Old)  
On Track English Skills for Success (Paper – I)**

Time : 2½ Hours

Max. Marks : 70

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

1. Rewrite the following sentences choosing correct alternatives given below them. **14**

- 1) Vivekananda reached Chicago in the month of  
a) September      b) February      c) December      d) July
- 2) J. H. Wright was  
a) A Professor at Harvard University  
b) A Professor at Oxford University  
c) A Professor at Cambridge University  
d) None of the above
- 3) \_\_\_\_\_ represented the Buddhists of Ceylon at Parliament of Religion in Chicago.  
a) Annie Besant                                  b) Protap Chunder Mozoomdar  
c) Chakravarti                                      d) Dharmapala
- 4) According to Palkhivala, violations of economic needs occur from  
a) Draught    b) Natural disaster  
c) Ignorance                                        d) Negligence
- 5) \_\_\_\_\_ noted that there are more than two hundred definitions of liberty.  
a) Paul Sieghart                                  b) Jerome Shestack  
c) Isaiah Berlin                                    d) None of the above
- 6) \_\_\_\_\_ missile devastated London in World War II.  
a) V2    b) Jupiter    c) Agni    d) None of the above
- 7) Wernher von Braun became a cult figure in  
a) America    b) Germany    c) France    d) Russia

P.T.O.



- 8) The poem 'Full Moon' is written by  
a) Robert Hayden                                  b) W. B. Yeats  
c) Sarojini Naidu                                  d) Ralph Waldo Emerson
- 9) The phrase 'bubble house' refers to  
a) The sun                  b) The moon                  c) Mars                  d) Earth
- 10) In the poem Brahma, 'red slayer' refers to  
a) Member of military in the Kshatriya caste system  
b) A member of army of maharaja  
c) A member of ministry of state  
d) None of the above
- 11) Abhishek is talking about \_\_\_\_\_ own brother.  
a) its                  b) her                  c) his                  d) it
- 12) The words 'clockwise and anti-clockwise' are  
a) Antonyms                                  b) Synonyms  
c) Homophones                                  d) Homographs
- 13) The words 'meat and meet' are  
a) Homophones                                  b) Homographs  
c) Homonyms                                  d) Antonyms
- 14) He thinks his car is as \_\_\_\_\_ as yours.  
a) Fast                                  b) Faster  
c) Fastest                                  d) None of the above

2. Answer **any seven** of the following question :

14

- 1) In Paul Sieghart's opinion, which society can be called civilized ?
- 2) What is the effect of broadbanding of human rights ?
- 3) What is the 'vanishing act' Palkhivala writes about ?
- 4) What did Vivekananda discover at Information Bureau of the Exposition ?
- 5) Describe Vivekananda's journey from Mumbai to Chicago.
- 6) What did Maharaja of Khetri give Vivekananda ?
- 7) What advice did Wernher von Braun give to Dr. Kalam ?
- 8) What does Dr. Kalam mean by 'flow' ?



3. A) Answer **any two** of the following questions : **8**
- 1) What is the message of the poem 'Brahma' ?
  - 2) Is the moon depicted as a challenge or a threat or a comfort in the poem ?
  - 3) Who were 'watchers of the moon' ? What happened to them ?
- B) Answer **any two** of the following questions : **6**
- 1) Your college is organising an essay competition. Write a notice informing the students about the competition, giving details such as day, date, time and venue of the competition.
  - 2) What is an agenda ?
  - 3) What is email ?
4. Answer **any one** of the following : **14**
- A) You are secretary of the Students Union in your college. The Students Union is organising a blood donation camp in the college. Write a notice and agenda of the meeting. Imagine all the details.
  - B) You have got an email letter offering job of probationary officer in a nationalised bank. Write an email letter accepting the offer.
5. Prepare a suitable C.V. for the post of the lecturer in English in a junior college in your city. **14**
-



Seat No.	
----------	--

**B.Sc. (ECS) – I (Semester – II) (Old) (CGPA Pattern) Examination, 2017  
Paper – II : COMPUTER FUNDAMENTALS AND PROGRAMMING  
USING C – II**

Time : 2.30 Hours

Total Marks : 70

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

**SECTION – I  
(Computer Fundamentals)**

1. Choose **correct** alternatives.

5

- 1) The bar at the bottom of a window that displays the number of words of document is known as \_\_\_\_\_
  - a) title bar
  - b) task bar
  - c) menu bar
  - d) status bar
- 2) In \_\_\_\_\_ topology central controller is used to connect the nodes.
  - a) Bus
  - b) Ring
  - c) Star
  - d) Mesh
- 3) Data transmission in which the data flow in both direction simultaneously is called \_\_\_\_\_
  - a) half-duplex
  - b) full duplex
  - c) simplex
  - d) All of these
- 4) Default extension of Paint file is \_\_\_\_\_
  - a) .txt
  - b) .bmp
  - c) .jpg
  - d) .rtf
- 5) The tag used in HTML to link it with other HTML file \_\_\_\_\_
  - a) <L>
  - b) <U>
  - c) <A>
  - d) None of these

P.T.O.



2. Attempt **any five** from the following : **(5×2=10)**
- 1) What is Mail merge ?
  - 2) Define paired tags with example.
  - 3) Define Multitasking.
  - 4) Define word processor.
  - 5) What is image mapping in HTML ?
  - 6) Short note on GUI.
3. A) Answer **any two** of the following : **10**
- 1) What is Multiprogramming ? Explain with suitable diagram.
  - 2) Write the different uses of Internet.
  - 3) Explain any five built in functions in JavaScript.
- B) Answer **any one** of the following : **10**
- 1) Explain table tag and frameset tag with its attributes and example.
  - 2) What is Computer network ? Explain types of computer network.

SECTION – II  
**(Programming Using 'C' – II)**

1. Choose **correct** alternatives : **5**
- 1) 'Structure' and 'Union' having same memory if both contains \_\_\_\_\_
    - a) More than two data members with same type
    - b) More than two data members with different type
    - c) Only one data member with same data type
    - d) Only one data member with different data type
  - 2) \_\_\_\_\_ is file handling function that reads one integer value.
    - a) getc()
    - b) fgetc()
    - c) getw()
    - d) read\_int()
  - 3) Default storage class for global variable is \_\_\_\_\_
    - a) auto
    - b) static
    - c) register
    - d) extern





4) To release previously allocated dynamic memory, \_\_\_\_\_ function is used.

- a) malloc
- b) release
- c) realloc
- d) free

5) Consider the following 'C' statement and find its output.

```
int *p;  
char q = 'A';  
p = &q;  
printf("%d", *p)
```

- a) 65
- b) A
- c) 66
- d) Compile time error

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

- 1) Differentiate between static and dynamic memory allocation.
- 2) Write syntax for nested structure.
- 3) What is file ? List out different file opening modes with their use.
- 4) What is Pointer ? Declaration of pointer.
- 5) Write difference between 'call by value' and 'call by pointer'.
- 6) Define-Recursion.

3. A) Attempt **any two** of the followings : **10**

- 1) Write a program to check number is palindrome or not using pointer.
- 2) Write a program to check number is Armstrong or not using function.
- 3) How will you pass entire structure to user defined function ?

B) Attempt **any one** of the followings : **10**

- 1) What is Function ? Explain all types of function with example.
  - 2) Write a program that accepts any 10 integers and write even numbers in "MyEven" file and write odd numbers in "MyOdd" file.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – II) (Old – CGPA) Examination, 2017  
LINEAR AND DIGITAL ELECTRONICS – II (Paper – III)**

Time : 2.30 Hours

Total Marks : 70

**SECTION – I  
(Linear)**

1. Choose the **correct** alternative.

5

- 1) FET is \_\_\_\_\_ controlled device.
  - a) Voltage
  - b) Current
  - c) Voltage and current
  - d) None of above
  
- 2) \_\_\_\_\_ multivibrator is the free running oscillator.
  - a) Astable
  - b) Monostable
  - c) Bistable
  - d) All above
  
- 3) The gain of the amplifier is increase by using \_\_\_\_\_ feedback.
  - a) Positive
  - b) Negative
  - c) With
  - d) Without
  
- 4) Impedance of the Op-Amp is \_\_\_\_\_
  - a) High
  - b) Low
  - c) Medium
  - d) All of above
  
- 5) Collipits oscillator use \_\_\_\_\_ as tuning element.
  - a) Resistor
  - b) Inductor
  - c) Capacitor
  - d) Transistor



2. Solve **any five** of the following : 10
- 1) What is the function of inverting and non-inverting input of Op-Amp ?
  - 2) Explain the concept of feedback.
  - 3) Give the names of the amplifier based on the coupling.
  - 4) Draw the diagram of the Hartely oscillator.
  - 5) Explain the Barkhausen criteria.
  - 6) Explain the ideal parameters of Op-Amp.
  - 7) Explain the function of the Source, Drain, Gate terminals of the FET.
3. A) Solve **any two** of the following : 10
- 1) Explain Op-Amp as inverting amplifier.
  - 2) What is the FET ? Explain the working of the FET.
  - 3) Explain the phase shift oscillator.
- B) Solve **any one** of the following : 10
- 1) Explain IC555 as astable multivibrator.
  - 2) Explain Op-Amp as subtr.

SECTION – II  
(Digital Electronics – II)

4. Choose the **correct** alternative. 5
- 1) Flip-Flop stores \_\_\_\_\_ bit information.  
a) 1 b) 2  
c) 3 d) 10
  - 2) \_\_\_\_\_ is the D to A converter.  
a) R-2R b) Dual slope  
c) Single slope d) Successive approximation
  - 3) IC 7490 is \_\_\_\_\_  
a) Flip-flop b) Shift register  
c) Counter d) Gate



- 4) RAM stands for \_\_\_\_\_
- a) Random Access
  - b) Read Only
  - c) Non volatile
  - d) All above

- 5) IC 0808 is \_\_\_\_\_ bit ADC.
- a) 4
  - b) 10
  - c) 6
  - d) 8

5. Solve **any five** of the following : **10**

- 1) Explain Mod 5 counter.
- 2) What is the function of comparator ?
- 3) What are sequential circuits ?
- 4) Give the classification of memory.
- 5) Explain Read Only Memory.
- 6) What is accuracy of DAC ?
- 7) Explain Mod 2 counter.

6. Solve **any two** of the following : **10**

- 1) Explain the working of J-K flip-flop.
- 2) Explain right shift register.
- 3) Explain the Flash ADC.

7. Solve **any one** of the following : **10**

- 1) Explain the PROM and EPROM.
  - 2) Explain R-S and MS flip-flop.
-



Seat No.	
----------	--

**B.Sc. (ECS) – I (Semester – II) (CGPA Pattern) Examination, 2017  
MATHEMATICS (Paper – IV) (Old)  
Algebra and Operations Research**

Time : 2½ Hours

Max. Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Use of scientific calculator is allowed.**  
3) **Figures to the right indicate full marks.**  
4) **Graph paper will be provided (if necessary) on demand.**

**SECTION – I  
(Algebra)**

1. Choose the correct alternative :

5

- 1) Which of the following is not a statement ?  
a) Sun rises in the West                      b) A square has 3 sides  
c)  $4 + 5 = 7$                                       d)  $x < 4$
- 2) The imaginary part of the complex number  $z = (2 + 3i) \cdot (2 - 3i)$  is  
a) 13                                      b) 0                                      c) 4                                      d) 9
- 3) In matrix of relation R if all the elements are 1 then the relation R is \_\_\_\_\_ relation.  
a) Void                                      b) Universal                      c) Special                      d) Functional
- 4) A function  $f : A \rightarrow B$  is invertible if and only if 'f' is  
a) only one-one                                      b) only onto  
c) either one-one or onto                                      d) both one-one and onto
- 5) In the I principle of mathematical induction (finite induction)  $p(1)$  is true is known as  
a) Induction hypothesis                                      b) Induction  
c) Basis of induction                                      d) None of these



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

- 1) Define symmetric relation.
- 2) Prepare the truth table for the statement  $\sim P \rightarrow (p \rightarrow q)$ .
- 3) Let  $A = \{a, b, c\}$ . Let  $R$  be the relation defined on the set  $A$  given by  $R = \{(a, a), (a, c), (b, a), (b, c), (c, a), (c, c)\}$ . Write matrix of relation  $R$ . Also draw digraph of relation  $R$ .
- 4) Find modulus of the complex number  $z = (2 - 5i) + (-5 + 2i)$ .
- 5) Define one-one function.
- 6) If  $*$  is a binary operation on  $z$  defined by  $a * b = a + b + 5$ ;  $a, b \in z$ . Determine whether  $*$  is associative or not.
- 7) Define tautology and contradiction.

3. A) Attempt **any two** of the following : 10

- 1) By using principle of finite induction, show that

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}, \text{ for all } n \geq 1.$$

- 2) Let  $A = \{a, b, c\}$ . Let  $R$  be the relation defined on the set  $A$  given by  $R = \{(a, b), (b, a), (b, c), (c, a), (c, b)\}$ . Find transitive closure  $R^*$  by using Marshall's algorithm.

- 3) Test the validity of the following argument by using truth table

$$p \vee q, \sim q, p \leftrightarrow q, p \rightarrow \sim q \mid \text{---} \sim p.$$

B) Attempt **any one** of the following : 10

- 1) Let  $z_1 = 4 - 3i$  and  $z_2 = 5 + 7i$  then find the real part and imaginary part of

the following complex numbers  $z_1 + z_2$ ,  $z_1 - z_2$ ,  $z_1 \cdot z_2$  and  $\frac{z_1}{z_2}$ .

- 2) Define one-one function, onto function and bijective function. Hence prove

that the function  $f : \mathbb{R} \rightarrow \mathbb{R}$  defined by  $f(x) = \frac{5 + 2x}{3}$ , for all  $x \in \mathbb{R}$ , is bijective.



SECTION – II  
(Operations Research)

1. Choose the correct alternative : 5
- 1) In the optimality test of T.P. if all  $d_{ij} > 0$ , then the solution under test is
    - a) not optimum
    - b) alternate
    - c) optimum and unique
    - d) un-balanced
  - 2) If primal LPP contains 4 constraints and 5 variables then its dual LPP will contain \_\_\_\_\_ constraints and \_\_\_\_\_ variables.
    - a) 5, 4
    - b) 5, 5
    - c) 4, 5
    - d) 4, 4
  - 3) In the un-balanced A. P. total number of jobs are \_\_\_\_\_ to the total number of machines.
    - a) equal
    - b) not equal
    - c) greater
    - d) less
  - 4) The objective function of the LPP in the standard form is of \_\_\_\_\_ type.
    - a) Maximize
    - b) Minimize
    - c) Either maximize or minimize
    - d) Standard
  - 5) In a  $m \times n$  T. P. if the total number of occupied cells is less than  $(m + n - 1)$  then the T. P. is said to have \_\_\_\_\_ solution.
    - a) Degenerate
    - b) Optimum
    - c) Maximum
    - d) Non-degenerate
2. Attempt **any five** of the following : 10
- 1) Define non-degenerate solution of a T.P.
  - 2) Write the standard form of the following LPP  
Minimize  $z = 3x_1 + 5x_2$  subject to,  
 $2x_1 + 3x_2 \geq 4$ ;  $5x_1 + 4x_2 \geq 5$ ;  $x_1 + 2x_2 \geq 3$ ;  $x_1, x_2 \geq 0$ .
  - 3) How the A. P. of maximize type will be converted into minimize type ?
  - 4) Define surplus variable.
  - 5) Write tabular form of a T. P. with 3 origins and 4 destinations.
  - 6) In Hungarian method of solving A. P., when we arrive at optimum solution.
  - 7) Write the names of methods to find IBFS of a T. P.



3. A) Attempt **any two** of the following : 10

1) Solve the following LPP by using graphical method.

Maximize  $z = 45x + 65y$  subject to the constraints

$$6x + 4y \leq 120 ;$$

$$3x + 10y \leq 180 ;$$

$$x, y \geq 0$$

2) Write the difference between T. P. and A. P.

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

	P	Q	R	S
A	3	8	2	10
B	8	7	2	9
C	6	4	2	7
D	8	4	2	3

B) Attempt **any one** of the following : 10

1) Find IBFS for the following T. P. Hence find optimum solution by using Modified Distribution Method (MODI)

	$W_1$	$W_2$	$W_3$	$W_4$	<b>Capacity</b>
$F_1$	(50) 18	20	(150) 12	0	200
$F_2$	(40) 14	(120) 10	18	0	160
$F_3$	(90) 21	23	18	(10) 0	100
<b>Demand</b>	180	120	150	10	460

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

		<b>Projects</b>				
		I	II	III	IV	V
<b>Engineers</b>	$E_1$	62	78	50	101	82
	$E_2$	74	84	61	73	59
	$E_3$	87	92	111	71	81
	$E_4$	48	64	87	77	80





Seat No.	
-------------	--

**B.Sc. (ECS) – I (Semester – II) (Old-CGPA) Examination, 2017**  
**STATISTICS (Paper – V)**  
**Descriptive Statistics and Probability Theory – II**

Time : 2½ Hours

Max. Marks : 70

- N.B. :** 1) **Use** single answer book for Section – I and II.  
2) Figures to **right** indicates **full** marks.  
3) **Use** of any type of calculator is **allowed**.

SECTION – I  
(Descriptive Statistics)

1. Choose most correct alternative.

5

- 1) If  $\text{corr}(X, Y) = 0.63$ , then  $\text{corr}(-X, -Y) =$  \_\_\_\_\_  
a) 0.63                      b) -0.63                      c) 0.36                      d) -0.36
- 2) Let A : both regression coefficients may be less than 1 simultaneously.  
B : both regression coefficients may not be greater than 1 simultaneously.  
a) only A is true                      b) only B is true  
c) both A and B are true                      d) none of these
- 3) Multiple correlation coefficient always lies between \_\_\_\_\_  
a) 0 and 1                      b) -1 and +1  
c) -1 and 0                      d) none of these
- 4) The variation in time series, due to flood, fire, strikes etc is known as \_\_\_\_\_  
a) Trend                      b) Seasonal variation  
c) Cyclical variation                      d) Random variation
- 5) If  $\sum p_1q_0 = x$ ,  $\sum p_0q_0 = y$ ,  $\sum p_1q_1 = z$ , then price I.No. by simple aggregate method is \_\_\_\_\_  
a)  $\frac{x}{y} \times 100$                       b)  $\frac{x}{z} \times 100$   
c)  $\frac{y}{z} \times 100$                       d) None of these



2. Attempt **any five** : **10**

- 1) Define – perfect positive correlation.
- 2) Define – Regression.
- 3) Given :  $\sum (X - \bar{X})(Y - \bar{Y}) = 26$ ,  $\sum (X - \bar{X})^2 = 25$ ,  $\sum (Y - \bar{Y})^2 = 41$ , find correlation coefficient between X and Y.
- 4) Given :  $\bar{X} = 50$ ,  $\bar{Y} = 56$ ,  $b_{yx} = 1.5$ ,  $b_{xy} = 0.80$ . Find equation of line of regression Y on X.
- 5) Given :  $\sum p_0q_0 = 25$ ,  $\sum p_1q_1 = 66$ ,  $\sum p_1q_0 = 33$ . Find appropriate price Index No.
- 6) Given :  $r_{12} = r_{13} = r_{23} = 0.6$ . Obtain partial regression coefficient  $r_{12.3}$ .
- 7) State components of time series.

3. A) Attempt **any two** : **10**

- 1) Define – Index No. State problems in construction of index no.
- 2) Compute Spearman's Rank correlation coefficient between X and Y interpret the result :

X : 50 64 72 42 70 68  
Y : 45 60 70 50 75 63

- 3) Given :  $n = 10$ ,  $\sum X = 140$ ,  $\sum Y = 120$ ,  $\sum X^2 = 2270$ ,  $\sum XY = 1940$ .  
Obtain equation of line of regression Y on X and hence estimate Y for  $X = 22$ .

B) Attempt **any one** : **10**

- 1) Derive equation of line of regression Y on X by least square principle. Interpret regression coefficient Y on X.
- 2) Obtain trend values by considering 4 yearly centred moving averages.

<b>Year :</b>	2001	2002	2003	2004	2005	2006	2007
<b>Sale (Rs.) :</b>	34	42	45	50	56	52	60
<b>Year :</b>	2008	2009	2010	2011			
<b>Sale (Rs.) :</b>	58	65	67	70			



SECTION – II  
(Probability Theory – II)

4. Choose most correct alternative : 5

- 1) If a continuous r.v.  $X$  follows a normal distribution with parameters  $\mu = 40$  and  $\sigma^2 = 16$ . Then median is \_\_\_\_\_  
a) 56                      b) 40                      c) 16                      d) None of these
- 2) If pdf of continuous r.v.  $X$  is  $f(X) = KX(2 - X)$  if  $0 \leq X \leq 2$  then value of  $K$  is \_\_\_\_\_  
a) 2                                      b)  $\frac{3}{4}$   
c)  $\frac{4}{3}$                                       d) None of these
- 3) Testing  $H_0 : \mu = \mu_0$  against  $H_1 : \mu \neq \mu_0$  is \_\_\_\_\_  
a) Test statistic                      b) Two sided test  
c) One sided test                      d) One sided right tailed test
- 4) If r.v.  $X$  follows exponential distribution with mean  $\theta = 5$ . Then variance of  $X$  is \_\_\_\_\_  
a) 5                      b) 25                      c) 15                      d) 20
- 5) Let  $(X; Y)$  be two dimensional r.v. with  $E(X) = \frac{5}{9}$ ,  $E(Y) = \frac{9}{5}$ . Then  $X$  and  $Y$  are independent if \_\_\_\_\_  
a)  $E(XY) = \frac{5}{9}$                       b)  $E(XY) = 1$   
c)  $E(XY) = \frac{5}{45}$                       d) None of these

5. Attempt **any five** : 10

- 1) Define joint pmf of bivariate r.v.  $(X; Y)$ .
- 2) Define type-I and type-II errors.
- 3) The joint pmf of  $(X; Y)$  is given bellow :

$$P(X; Y) = \frac{2X + 3Y}{71} \text{ if } \begin{matrix} X = 0; 1; 2 \\ Y = 1; 2; 3 \end{matrix}$$

Find marginal pmf of  $Y$ .

- 4) If  $X$  is a continuous r.v. verify a function  $f(x) = 3x^2$  if  $0 \leq x \leq 1$  is pdf or not.



- 5) Define variance of a continuous r.v.X.
- 6) Define a normal distribution.
- 7) Define distribution function of continuous uniform distribution.

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

10

- 1) Define cumulative distribution function of a continuous r.v.X. State its important properties.
- 2) Life time of certain make T.V. tube follows exponential distribution with mean life time 1600 hours. What is probability that the tube will work upto 2400 hours ?
- 3) The joint pmf of (X; Y) is

$$P(X; Y) = \frac{2X + 3Y}{71} \text{ if } \begin{matrix} X = 0; 1; 2 \\ Y = 1; 2; 3 \end{matrix}$$

Verify whether X and Y are independent or not.

B) Attempt **any one** :

10

- 1) Define uniform distribution. Find its mean and variance.
  - 2) Write test procedure for testing equality of two population proportions.
-



Seat No.	
----------	--

**B.Sc. – II (Entire Computer Science) (Semester – III) (CGPA)  
Examination, 2017  
OPERATING SYSTEM (Paper – I)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose and write **correct** answer from given **four** alternatives. **14**

1) The process who only reads data from file is called reader process in Reader-Writer problem.

- a) True b) False

2) Which of the following is contained in Process Control Block (PCB) ?

- a) Process Number b) Memory Limits  
c) List of open files d) All of these

3) The primary job of the operating system of a computer is to \_\_\_\_\_

- a) Command resources b) Manage resources  
c) Provide utilities d) User friendly

4) A semaphore S is an integer variable that, apart from initialization is accessed only through two standard atomic operations \_\_\_\_\_ and \_\_\_\_\_

- a) wait, signal b) wait, wakeup  
c) signal, wakeup d) resume, start

5) \_\_\_\_\_ is a logical extension of multiprogramming.

- a) Real time b) Multiprocessing  
c) Distributed d) Time sharing

6) The starvation problem faced in \_\_\_\_\_ scheduling algorithm.

- a) FCFS b) SJF c) Priority d) RR



- 7) The number of processes completed per unit time is known as \_\_\_\_\_
- a) Output
  - b) Throughput
  - c) Efficiency
  - d) Capacity
- 8) Short-term scheduler executes more frequently than long-term scheduler.
- a) True
  - b) False
- 9) Which of the following do not belong to queues for processes ?
- a) Job Queue
  - b) PCB queue
  - c) Device Queue
  - d) Ready Queue
- 10) If the semaphore value is negative
- a) The number of processes waiting on that semaphore
  - b) It is invalid
  - c) No operation can be further performed on it until the signal operation is performed on it
  - d) None of these
- 11) Which of the following statement about operating systems is correct ?
- I) Operating system is not the interface between user and computer
  - II) The batch operating systems allow group of user jobs to be in the computer system
  - III) System provides on-line communication between the user and the system
  - IV) In a real-time operating system response time is not a key issue.
- a) Only (I)
  - b) (I), (III) and (IV)
  - c) Both (II) and (III)
  - d) Both (I) and (III)
- 12) Switching the CPU to another process requires saving state of the old process and loading new process state is called as \_\_\_\_\_
- a) Process Blocking
  - b) Context Switch
  - c) Time Sharing
  - d) None of the above



- 13) Which scheduling technique allow the process to move between the queue ?
- a) Multilevel queue scheduling
  - b) Multilevel feedback queue scheduling
  - c) Multiple queue scheduling
  - d) Multivalve queue scheduling

- 14) A binary semaphore \_\_\_\_\_
- a) Has the values one or zero
  - b) Is essential to binary computers
  - c) Is used only for synchronization
  - d) Is used only for mutual exclusion

2. Solve **any seven** of the followings : **14**

- 1) What is spooling ?
- 2) Draw process state diagram.
- 3) Define term busy-waiting and spinlock.
- 4) Distinguish between Hard real time and Soft real time System.
- 5) Define convey effect.
- 6) What are threads ? What are its benefits ?
- 7) Define Turnaround time and Waiting time
- 8) Define race condition.
- 9) What is difference between preemptive and non-preemptive scheduling ?

3. A) Attempt **any two** of the followings : **10**

- 1) State the critical section problem. What requirements must a solution to the critical section problem satisfy ?
- 2) Explain different operations on process.
- 3) Explain Batch Operating system and Multiprogramming Operating System.

B) Explain System Implementation and Design. **4**

4. Attempt **any two** of the followings : **14**

- 1) What do you mean by Layered approach of Operating system structure ? Give an example where it is implemented.
- 2) What is system calls ? Explain various system calls.



3) Consider the following set of processes ; with the length of CPU-burst time given in milliseconds :

Process	Arrival time	Burst time
P1	2	9
P2	4	11
P3	1	5
P4	0	7
P5	3	13

Solve the following questions.

- A) Draw the Gantt chart illustrating the execution of these process using :
- Priority scheduling (consider 4 as highest priority)
  - Round Robin Scheduling (Quantum = 5).
- B) Calculate Average Turnaround and Waiting Time.
- C) State which scheduling algorithm gives minimum Average Waiting Time.

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

**14**

- 1) Discuss classical problem of synchronization for dining philosopher.
  - 2) Explain interprocess communication with its types in detail.
  - 3) What is scheduler ? Explain the short-term and long-term scheduler.
-





Seat No.	
-------------	--

**B.Sc. (ECS) – II (Semester – III) (CGPA) Examination, 2017  
Paper – II : OBJECT ORIENTED PROGRAMMING USING C++ – I**

Time : 2.30 Hours

Total Marks : 70

***N.B. :*** 1) ***All questions are compulsory.***

2) ***Figures to the right place indicate full marks.***

1. Select the **correct** alternatives.

**14**

1) \_\_\_\_\_ operator is used to destroy a memory space.

- a) New
- b) Delete
- c) Constructor
- d) Destructor

2) A \_\_\_\_\_ constructor is used to initialize the class object, to the value of another class object of same class.

- a) Copy
- b) Parameterized
- c) Default
- d) Dynamic

3) The members declared in the \_\_\_\_\_ section can be accessed by any function from the outside world.

- a) Private
- b) Protected
- c) Public
- d) None

4) \_\_\_\_\_ is a combination of operators, constants and variables arranged as per the rules of language.

- a) Expression
- b) Constant
- c) Statement
- d) None

5) Which stream is used to display output ?

- a) cin
- b) cout
- c) in
- d) out

**P.T.O.**



- 6) Which of the following operator cannot be overloaded ?
- a) = ( assignment operator )                      b) == ( equality operator )  
c) -> ( arrow operator )                      d) :: ( scope resolution operator )
- 7) How many copies of a class static member are shared between objects of the class ?
- a) A copy of the static member is shared by all objects of a class  
b) A copy is created only when at least one object is created from that class  
c) A copy of the static member is created for each instantiation of the class  
d) No memory is allocated for static members of a class
- 8) Inline functions are invoked at the time of \_\_\_\_\_
- a) Run time    b) Compile time  
c) Depends on how it is invoked                      d) Both b and c above
- 9) Which of the following operator below allow to define the member functions of a class outside the class ?
- a) ::    b) ?  
c) :?    d) %
- 10) We can overload the constructor.
- a) True    b) False
- 11) Which of the following is not a valid reserved keyword in C++ ?
- a) Explicit    b) Public  
c) Implicit    d) Private
- 12) If a member needs to have unique value for all the objects of that same class, declare the member as
- a) Global variable outside class  
b) Local variable inside constructor  
c) Static variable inside class  
d) Dynamic variable inside class



13) Which of the following is not a jump statement in C++ ?

- a) Break
- b) Goto
- c) Continue
- d) Switch

14) int a = 10;

void main()

{

int a = 20;

cout<<a<<::a;

}

- a) Syntax error
- b) 10 20
- c) 20 10
- d) 20 20

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

14

- 1) Why is it necessary to include the file iostream in all our C++ program ?
- 2) What is reference variable ? What is its major use ?
- 3) State Manipulators in C++.
- 4) State the major difference between C and C++.
- 5) What do you mean by C++ access specifiers ?
- 6) How many ways we can initialize an int variable in C++ ?
- 7) What are objects ? How they are created ?
- 8) When do we declare a member of a class static ?
- 9) Define keywords. List the keywords which are added by C++ .

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

10

- 1) How does a C++ structure differ from a C++ class ?
- 2) Describe the memory management operators in C++.
- 3) Describe with examples the uses of enumeration data types.

B) What is the application of scope resolution operator in C++ ?

4



4. Attempt **any two** of the following : **14**

- 1) What is friend function ? What are the merits and demerits of using friend function ?
- 2) Write a program to demonstrate the use of static members in a class.
- 3) What is a class ? How does it accomplish data hiding ?

5. Attempt **any two** of the following : **14**

- 1) What do you meant by overloading of a function ? When do we use this concept ?
  - 2) Write a program to read a matrix of size  $m \times n$  from the keyboard and display the same on the screen using functions.
  - 3) Write a program for unary minus operator overloading.
-



Seat No.	
----------	--

**B.Sc. (ECS) – II (Semester – III) (CGPA) Examination, 2017  
DATA STRUCTURES AND ALGORITHMS (Paper – III)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternatives : **14**

1) \_\_\_\_\_ is indexed data structure.

- a) Linear array
- b) Linked list
- c) Both a and b
- d) None of these

2) The output of the following program fragment is

```
x=5 ;  
y=x++;  
printf (“ %d%d ”, x, y);
```

- a) 5, 6
- b) 5, 5
- c) 6, 5
- d) 6, 6

3) Stack Overflow condition occurs while performing \_\_\_\_\_ operation.

- a) Create ()
- b) Pop ()
- c) Push ()
- d) Status ()

4) \_\_\_\_\_ is a data structure where elements can be added or removed at either end, but not in the middle.

- a) Linked list
- b) Stack
- c) Queue
- d) Dequeue



- 5) Queue is \_\_\_\_\_ data structure.
- a) LIFO
  - b) LILO
  - c) FIFO
  - d) FILO
- 6) The prefix of  $(X + Y) * (W - Z)$  is \_\_\_\_\_
- a)  $* - XY + WZ$
  - b)  $+ * XY - WZ$
  - c)  $* + - XYWZ$
  - d)  $* + XY - WZ$
- 7) Two main measures for the efficiency of an algorithm are \_\_\_\_\_
- a) Processor and Memory
  - b) Complexity and Capacity
  - c) Time and Space
  - d) Data and Space
- 8) Each node in a singly linked list contain atleast \_\_\_\_\_ fields.
- a) One field
  - b) Two field
  - c) Three field
  - d) Four field
- 9) Which of the following case does not exist in complexity theory ?
- a) Best case
  - b) Worst case
  - c) Average case
  - d) Null case
- 10) The function call itself, is \_\_\_\_\_ function.
- a) Definition
  - b) Default
  - c) Recursion
  - d) Prototype
- 11) Structure is a data type.
- a) True
  - b) False
- 12) Expression in which operator is written after operand is called as \_\_\_\_\_
- a) Prefix
  - b) Postfix
  - c) Infix
  - d) None of these
- 13) Pointer variable store memory address of another variable.
- a) True
  - b) False
- 14) Array is a collection of \_\_\_\_\_ element type.
- a) Same
  - b) Different
  - c) Both a and b
  - d) None of these



2. Solve **any seven** : **14**
- 1) What is two dimensional array ?
  - 2) Define algorithm. List out characteristics of algorithm.
  - 3) What is ADT ? Explain stack ADT.
  - 4) What is singly linked list ? Write node structure of linked list.
  - 5) Define Time and Space complexity.
  - 6) Define Omega notation.
  - 7) Define data structure. What is the need of data structure ?
  - 8) What is branch and bound technique ?
  - 9) What is the evaluated value of the following expression ?  
5 4 6 + \* 4 9 3 / + \*
3. A) Attempt **any two** : **10**
- 1) Explain insertion in doubly linked list.
  - 2) What is priority queue explain it ?
  - 3) How to check expression is valid or not using stack ?
- B) Write a program to display Fibonacci series using recursion. **4**
4. Attempt **any two** : **14**
- 1) Explain various operations on circular queue.
  - 2) Explain backtracking with suitable example.
  - 3) Write an algorithm for evaluation of postfix expression using stack.
5. Attempt **any two** : **14**
- 1) Explain pointer to structure with example.
  - 2) Write a program to create a singly linked list and display all the nodes.
  - 3) Write a program to implement stack using linked list.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – II (Semester – III) (CGPA) Examination, 2017  
COMPUTER SCIENCE (Paper – IV)  
Software Engineering – I**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternatives : **14**
- 1) Which of the following is not a fact finding technique ?
    - a) Third party enquiry
    - b) Interview
    - c) Record review
    - d) Observation
  - 2) Cost-benefit analysis is performed during \_\_\_\_\_
    - a) Analysis phase
    - b) Design phase
    - c) Feasibility study phase
    - d) Implementation phase
  - 3) Which of the following is not considered as a tool at the system design phase ?
    - a) Decision table
    - b) System Flowchart
    - c) Data flow diagram
    - d) Pie chart
  - 4) The scope immediately outside a system is called
    - a) Boundary
    - b) Interface
    - c) Protocols
    - d) Environment





- 5) Enhancements, upgrades and bug fixes are done during the \_\_\_\_\_ step in the SDLC.
- a) Maintenance and evaluation
  - b) Problem identification
  - c) Design
  - d) Development and documentation
- 6) Changes made periodically to a system, after its implementation, is known as \_\_\_\_\_
- a) Analysis
  - b) Design
  - c) Development
  - d) Maintenance
- 7) \_\_\_\_\_ is the objective for which system is designed.
- a) Input
  - b) Process
  - c) Output
  - d) None of these
- 8) The \_\_\_\_\_ symbol is used in a flowchart to represent a calculation task.
- a) Start
  - b) Input
  - c) Process
  - d) Output
- 9) \_\_\_\_\_ is a good example of deterministic system.
- a) Life cycle
  - b) Computer program
  - c) Software program
  - d) None of the above
- 10) The most important feature of spiral model is \_\_\_\_\_
- a) Requirement analysis
  - b) Risk management
  - c) Quality management
  - d) Configuration management



- 11) Main aim of software engineering is to produce \_\_\_\_\_
- a) Program
  - b) Software
  - c) Within budget
  - d) Software within budget in the given schedule
- 12) In decision trees branches represent
- a) Name of process
  - b) Conditions
  - c) Actions to be performed
  - d) Rules
- 13) Actual programming of software code is done during the \_\_\_\_\_ step in the SDLC.
- a) Maintenance and evaluation
  - b) Design
  - c) Analysis
  - d) Development
- 14) HIPO stands for \_\_\_\_\_
- a) Hierarchy input process output
  - b) Hierarchy input plus output
  - c) Hierarchy plus input process output
  - d) Hierarchy input output process

2. Solve **any seven** from the following :

14

- 1) Define system. Give its examples.
- 2) What is boundary and environment ?
- 3) What do you mean by black-box in system ?
- 4) Define subsystem. Give its example.
- 5) What is open system ? Write an example of it.
- 6) Define software. List any two types of software.
- 7) What is requirement anticipation ?
- 8) Define evaluation of system.
- 9) What is software prototyping ?



3. A) Attempt **any two**. **10**
- 1) Explain the different characteristics of system.
  - 2) What are the advantages and disadvantages of spiral model ?
  - 3) What is feasibility study ? What are the types of feasibility ?
- B) Explain the different elements of a system. **4**
4. Attempt **any two**. **14**
- 1) Explain the role of system analyst in software development.
  - 2) Explain the different fact finding techniques.
  - 3) What is decision table and decision tree ? Explain with example.
5. Attempt **any two**. **14**
- 1) What are the characteristics of software ?
  - 2) Explain waterfall model in detail.
  - 3) Explain HIPO technique with example.
-



Seat No.	
-------------	--

**B.Sc. (E.C.S.) – II (Sem. – III) (CGPA) Examination, 2017**  
**ELECTRONICS (Paper – V)**  
**Organization of PC**

Time : 2.30 Hours

Max. Marks : 70

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

1. Choose correct alternatives :

14

- 1) The \_\_\_\_\_ printer has high quality printing.  
a) laser                      b) line printer      c) dot matrix      d) daisy wheel
- 2) The evacuated glass tube of CRT monitor contains \_\_\_\_\_ for emits electrons.  
a) anode                      b) cathode              c) phosphor              d) nitrate
- 3) In \_\_\_\_\_ mode CPU does perform data transfer called as polling.  
a) programmed      b) interrupt              c) DMA                      d) none of these
- 4) The \_\_\_\_\_ printer make high sound while printing.  
a) inkjet                      b) thermal              c) laser                      d) dot matrix
- 5) \_\_\_\_\_ memory is a buffer memory between the main memory and CPU.  
a) Virtual memory                                      b) Cache memory  
c) Flash memory                                      d) RAM
- 6) The \_\_\_\_\_ supports multiprogramming and virtual memory.  
a) PC-AT                      b) PC                      c) PC-XT                      d) PC-NT
- 7) \_\_\_\_\_ is a non-impact printer.  
a) laser                                      b) daisy wheel  
c) inkjet                                      d) thermal
- 8) Keyboard has special keys from f1 to f12 called as \_\_\_\_\_ keys.  
a) function                      b) navigation              c) control                      d) numeric



- 9) The fetching of instruction is done by \_\_\_\_\_  
a) ALU                      b) Control                      c) Memory                      d) Input device
- 10) In microprocessor the control bus is always \_\_\_\_\_  
a) unidirectional                      b) bidirectional  
c) multidirectional                      d) none of these
- 11) Usually the boot strap program is stored in \_\_\_\_\_  
a) RAM                      b) ROM                      c) Cache                      d) None of these
- 12) \_\_\_\_\_ operating system has specific time slice for each task.  
a) Stand alone OS                      b) Multitasking OS  
c) Real time OS                      d) Time sharing OS
- 13) \_\_\_\_\_ format is also called single density format.  
a) FM                      b) MFM                      c) FFM                      d) FMF
- 14) In CD-ROM \_\_\_\_\_ signal is used for reading and writing data.  
a) laser                      b) electrical  
c) electromechanical                      d) none of these

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

14

- 1) What is application software and system software ?
- 2) What is EEPROM ?
- 3) What is bus ? What is function of control bus ?
- 4) What is real time operating system ?
- 5) Write characteristics of printer.
- 6) Write types of key switches of keyboard.
- 7) What is use of phosphor coating behind monitor screen ?
- 8) What is instruction cycle ?
- 9) What is function of track and sector in hard disk ?



3. A) Answer **any two** of the following : **10**
- 1) Explain block diagram of computer.
  - 2) Explain operation of inkjet printer.
  - 3) Compare features of PC and PC/XT.
- B) Write short note on scanner. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain working principle of monitor with suitable block diagram.
  - 2) Explain direct memory access data transfer.
  - 3) Write short note – new generation PC.
5. Attempt **any two** of the following : **14**
- 1) Explain types of operating system.
  - 2) Explain working principle of floppy disk drive.
  - 3) What is static RAM ? Explain cache memory in detail.
-



Seat No.	
-------------	--

**B.Sc. – II (Semester – III) (ECS) (CGPA) Examination, 2017**  
**MICROPROCESSORS – I (Paper – VI)**

Time : 2.30 Hours

Total Marks : 70

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

1. Multiple Choice Questions:

14

- 1) In \_\_\_\_\_ mode CPU does not perform data transfer.
  - a) Programmed
  - b) Interrupt
  - c) DMA
  - d) None
- 2) Dynamic ram uses \_\_\_\_\_ to store instruction.
  - a) Capacitor
  - b) Register
  - c) Flip-flop
  - d) None of these
- 3) IR is a part of \_\_\_\_\_
  - a) PCU
  - b) DPU
  - c) CPU
  - d) NMU
- 4) To transfer data between io device and cpu \_\_\_\_\_ is used.
  - a) Data bus
  - b) IO Bus
  - c) Control Bus
  - d) Address bus
- 5) \_\_\_\_\_ is called auxiliary memory.
  - a) Main memory
  - b) Internal memory
  - c) Secondary memory
  - d) Read only memory
- 6) \_\_\_\_\_ is a program control instruction.
  - a) mov
  - b) pop
  - c) rar
  - d) call

P.T.O.



- 7) \_\_\_\_\_ is a software method to provide priority to the interrupt.
- a) Polling
  - b) Daisy Chain
  - c) Parallel priority
  - d) None of these
- 8) To access 4 kb of memory \_\_\_\_\_ address lines are used.
- a) 8
  - b) 12
  - c) 20
  - d) 13
- 9) \_\_\_\_\_ is a bit slice processor.
- a) AMD 2901
  - b) 8089
  - c) HP3000
  - d) None of these
- 10) In \_\_\_\_\_ transmission, CPU and IO interface share common clock.
- a) Asynchronous
  - b) Synchronous
  - c) Both a and b
  - d) None of these
- 11) Transfer of logical address to physical address is done by \_\_\_\_\_ unit.
- a) DMA
  - b) MMU
  - c) ALU
  - d) CU
- 12) RISC stands for \_\_\_\_\_
- a) Reduced instruction set computer
  - b) Relative instruction set computer
  - c) Register instruction set computer
  - d) None of these
- 13) \_\_\_\_\_ memory is act as a buffer memory.
- a) Associative
  - b) Main
  - c) Cache
  - d) ROM
- 14) \_\_\_\_\_ register is used to show address of next instruction.
- a) SP
  - b) DR
  - c) IP
  - d) AC





2. Answer **any seven** of the following : **14**
- 1) Draw structure of instruction format.
  - 2) List the types of memory.
  - 3) Distinguish between synchronous and asynchronous data transfer.
  - 4) Define polish notation and explain it.
  - 5) Define mapping and list their types.
  - 6) Draw block diagram of transmission format for asynchronous transmission.
  - 7) Explain data transfer instruction.
  - 8) Give characteristics of memory.
  - 9) Explain serial communication.
3. A) Answer **any two** of the following : **10**
- 1) Compare RISC and CISC.
  - 2) Explain memory interfacing to CPU.
  - 3) Explain CPU-IOP communication.
- B) Define memory hierarchy. Explain their types. **4**
4. Answer **any two** of the following : **14**
- 1) Define addressing mode. Explain their types in details.
  - 2) Write a note on associative memory.
  - 3) Write a note on DMA.
5. Answer **any two** of the following : **14**
- 1) Compare I/O mapped I/O and memory mapped I/O with suitable diagram.
  - 2) Classify instruction types depending on address field and explain instruction format in stack organization.
  - 3) What is virtual memory ? Explain paging system in virtual memory.
-



Seat No.	
----------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**Paper – I : OPERATING SYSTEM – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives. **14**
- 1) The Belady's anomaly is related to \_\_\_\_\_ page replacement algorithm.  
a) FIFO b) LRU  
c) Optimal d) All of these
  - 2) Which of the following is not necessary condition for deadlock ?  
a) Mutual Exclusion b) Hold and Wait  
c) Wait and Signal d) Circular wait
  - 3) TLB stands for \_\_\_\_\_  
a) Translation Lookout Buffer b) Transition Lock Buffer  
c) Transmission Look Buffer d) Translation Look-aside Buffer
  - 4) \_\_\_\_\_ address binding method generates the re-locatable code.  
a) Compile time b) Load time  
c) Execution time d) None of these
  - 5) Physical memory is divided into fixed-sized blocks called \_\_\_\_\_  
a) Frames b) Pages  
c) Backing store d) None of these

P.T.O.



- 6) The process zero is called as \_\_\_\_\_ process.  
a) Swapper                      b) Init                      c) New                      d) Final
- 7) In UNIX the operating system also called as Kernel.  
a) True                                      b) False
- 8) \_\_\_\_\_ allocates the smallest memory hole (block) for required process.  
a) Worst fit                      b) First fit                      c) Last fit                      d) Best fit
- 9) In the single level directory  
a) All directories must have unique names  
b) All files must have unique names  
c) All files must have unique owners  
d) All of these
- 10) \_\_\_\_\_ is a unique tag, usually a number, identifies the file within the file system.  
a) File identifier                      b) File name  
c) File type                      d) None of the mentioned
- 11) In UNIX operating system, terminated state of process is also called \_\_\_\_\_  
a) Finish                                      b) Exit  
c) Zombie                                      d) None of these
- 12) \_\_\_\_\_ describes the state of file system.  
a) Boot block                                      b) Super block  
c) Inode list                                      d) Data block
- 13) If we preempt a resource from a process, the process cannot continue with its normal execution and it must be  
a) Aborted                                      b) Rolled back  
c) Terminated                                      d) Queued
- 14) \_\_\_\_\_ is not part of buffer header.  
a) Device num                                      b) Block num  
c) Status                                      d) Process id



2. Answer **any seven** of the followings : **14**
- 1) List out different file attributes.
  - 2) Draw and explain structure of buffer pool.
  - 3) What is Deadlock ?
  - 4) Explain tree level directory structure.
  - 5) List out advantages of Buffer cache.
  - 6) Define- Dynamic linking and shared libraries.
  - 7) What is virtual memory ?
  - 8) Define -Request edge and Allocation edge.
  - 9) What is fragmentation ? Write its types.
3. A) Attempt **any two** of the followings : **10**
- 1) Write note on : Saving the context of process.
  - 2) Explain deadlock detection method for single instance of resources.
  - 3) Explain with diagram : Swapping technique for memory management.
- B) Explain the different operations performed on file. **4**
4. Answer **any two** of the followings : **14**
- 1) Explain the banker's algorithm with example.
  - 2) Write in brief : Segmentation.
  - 3) Draw and explain process state transition diagram for UNIX operating system.
5. Answer **any two** of the followings : **14**
- 1) What is page replacement ? Implement FIFO, LRU and Optimal Page replacement algorithms for following reference string and calculate page fault.  
(Take frames = 3)  
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
  - 2) How will you retrieve buffer from buffer pool using first and second scenario ?
  - 3) Explain different file accessing methods.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**Paper – II : OBJECT ORIENTED PROGRAMMING USING C++ – II**

Time : 2.30 Hours

Total Marks : 70

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

1. A) Choose the **correct** alternative and rewrite the answer : **10**
- 1) In multipath inheritance in order to remove duplicate set of records in child class we make \_\_\_\_\_
    - a) Virtual function in parent class
    - b) Virtual function in base class
    - c) Base class as virtual base class
    - d) All
  - 2) Streams that will be performing both input and output file operations \_\_\_\_\_
    - a) iostream
    - b) fstream
    - c) ofstream
    - d) stdstream
  - 3) \_\_\_\_\_ function outputs bytes to a character array.
    - a) get()
    - b) put()
    - c) read()
    - d) write()
  - 4) Reusability of the code can be achieved in CPP through \_\_\_\_\_
    - a) Polymorphism
    - b) Encapsulation
    - c) Inheritance
    - d) a and b both
  - 5) Class x, class y, class z are derived from BASE class this is \_\_\_\_\_ inheritance.
    - a) single
    - b) multipath
    - c) hierarchical
    - d) hybrid





- 4) Write a function for deleting a file.
  - 5) What is buffer ?
  - 6) What is error ?
  - 7) Explain this pointer.
  - 8) Explain unformatted getline() function.
  - 9) What is the use of exception handling ?
3. A) Answer **(any 2)**. **10**
- 1) What is abstract class ? Write a program for abstract class.
  - 2) Write a note on file input and output stream.
  - 3) Explain exception handling mechanism with example.
- B) Explain destructors in derived classes. **4**
4. Answer **(any 2)**. **14**
- 1) Explain with a program to show multiple catch statements used to handle various types of exceptions.
  - 2) Write a program which copies the contents of one text file to another and prints size of the text file.
  - 3) What is manipulator ? Explain any three manipulators with example.
5. Answer **(any 2)**. **14**
- 1) What is the use of virtual function ? Write a program using virtual function.
  - 2) Write the difference between Single and Multiple inheritance.
  - 3) Explain constructors in derived class.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**Paper – III : DATA STRUCTURES ALGORITHMS ENGINEERING – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives. **14**

1) In case of Graph, \_\_\_\_\_ node has in-degree 1 and out-degree 0.

- a) Source
- b) Sink
- c) Volatile
- d) Pendant

2) We can construct \_\_\_\_\_ number of possible binary trees using 7 nodes.

- a) 429
- b) 42
- c) 249
- d) 24

3) \_\_\_\_\_ data structure is useful in implementation of graph traversals.

- a) Stack
- b) Queue
- c) Array
- d) Both a and b

4) Which of the following sorting method uses divide and conquer strategy ?

- a) Bubble
- b) Merge
- c) Quick
- d) Both b and c

5) In AVL tree, balance factor of each node is in the range \_\_\_\_\_

- a) - 1
- b) 0
- c) 1
- d) All of these





- 6) \_\_\_\_\_ sorting method belongs to exchange sort category.
- a) Bubble
  - b) Merge
  - c) Radix
  - d) Both a and b
- 7) \_\_\_\_\_ searching method applied on sorted as well as unsorted data.
- a) Binary
  - b) Linear
  - c) Indexed Sequential
  - d) Both a and b
- 8) Left, Right, Root is the mechanism of \_\_\_\_\_ traversal method.
- a) Preorder
  - b) Inorder
  - c) Postorder
  - d) BFS
- 9) Find out one from the following
- a) Mid-square
  - b) Folding
  - c) Truncation
  - d) DFS
- 10) How many maximum swapping done in bubble sort method to sort '4' unsorted elements ?
- a) 6
  - b) 8
  - c) 10
  - d) 12
- 11) The closed-simple path in a graph is called \_\_\_\_\_
- a) Self edge
  - b) Loop
  - c) Both a and b
  - d) Cycle
- 12) \_\_\_\_\_ node in a tree does not have ancestors.
- a) Leaf
  - b) Terminal
  - c) Both a and b
  - d) Root
- 13) An auxiliary storage is required for \_\_\_\_\_ search method.
- a) Indexed Sequential
  - b) Linear
  - c) Binary
  - d) Both b and c
- 14) Queue is required for implementation of \_\_\_\_\_ sort method.
- a) Bubble
  - b) Insertion
  - c) Radix
  - d) Shell



2. Answer **any seven** of the followings : **14**
- 1) What is directed and undirected graph ?
  - 2) What is Sink node in case of graph ?
  - 3) Why Binary search is fast as compared to linear search ?
  - 4) What is Bit matrix or Boolean matrix ?
  - 5) What is Extended binary tree ?
  - 6) What is internal and external sort ?
  - 7) List out some applications of tree data structure.
  - 8) Sort following numbers in ascending order using bubble sort method. (Show passes).  
78, 35, 12, 43, 56
  - 9) List out the different problems arising in graph traversal.
3. A) Attempt **any two** of the followings : **10**
- 1) Explain 'Insertion sort' method with example.
  - 2) What is Hashing ? Explain different hash functions.
  - 3) What is traversal ? Explain preorder and inorder traversal of binary tree.
- B) Write a function that counts and display only leaf nodes of binary search tree. **4**
4. Answer **any two** of the followings : **14**
- 1) Write a program to implement 'Selection' sort method that sorts 'n' numbers.
  - 2) Write an algorithm and also implement function for binary search technique.
  - 3) Explain Breadth first search algorithm of graph traversal with example.
- 5) Answer **any two** of the followings : **14**
- 1) Explain following operations of graph using linked list
    - i) Insert – Vertex()
    - ii) Insert – Edge()
    - iii) Find – Adjacent()
  - 2) Explain : Indexed sequential search in details.
  - 3) What is "Threaded Binary Tree" ? Explain it with its types.
-



Seat No.	
----------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017  
COMPUTER SCIENCE (Paper – IV)  
Software Engineering – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternatives. **14**

- 1) The relation between data items and removing unnecessary data item is known as \_\_\_\_\_  
A) ERD  
B) DFD  
C) Normalization  
D) None of these
- 2) The internal logic of program to test in the \_\_\_\_\_ testing.  
A) BBT  
B) WBT  
C) Alpha  
D) Beta
- 3) Data dictionary is also called as \_\_\_\_\_  
A) Catalog  
B) Central repository  
C) Both A and B  
D) None of these
- 4) In an ER diagram to represent attribute we use \_\_\_\_\_  
A) Rectangle  
B) Ellipse  
C) Diamond  
D) Line
- 5) The first step of implementation phase is \_\_\_\_\_  
A) Select the computer  
B) Implementation Planning  
C) Prepare physical facilities  
D) None of these
- 6) Aliases means different names of data item.  
A) True  
B) False





- 3) What is Testing ?
- 4) Draw the different symbols of DFD.
- 5) Write benefits of CASE tools.
- 6) What is System construction ?
- 7) What direct conversion of implementation ?
- 8) Define the file.

3. A) Answer the followings (**Any two**) : **10**
- 1) Draw an ER diagram for college Admission System.
  - 2) Design input screens for library system.
  - 3) State design principles of output.
- B) Differentiate between physical and logical DFD. **4**
4. Answer the followings (**Any two**) : **14**
- 1) Define the term Entity, Relationship and Attribute with example.
  - 2) What is DD ? Explain important of DD.
  - 3) What is Normalization ? Explain up to 3NF.
5. Answer the followings (**Any two**) : **14**
- 1) Draw a CLD and first level DFD for mark sheet printing system.
  - 2) Explain the white box testing and black box testing with example.
  - 3) Explain maintenance in brief.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**ELECTRONICS (Paper – V)**  
**Organization of PC – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Multiple choice questions.

14

- 1) Microwaves are
  - a) Single directional
  - b) Unidirectional
  - c) Multidirectional
  - d) None of these
- 2) The \_\_\_\_\_ cable transmits light pulse over glass conductor.
  - a) Twisted pair
  - b) Fibre optics
  - c) Co-axial
  - d) Both a and b
- 3) In a computer network each node has \_\_\_\_\_ IP address.
  - a) Two
  - b) Three
  - c) Unique
  - d) Single
- 4) Router operates at \_\_\_\_\_ layer.
  - a) Physical
  - b) Data link
  - c) Application
  - d) Network
- 5) When two or more network are connected they becomes an \_\_\_\_\_.
  - a) Network
  - b) LAN
  - c) Internetwork
  - d) None



- 6) VLSI contains between \_\_\_\_\_ numbers of gates/transistors.
- a) Less than 10
  - b) 10 to 100
  - c) 100 to 5000
  - d) 5000 to 50,000
- 7) Fanout of TTL logic is \_\_\_\_\_
- a) 5-10
  - b) 10-20
  - c) 20-30
  - d) 30-40
- 8) Propagation delay time in TTL logic is \_\_\_\_\_ ns.
- a) 5
  - b) 10
  - c) 15
  - d) 20
- 9) In \_\_\_\_\_ there are set of AND gates.
- a) PLA
  - b) PAL
  - c) CPLD
  - d) FPGA
- 10) In \_\_\_\_\_ method there are plated through holes which establish a connection between two side of PCB.
- a) ETH
  - b) EMT
  - c) PTH
  - d) None of these
- 11) Intel 80286 is a 16 bit microprocessor with \_\_\_\_\_ address lines.
- a) 8
  - b) 16
  - c) 20
  - d) 24
- 12) In \_\_\_\_\_ mode the 8086 behaves similar to an 8088 and 8086.
- a) Real
  - b) Protected
  - c) Reserved
  - d) Non-reserved
- 13) The \_\_\_\_\_ is the first Intel microprocessor with internal cache memory.
- a) 80186
  - b) 80286
  - c) 80386
  - d) 80486
- 14) The Pentium has \_\_\_\_\_ way superscalar architecture.
- a) 1
  - b) 2
  - c) 3
  - d) 4



2. Answer **any seven** of the following : **14**
- 1) Draw diagram of Star topology.
  - 2) What is RISC ?
  - 3) Give two advantages of TTL family.
  - 4) Define Propagation delay.
  - 5) Give feature of Pentium processor.
  - 6) What are advantages of fibre optics cable ?
  - 7) What are disadvantages of SMD ?
  - 8) Write seven layer of OSI reference model.
  - 9) What is server based network ?
3. A) Answer **any two** of the following : **10**
- 1) Explain PAL.
  - 2) Explain briefly about Pentium pro processor.
  - 3) Explain advantages of computer network.
- B) Explain LAN, MAN and WAN. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain surface mount technology.
  - 2) Explain guided media.
  - 3) Compare CISC and RISC processor.
5. Attempt **any two** of the following : **14**
- 1) Explain the difference between FPGAs and CPLDs.
  - 2) Give function of Repeater, Hub, Bridges, Router, Switch and Brouter.
  - 3) Write a short note on embedded system.
-





Seat No.	
----------	--

**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**Paper – VI : MICROPROCESSORS – II**

Time : 2.30 Hours

Total Marks : 70

- Instructions :** 1) *All questions are compulsory.*  
2) *Draw neat diagram whenever necessary.*  
3) *Figures to the right place indicate full marks.*

1. Choose **correct** alternatives : **14**

- 1) The external data bus of 8088 microprocessor is \_\_\_\_\_
  - a) 8
  - b) 16
  - c) 20
  - d) 24
  
- 2) The address line used in 80386 are \_\_\_\_\_
  - a) 32
  - b) 20
  - c) 24
  - d) 64
  
- 3) \_\_\_\_\_ is conditional jump instruction
  - a) JMP
  - b) JC
  - c) CALL
  - d) INT
  
- 4) The \_\_\_\_\_ registers serves as the data register.
  - a) AX
  - b) BX
  - c) CX
  - d) DX
  
- 5) The MOV AX, BX transfer \_\_\_\_\_ bit data from source to destination.
  - a) 8
  - b) 16
  - c) 4
  - d) 20



- 6) \_\_\_\_\_ is the processor control instruction.
- a) STD
  - b) IN
  - c) INTO
  - d) JNZ
- 7) The 8088 microprocessor has \_\_\_\_\_ byte instruction queue.
- a) 2
  - b) 4
  - c) 6
  - d) 8
- 8) The \_\_\_\_\_ instruction adjust the binary result of SUB or SBB instruction.
- a) AAA
  - b) AAS
  - c) AAC
  - d) ADS
- 9) \_\_\_\_\_ processor is 32 bit processor with external bus 64 bit.
- a) Pentium
  - b) 80386
  - c) 80486
  - d) 80286
- 10) The 8255 has \_\_\_\_\_ I/O pins used.
- a) 20
  - b) 24
  - c) 16
  - d) 32
- 11) In 8086 microprocessor \_\_\_\_\_ IC used for transreceiver.
- a) 8284
  - b) 8286
  - c) 8282
  - d) 8288
- 12) The 8253 has \_\_\_\_\_ independent 16 bit counters are used.
- a) 2
  - b) 3
  - c) 4
  - d) 5
- 13) The BIU always insert zero for the lowest \_\_\_\_\_ bits to form a 20 bit address for segment.
- a) one
  - b) zero
  - c) four
  - d) eight
- 14) The \_\_\_\_\_ instruction copies word from source to stack location pointed by stack pointer.
- a) PUSH
  - b) POP
  - c) MOV
  - d) OUT



2. Answer **any seven** of the followings : 14
- 1) Give features of advanced microprocessors.
  - 2) Explain processor control instructions.
  - 3) State program execution transfer instructions.
  - 4) Explain 8257 DMA.
  - 5) Give addressing modes of advanced microprocessor.
  - 6) Explain memory mapped I/O modes.
  - 7) Give difference between 8086 and 8088.
  - 8) Explain control word for 8255.
  - 9) Give different types of general purpose registers in advanced microprocessors.
3. A) Attempt **any two** of the followings. 10
- 1) Explain different modes of 8253.
  - 2) Explain flag registers of 8086.
  - 3) Write assembly language program for multiplication and division in 8086.
- B) Explain features of advanced microprocessors. 4
4. Answer **any two** of the followings : 14
- 1) Explain different types of data transfer instructions.
  - 2) Explain absolute select decoding.
  - 3) Explain with suitable diagram of minimum mode of 8086.
5. Answer **any two** of the followings : 14
- 1) Draw block diagram 8255. Explain its modes.
  - 2) State different types of instruction set. Explain bit manipulation instruction.
  - 3) Draw internal architecture of 8086. Explain its EU section.
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – V) Examination, 2017  
New (CGPA Pattern)  
Paper – I : DATA COMMUNICATION AND NETWORKING – I**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives : **14**

1) Example of analog to analog conversion.

- a) Radio
- b) Video
- c) Television
- d) Internet

2) Combination of two or more networks are called \_\_\_\_\_

- a) Internetwork
- b) WAN
- c) MAN
- d) LAN

3) Advantages of security, robust and eliminating traffic in \_\_\_\_\_ topology.

- a) Mesh
- b) Ring
- c) Star
- d) Bus

4) \_\_\_\_\_ is communication pathway that transfer data from one point to another.

- a) Link
- b) Node
- c) Medium
- d) Topology

5) In Block Coding we divide out message into block.

- a) Code block
- b) Packet block
- c) Code words
- d) Data words



- 6) The data link layer take packets from \_\_\_\_\_ and encapsulates them into frames for transmission.
- a) Network Layer
  - b) Physical Layer
  - c) Transport Layer
  - d) Application Layer
- 7) Header of node generally contains \_\_\_\_\_
- a) Synchronous bit
  - b) Address
  - c) Frame identifier
  - d) All of above
- 8) An unauthorized users is network \_\_\_\_\_ issue.
- a) Security
  - b) Reliability
  - c) Performance
  - d) All of above
- 9) A connection provides a dedicated link between two devices.
- a) Primary
  - b) Multipoint
  - c) Point to point
  - d) Secondary
- 10) Which topology require multipoint connection ?.
- a) Bus
  - b) Star
  - c) Mesh
  - d) Ring
- 11) A \_\_\_\_\_ is set of rules that governs data communication.
- a) Protocol
  - b) Forum
  - c) Standard
  - d) None of the above
- 12) The information is to be communicated in a data communication system is the \_\_\_\_\_
- a) Medium
  - b) Protocol
  - c) Message
  - d) Transmission
- 13) A television broadcast is an example of \_\_\_\_\_ transmission.
- a) Half-duplex
  - b) Simplex
  - c) Full-duplex
  - d) Automatic
- 14) A \_\_\_\_\_ is data communication system that spanning data states, countries 7 whole world.
- a) LAN
  - b) MAN
  - c) WAN
  - d) All of above



2. Answer the following (**any 7**) : **14**
- 1) What is connection oriented services ?
  - 2) What is MAN ?
  - 3) What is protocol ?
  - 4) Define any four applications of network.
  - 5) Define history of internet.
  - 6) Define Star topology.
  - 7) Explain components of network.
  - 8) What is piggybacking ?
  - 9) What is use of modem in computer network ?
3. A) Answer the following (**any 2**) : **10**
- 1) Explain congestion prevention policies in details.
  - 2) What is transmission medium ? Explain different types of transmission medium .
  - 3) Explain selective repeat ARQ in details.
- B) Define CDMA and FDMA. **4**
4. Answer the following (**any 2**) : **14**
- 1) Explain layers of TCP/IP protocol.
  - 2) What is Switching ? Explain different types of switching.
  - 3) Explain link state packet routing.
5. Answer the following (**any 2**) : **14**
- 1) What is framing ? Explain different techniques of framing.
  - 2) Explain different layers in OSI reference model.
  - 3) Explain in details CSMA/CD.
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – V) (New CGPA) Examination, 2017  
Paper – II : DATABASE MANAGEMENT SYSTEM – I**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternative.

**14**

- 1) Which of the following is a problem of file management system ?
  - a) Lack of data independence
  - b) Data redundancy
  - c) Program dependence
  - d) All of above
- 2) An ER model was introduced by \_\_\_\_\_
  - a) Dr. E.F. Codd
  - b) P.P. Chen
  - c) James Gosling
  - d) Ken Thomson
- 3) The number of tuples in the relation is \_\_\_\_\_
  - a) Cardinality
  - b) Degree
  - c) Sum
  - d) None of above
- 4) Function that acts on set of values is called
  - a) Aggregate function
  - b) Scalar function
  - c) Row set function
  - d) None of these
- 5) For each attribute of a relation, there is a set of permitted values, called the \_\_\_\_\_ of that attribute.
  - a) Domain
  - b) Relation
  - c) Set
  - d) Schema
- 6) Create table employee (name varchar, id integer). What type of statement is this ?
  - a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint



- 7) To remove a relation from an SQL database, we use the \_\_\_\_\_ command.
- a) Delete                      b) Purge                      c) Remove                      d) Drop table
- 8) The intersection operator is used to get the \_\_\_\_\_ tuples.
- a) Different                      b) Common                      c) All                      d) Repeating
- 9) How many tables may be included with a join ?
- a) One                      b) Two                      c) Three                      d) All of the mentioned
- 10) The operation which is not considered a basic operation of relational algebra is
- a) Join                      b) Selection                      c) Union                      d) Cross product
- 11) The attribute AGE is calculated from DATE\_OF\_BIRTH. The attribute AGE is
- a) Single valued                      b) Multi valued  
c) Composite                      d) Derived
- 12) The entity set person is classified as student and employee. This process is called
- a) Generalization                      b) Specialization  
c) Inheritance                      d) Constraint generalization
- 13) What is degree of table with 10 row and 5 columns ?
- a) 10                      b) 5                      c) 15                      d) 50
- 14) Select '2 + 5' from dual ;
- a) 2 + 5                      b) 2                      c) 5                      d) 7

2. Answer **any 7** of the following :

**(7×2=14)**

- 1) What are the disadvantages of file base system ?
- 2) Write functions of DBA.
- 3) What is logical data independence ?
- 4) What is connectivity of relationship ?
- 5) Define candidate key and super key.





- 6) Write join dependency.
- 7) What is indexing ? Write a type of indexing.
- 8) Write numeric functions used in oracle.

3. A) Answer **any two** : (2×5=10)

- 1) Explain left and right outer join.
- 2) Explain foreign key constraint with e.g.
- 3) Explain database schema and instance.

B) What is weak entity set ? Explain with example. 4

4. Answer **any two** : (2×7=14)

- 1) Explain generalization.
- 2) Explain network data model.
- 3) What is relational algebra ? Explain any two operators.

5. Answer **any two** : (2×7=14)

- 1) What is functional dependency ? Explain fully functional dependency and transitive dependency.
  - 2) What are advantages of join ? Explain different types of join with e.g.
  - 3) Explain different notations in E-R model.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – V) Examination, 2017  
New (CGPA Pattern)  
Paper – III : CORE JAVA**

Time : 2.30 Hours

Total Marks : 70

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

1. Select the **correct** alternatives. **14**

- 1) Which of the following keyword is used to invoke superclass of an overridden method ?
  - a) Native
  - b) New
  - c) Super
  - d) Static
- 2) Which of the following modifiers can be used to disallow a method from being overridden ?.
  - a) Final
  - b) Transient
  - c) Volatile
  - d) None of these
- 3) A subclass is also called as \_\_\_\_\_
  - a) Inner class
  - b) Nested class
  - c) Derived class
  - d) Hidden class
- 4) In java, Method Overloading is not possible by changing the return type of the method.
  - a) True
  - b) False
- 5) Select the correct statement.
  - a) Method overloading is called compile time polymorphism
  - b) Method overriding is called runtime polymorphism
  - c) Only (b) is correct
  - d) Both (a) and (b) are correct



- 6) Which of the following is not supported by OOP ?
- a) Abstraction
  - b) Polymorphism
  - c) Encapsulation
  - d) Global variables
- 7) Java static property is shared to all objects.
- a) True
  - b) False
- 8) Java uses \_\_\_\_\_ to represent character.
- a) ASCII code
  - b) Unicode
  - c) Byte code
  - d) None of the above
- 9) In Java \_\_\_\_\_ is a mechanism to achieve full abstraction.
- a) Abstract class
  - b) Interface
  - c) Inheritance
  - d) Polymorphism
- 10) If there is no constructor in a class, compiler automatically creates a default constructor.
- a) True
  - b) False
- 11) Which of the following is an correct declaration for the main method in Java program ?
- a) Public static void main (String [] args)
  - b) Public static void main (String args [])
  - c) Both a and b
  - d) None of these
- 12) To copy the values of one object into another in java \_\_\_\_\_
- a) By constructor
  - b) By assigning the values of one object into another
  - c) By clone () method of Object class
  - d) All of these
- 13) Multiple inheritance is possible in Java by means of
- a) Package
  - b) Object
  - c) Interfaces
  - d) Class
- 14) Java supports operator overloading
- a) True
  - b) False



2. Solve **any seven** of the following : **14**
- a) Define dynamic method dispatch.
  - b) What is Exception handling ?
  - c) Define Multithreading.
  - d) Define Wrapper Class.
  - e) What is Java Applet ?
  - f) List the event classes.
  - g) Differentiate between C++ and Java.
  - h) Define synchronization.
  - i) What is Garbage collection in Java ?
3. A) Write the answer of the following questions (**any two**) : **10**
- a) Define this keyword. Explain with suitable example.
  - b) Explain with example different access modifiers available in Java.
  - c) What is collection framework in Java ? Explain with suitable example Hash Map.
- B) Explain the uses of final keyword with example. **4**
4. Write the answer of the following questions (**any two**). **14**
- a) Explain constructor overloading in java with example.
  - b) What is thread in Java ? Explain Lifecycle of a thread with diagram.
  - c) Define exception. Explain Exception handling in Java using throw and throws keyword.
5. Write the answer of the following questions (**any two**) . **14**
- a) What are the uses of super keyword ? Write a program to invoke immediate parent class method using super keyword.
  - b) Define package. Explain how to create and import package.
  - c) Write a program to implement mouse events.
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – V) (New CGPA) Examination, 2017**  
**COMPUTER SCIENCE (Paper – IV)**  
**Theory of Computer Science**

Time : 2.30 Hours

Total Marks : 70

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

1. Select **correct** alternative from the following : **14**

- 1) A grammar that produce more than one parse tree for some sentence is called \_\_\_\_\_
  - a) Context free
  - b) Regular
  - c) Ambiguous
  - d) None of these
- 2) In \_\_\_\_\_ machine the transition is associated with state.
  - a) Moore
  - b) Mealy
  - c) Both a and b
  - d) None of these
- 3) Number of states requires accepting string ends with 10.
  - a) 3
  - b) 2
  - c) 1
  - d) Can't be represented
- 4) Regular expression  $(a + b).(a + b)$  denotes the set \_\_\_\_\_
  - a) a
  - b) {aa,ba,ab,bb}
  - c) {abab}
  - d) {aabb}
- 5) The context free language is not closed under \_\_\_\_\_
  - a) Union
  - b) Intersection
  - c) Series
  - d) None of these



- 6) In CNF grammar is required in the form of \_\_\_\_\_
- a)  $A \rightarrow BC|a$
  - b)  $A \rightarrow a\alpha$
  - c) Both a and b
  - d) None of these
- 7) The \_\_\_\_\_ is accepted unrestricted grammar.
- a) TM
  - b) PDA
  - c) DFA
  - d) None of these
- 8) A finite automaton with stack is known as \_\_\_\_\_
- a) FA
  - b) TM
  - c) DFA
  - d) PDA
- 9) The regular expression for Arden's algorithm is \_\_\_\_\_
- a)  $R_{ij}^{(K)}$
  - b)  $R = R + QP$
  - c)  $R = Q + RP$
  - d) None of these
- 10) If  $L(r) = \{a, b, aa, bb, \dots\}$  then  $r =$  \_\_\_\_\_
- a)  $(a + b)$
  - b)  $(a + b)^*$
  - c)  $(a + b)^+$
  - d) None of these
- 11) Pumping lemma is a \_\_\_\_\_
- a) Powerful tool for providing certain languages non-regular
  - b) Powerful tool for providing certain languages context sensitive
  - c) Both a and b
  - d) None of these
- 12) If  $L(r) = \{a, aa, aaa, aaaa, aaaaa\}$  then  $r =$  \_\_\_\_\_
- a)  $a^*$
  - b)  $a^+$
  - c)  $a^5$
  - d)  $a^4$
- 13) The language accepted by finite automates are described or represented by simple expression called \_\_\_\_\_
- a) Grammar
  - b) Regular Set
  - c) Language
  - d) Regular expression
- 14) The transition function  $\delta: Q \times (\Sigma \cup \{\epsilon\}) \times \Gamma \rightarrow Q \times \Gamma^*$  is of \_\_\_\_\_
- a) PDA
  - b) FSM
  - c) Turing Machine
  - d) Mealy Machine



2. Solve **any seven** :

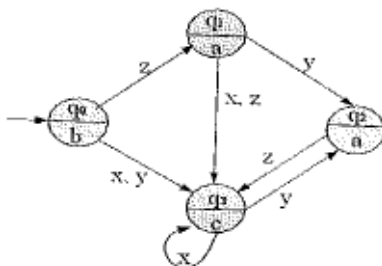
14

- 1) Construct DFA to Accept a string ending with 010 over {0, 1}.
- 2) Explain Turing Machine Model.
- 3) Let  $R = \{(1, 2), (2, 3), (2, 4)\}$  be a relation in {1, 2, 3, 4}. Find  $R^+$ .
- 4) State difference between DFA and NFA.
- 5) Find language for the following regular expression
  - a)  $ab^* + ab^*$
  - b)  $(0 + 1)^* 00(0 + 1)^*$
- 6) Give pictorial representation of PDA.
- 7) Explain notations used in CFG.
- 8) Define with example
  - a) Alphabet
  - b) Language
- 9) Construct NFA to Accept a string ending with abb Over {a, b}.

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

- 1) Construct relay machine equivalent to Moore machine.

5



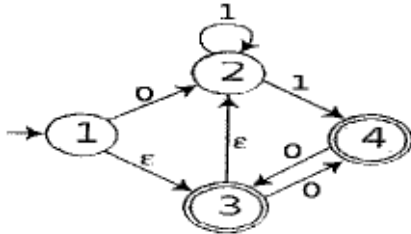
- 2) Construct TM for  $L = \{a^n b^n c^n | n \geq 1\}$ .

5



3) Construct DFA for NFA.

5



B) Convert the following right linear grammar to equivalent left linear grammar.

4

$$S \rightarrow 0A \mid 1B$$

$$A \rightarrow 0C \mid 1A \mid 0$$

$$B \rightarrow 1B \mid 1A \mid 0 \mid 1A \mid 1$$

$$C \rightarrow a$$

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

A) Find CNF for the following grammar

7

$$A \rightarrow A+A \mid A^*A \mid (A) \mid a$$

B) Check whether the following grammar is ambiguous or not ; if ambiguity found remove the ambiguity and rewrite an equivalent grammar.

7

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

C) Construct DFA for regular expression.

7

$$(0 + 1)^*00 + 1(0 + 1)^*$$

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

A) Construct Turing Machine for checking well formdness of parenthesis.

7

B) Construct DFA accepting the string over alphabets {0, 1, 2} beginning with 0 Ending with 2 and 11 as a Substring.

7

C) What is pumping lemma ? Using pumping lemma check  $\{a^p \mid p \text{ is prime}\}$  is regular or not.

7

---





Seat No.	
-------------	--

**B.Sc. (ECS) (Part – III) (Semester – V) (New CGPA) Examination, 2017  
Paper – V : WEB TECHNOLOGY AND E-COMMERCE – I**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternative:

**14**

- 1) The first event triggers in an aspx page is
  - a) Page\_Init ()
  - b) Page\_Load ()
  - c) Page\_click ()
  - d) Page\_Unload ()
- 2) Which of the following control is used to validate that two fields are equal ?
  - a) RegularExpressionValidator
  - b) CompareValidator
  - c) Equals() method
  - d) RequiredFieldValidator
- 3) You can have only one Global .asax file per project.
  - a) Yes
  - b) No
- 4) Web.config file is used \_\_\_\_\_
  - a) Configures the time that the server-side code behind module is called
  - b) To store the global information and variable definitions for the application
  - c) To configure the web server
  - d) To configure the web browser
- 5) \_\_\_\_\_ is a property common in every validation control.
  - a) ValidationExpression
  - b) ValueToCompare
  - c) ControlToCompare
  - d) ControlToValidate
- 6) Which of the following languages are used to write server side scripting in ASP.NET ?
  - a) C-sharp
  - b) VB
  - c) Both C-sharp and VB
  - d) C++

P.T.O.



- 7) EDI stands for \_\_\_\_\_
- a) Electronic Data Intersection
  - b) Electronic Data Interchange
  - c) Electronic Data Internet
  - d) None of the above
- 8) Which property is used to name a web control ?
- a) ControlName
  - b) Designation
  - c) ID
  - d) Name
- 9) Which of the following is application folder is used to store the database file ?
- a) App\_Code
  - b) App\_Theme
  - c) App\_Data
  - d) App\_Browser
- 10) ValidationSummary control in a webpage
- a) Shows all the error messages from the validators via E-mail
  - b) Shows all the error messages from the validators in one specific spot on the page
  - c) Show all the error messages from the validators in the next page
  - d) None of the above
- 11) By using which of the following attribute, HTML elements are transformed to HTML server control.
- a) runat="client"
  - b) runat="server"
  - c) runat="browser"
  - d) runat="host"
- 12) The method applied to change the styles of the elements in ASP.NET webpage is called \_\_\_\_\_
- a) Master page
  - b) Child page
  - c) Cascading style sheets
  - d) None of the above
- 13) Postback occurs in which of the following forms ?
- a) Winforms
  - b) HTML forms
  - c) Webforms
  - d) All of the above
- 14) To add a custom control to a web form we have to register with.
- a) Tagprefix
  - b) Name space with the dll that is referenced
  - c) Assembly name
  - d) All of the above



2. Answer the following **(any 7)** : **14**
- 1) Explain cross page posting.
  - 2) Define E-commerce.
  - 3) What is code behind page ?
  - 4) Draw a neat diagram of e-commerce trade cycle.
  - 5) What is RequiredFieldValidator ?
  - 6) What is Global.asax ?
  - 7) Define value chain and supply chain.
  - 8) Explain calendar control.
  - 9) Explain validation groups.
3. A) Answer the following **(any 2)** : **10**
- 1) Explain the ASP.NET page life cycle.
  - 2) Describe Electronic Market in detail.
  - 3) Describe TextBox, Label and Button control with example.
- B) Difference between ASP and ASP.NET. **4**
4. Answer the following **(any 2)** : **14**
- 1) Describe Themes and Skins in ASP.NET.
  - 2) Explain Nested master page with example.
  - 3) Explain Porter's value chain model.
5. Answer the following **(any 2)** : **14**
- 1) What are the ASP.NET application folders ?
  - 2) Explain validation controls.
  - 3) Explain any seven directives.
-



Seat No.	
-------------	--

**B.Sc. – III (Semester – V) (ECS) (New CGPA) Examination, 2017  
VISUAL PROGRAMMING AND APPLICATION SOFTWARE – I  
(Paper – VI)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives :

**14**

- 1) A type of class which does not have its own objects but acts as a base class for its subclass is known as \_\_\_\_\_
  - a) Static Class
  - b) Sealed class
  - c) Abstract class
  - d) None of the mentioned
- 2) Which of the following modifiers is used when an abstract method is redefined by a derived class ?
  - a) Overloads
  - b) Override
  - c) Base
  - d) Virtual
- 3) Choose the keyword which declares the indexer.
  - a) Base
  - b) This
  - c) Super
  - d) Extract
- 4) Which of these classes is used to read and write bytes in a file ?
  - a) FileReader
  - b) FileWriter
  - c) FileInputStream
  - d) InputStreamReader
- 5) Which of these data types is returned by every method of OutputStream ?
  - a) Int
  - b) Float
  - c) Byte
  - d) None of the mentioned

P.T.O.



- 6) Which of these is used as a default specifier for a member of the class if no access specifier is used for it ?
- a) Private
  - b) Public
  - c) Public, within its own class
  - d) Protected
- 7) Which keyword is used to declare a base class method while performing overriding of base class methods ?
- a) This
  - b) Virtual
  - c) Override
  - d) Extend
- 8) \_\_\_\_\_ is predefined reference type structure.
- a) Structure
  - b) Object
  - c) Enumeration
  - d) Class
- 9) Which of the following operator cannot be overloaded ?
- a) True
  - b) ==
  - c) &
  - d) +=
- 10) \_\_\_\_\_ constructor is called before any object of class is created.
- a) Copy
  - b) Default
  - c) Static
  - d) Private
- 11) \_\_\_\_\_ class helps us to perform tasks such as creating and setting priority of thread.
- a) Thread
  - b) Monitor
  - c) Mutex
  - d) ThreadPool
- 12) The thread can be synchronized by using method such as \_\_\_\_\_ of thread class.
- a) Sleep and join
  - b) Start and suspend
  - c) Join and resume
  - d) None
- 13) \_\_\_\_\_ is condition that is caused by a run time error in a
- a) Exception
  - b) Error
  - c) Both a & b
  - d) None of these
- 14) The \_\_\_\_\_ defines a set of rules that enables interoperability on the .Net platform.
- a) CLR
  - b) CLS
  - c) CTS
  - d) Both a and b



2. Answer the following (**any seven**) : 14
- 1) Explain command line argument.
  - 2) What is Boxing and Unboxing ?
  - 3) Explain Intermediate language.
  - 4) What is Garbage collection ?
  - 5) Define Constructor.
  - 6) Define File.
  - 7) What is Exception ?
  - 8) Define Thread.
  - 9) What is Namespace ?
3. A) Answer the following (**any two**) : 10
- 1) What is Polymorphism ? Explain in detail.
  - 2) List parameter passing technique and explain any one with example.
  - 3) Explain Thread synchronization with example.
- B) Write a program to overload unary operator. 4
4. Answer the following (**any two**) : 14
- 1) Write a program to create custom exception.
  - 2) What is Indexer ? Explain with proper example.
  - 3) Explain .Net Framework with suitable diagram.
5. Answer the following (**any two**) : 14
- 1) Explain Generic collection class in details.
  - 2) Explain Interface with Example.
  - 3) Write a program to copy content of one file to another.
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – V) (Old) Examination, 2017  
Paper – I : DATA COMMUNICATION AND NETWORKING – I**

Time : 2 Hours

Total Marks : 50

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

1. Choose the **correct** alternative. **10**

- 1) Network of networks is known as \_\_\_\_\_
  - a) Intranet
  - b) Internet
  - c) LAN
  - d) WAN
  
- 2) Which layer of OSI model is responsible for creating and recognizing frame boundaries ?
  - a) Physical layer
  - b) Transport layer
  - c) Data link layer
  - d) Network layer
  
- 3) Which of the following divides the high speed signal into frequency bands ?
  - a) T switch
  - b) TDM
  - c) FDM
  - d) CDM
  
- 4) Which error detection method consists of just one redundant bit per data unit ?
  - a) CRC
  - b) Checksum
  - c) Simple parity check
  - d) Two dimensional parity check
  
- 5) In virtual circuit network each packet contains \_\_\_\_\_
  - a) Full source and destination address
  - b) A short VC number
  - c) Both (a) and (b)
  - d) None of the mentioned



- 6) Sending packets to a group of stations is known as \_\_\_\_\_
  - a) Broadcasting
  - b) Multicasting
  - c) Unicasting
  - d) Point-to point
  
- 7) Which one of the following routing algorithm can be used for network layer design ?
  - a) Shortest path algorithm
  - b) Distance vector routing
  - c) Link state routing
  - d) All of the mentioned
  
- 8) In \_\_\_\_\_ resources are allocated on demand.
  - a) Line switching
  - b) Circuit switching
  - c) Packet switching
  - d) Frequency switching
  
- 9) Terminators are used in \_\_\_\_\_ topology.
  - a) Bus
  - b) Ring
  - c) Star
  - d) None of the above
  
- 10) Which of the following signals is not standard RS-232-C signal ?
  - a) VDR
  - b) CTS
  - c) RTS
  - d) DSR

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

- 1) Which are the two standards of data communications ?
- 2) What is meant by distortion ?
- 3) Explain broadcast network in short.
- 4) Explain characteristics of data communications system.
- 5) What is 1-persistent method ?
- 6) What is meant by flooding ?

3. A) Answer the following (any 2) : **6**

- 1) State the difference between circuit switching and packet switching.
- 2) Explain congestion prevention policies in detail.
- 3) Explain analog to analog conversion methods in short.

B) Explain various framing methods in detail. **4**





4. Answer the following **(any 2)** : **10**
- 1) Explain OSI model in detail with diagram.
  - 2) Explain shortest path routing.
  - 3) Explain hamming code in detail.
5. Answer the following **(any 2)** : **10**
- 1) Explain selective repeat ARQ protocol in detail.
  - 2) Explain communication satellite in detail.
  - 3) How can you control congestion in datagram subnets ?
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – V) (Old) Examination, 2017  
DATABASE MANAGEMENT SYSTEM – I (Paper – II)**

Time : 2 Hours

Total Marks : 50

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

1. Choose the **correct** alternatives. **10**
- 1) \_\_\_\_\_ manages the allocation of the space on disk.  
a) Transaction manager                      b) File manager  
c) Storage manager                              d) Buffer manager
  - 2) Specialization represents Bottom-up manager  
a) True    b) False
  - 3) The \_\_\_\_\_ relationship is maintained by hierarchical model.  
a) One to many                                  b) Many to many  
c) Many to one                                  d) None of these
  - 4) Fifth normal form is related to \_\_\_\_\_  
a) Functional dependency                      b) Join dependency  
c) Multi-valued dependency                      d) None of these
  - 5) Relational algebra is \_\_\_\_\_ query language.  
a) Procedural                                      b) Non-procedural  
c) Simple    d) None of these



- 6) \_\_\_\_\_ operator is used to find the common records from the tables.
- |              |              |
|--------------|--------------|
| a) Union     | b) Union all |
| c) Intersect | d) Minus     |
- 7) Each file is partitioned into fixed length storage unit called \_\_\_\_\_
- |           |                  |
|-----------|------------------|
| a) Column | b) Row           |
| c) Block  | d) None of these |
- 8) \_\_\_\_\_ store the data about data.
- |                    |                  |
|--------------------|------------------|
| a) Data file       | b) File manager  |
| c) Data dictionary | d) None of these |
- 9) DESC command is used under the \_\_\_\_\_
- |        |        |
|--------|--------|
| a) DDL | b) DML |
| c) DCL | d) TCL |
- 10) Selection operation is denoted by greek symbol
- |                       |                       |
|-----------------------|-----------------------|
| a) Sigma ( $\sigma$ ) | b) Pi ( $\pi$ )       |
| c) rho ( $\rho$ )     | d) Cross ( $\times$ ) |

2. Attempt **any five**.

10

- 1) Define instance and schema of database.
- 2) What is Generalization ?
- 3) What is difference between union and union all ?
- 4) List out DDL commands.
- 5) What is Domain ?
- 6) What is seek time ?

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

6

- 1) Explain relational algebra symbols.
- 2) Define super key, primary key and candidate key.
- 3) Explain set operators in SQL with example (Union and Intersection)

B) Differentiate between having and where clause with example.

4



4. Attempt **any two**. 10

- 1) Define DBMS and explain the role of DBA.
- 2) What is Normalization ? Explain 2 NF and 3 NF.
- 3) Explain string functions with example.

5. Attempt **any two**. 10

- 1) Explain Levels of Data Abstraction.
  - 2) Differentiate between hierarchical and Network data model.
  - 3) What is join ? Explain different types of join.
-





- B) State whether **true** or **false** : **3**
- 1) Package is a collection of interfaces and classes.
  - 2) Float f = 10.20 is valid declaration of a float in java.
  - 3) JVM stands for Java Virtual Machine.
2. Solve **any five** questions. **10**
- 1) What is static keywords ?
  - 2) What is abstract method ?
  - 3) What is garbage collection ?
  - 4) Define serialization and de-serialization.
  - 5) What is byte code ?
  - 6) What are the different listeners used for event handling ?
3. A) Solve **any two** questions. **6**
- 1) Difference between abstract class and interface.
  - 2) What is the final keyword ? Explain with suitable example.
  - 3) What is package ? Write steps to create package.
- B) Write a program that demonstration use of 'ArrayIndexOutOfBoundsException' class. **4**
4. Solve **any two** questions. **10**
- 1) What is inheritance and explain type of inheritance ?
  - 2) Write a program that demonstrate communication between two threads.
  - 3) Write a program Addition of two matrices.
5. Solve **any two** questions. **10**
- 1) Explain different classes and interfaces used in java networking.
  - 2) Explain Thread synchronization with example.
  - 3) Write a program that will demonstrate multiple inheritance like mechanism in java.
-





- 6) NFA is more powerful than DFA.  
a) True b) False
- 7) Regular expression are \_\_\_\_\_  
a) Type 0 language b) Type 1 language  
c) Type 2 language d) Type 3 language
- 8) All possible subset of set is known as \_\_\_\_\_  
a) Sub set b) Power set  
c) Super set d) None of these
- 9) The \_\_\_\_\_ machine has infinite tape two both side.  
a) TM b) PDA  
c) DFA d) None of these
- 10) CFL is not closed under \_\_\_\_\_  
a) Union b) Intersection  
c) Difference d) All of the mentioned

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

10

- 1) What are the applications of DFA ?
- 2) Let  $R = \{(1, 2), (2, 3), (2, 4)\}$  be a relation in  $\{1, 2, 3, 4\}$ . Find  $R^+$ .
- 3) State difference between Moore and Mealy machine.
- 4) Give the instantaneous description of Turing Machine.
- 5) Show that  $(a + b)^* = (a + b)^* + (a + b)^*$
- 6) How many ways PDA accept language ? Give the names.

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

6

- 1) Design a DFA which accept number is even or odd.
- 2) Define a) Alphabet b) Regular expression.
- 3) Construct TM for  $L = \{a^n b^n c^n | n \geq 1\}$

B) Construct Mealy machine for increment binary number.

4





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

1) What is pumping lemma ? Using pumping lemma check  $L = \{a^n b^{n+1} | n \geq 1\}$  is regular or not.

2) For the grammar

$$S \rightarrow aABB | aAA$$

$$A \rightarrow aBB | a$$

$$B \rightarrow bBB | A$$

$$C \rightarrow a$$

Obtain the corresponding PDA.

3) Construct GNF for following grammar :

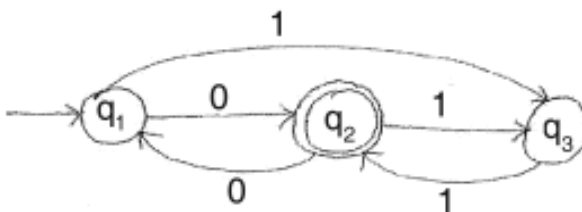
$$S \rightarrow S+S | S^*S | id$$

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

1) Design a PDA for accepting palindrome string over  $\Sigma = \{0,1\}$ .

2) Obtain an FA for the regular expression  $(a+b)^*aab^*(a+b)^*$ .

3) Find out RE for following DFA by using  $R_{ij}^{(K)}$ .



---



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – V) (Old) Examination, 2017  
COMPUTER SCIENCE (Paper – V)  
Web Technology and E-Commerce – I**

Time : 2 Hours

Total Marks : 50

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

1. Choose the **correct** alternatives : **10**

- 1) On which of the operating system below ASP.NET can run ?
  - a) Windows XP Professional
  - b) Windows 2000
  - c) Both a) and b)
  - d) None of the above
- 2) ASP.NET separates the HTML output from program logic using a feature named as
  - a) Exception
  - b) Code-behind
  - c) Code-front
  - d) None of the above
- 3) Which of the following languages can be used to write server side scripting in ASP.NET ?
  - a) C#
  - b) C
  - c) Java
  - d) Cobol
- 4) It is possible to set Maximum length for a text box through code.
  - a) True
  - b) False
- 5) Select the validation control used for “PatternMatching”.
  - a) FieldValidator
  - b) RegularExpressionValidator
  - c) RangeValidator
  - d) PatternValidator



- 6) What is the purpose of code behind ?
  - a) To separate different sections of a page into different files
  - b) To merge HTML layout and code into one file
  - c) To separate HTML Layout and code to different file
  - d) To ignore HTML usage
- 7) Which of the following control is used to validate that two fields are equal ?
  - a) RegularExpressionValidator
  - b) CompareValidator
  - c) Equals() method
  - d) RequiredFieldValidator
- 8) What type of commerce is enabled by technology ?
  - a) T-Commerce
  - b) E-Commerce
  - c) I-commerce
  - d) W-Commerce
- 9) Which products are people most likely to be more uncomfortable buying on the Internet ?
  - a) Books
  - b) Furniture
  - c) Movies
  - d) All of the above
- 10) What does Porter's five forces model determine ?
  - a) The relative attractiveness of an industry
  - b) The competitive advantage of a competitor
  - c) The distribution chain of a competitor
  - d) The relative attractiveness of another business

2. Solve **any five** :

10

- 1) ASP.NET Page Events
- 2) What is the use of @ Import Directive ?
- 3) List out Asp.net AppFolders.
- 4) Define E-Commerce.
- 5) Advantages of E-Commerce.
- 6) What do you mean by validation ?



3. A) Solve **any two** : **6**
- 1) Explain Asp.net page life cycle in detail.
  - 2) Asp.net page compilation in detail.
  - 3) Explain Electronic Data Interchange (EDI) in detail.
- B) Create a web page which shows AdRotator server control. **4**
4. Solve **any two** : **10**
- 1) Explain porter value chain model in detail.
  - 2) Explain client side validation control with example.
  - 3) Explain first mover advantage in detail with example.
5. Solve **any two** : **10**
- 1) Explain trade cycle in detail.
  - 2) Create a web page for student registration which accepts only valid data.
  - 3) Prepare a case study for Airline ticket booking system.
-





8) Every class directly or indirectly extends the \_\_\_\_\_ class.

- a) System                      b) Object                      c) Drawing                      d) Console

9) \_\_\_\_\_ method used for destroying thread.

- a) abort()                      b) start()                      c) suspend                      d) sleep()

10) \_\_\_\_\_ keyword is used to manually throw an exception.

- a) Try                      b) Catch                      c) Finally                      d) Throw

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

- 1) What is the use of do – while loop ?
- 2) What is string ? How strings are declared ?
- 3) What is structure ? How it is created in C# ?
- 4) What is the use of throw keyword ?
- 5) Differentiate between value type and reference type.
- 6) What is function overloading ?

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

- 1) Differentiate between class and structure.
- 2) What is abstract method explain with suitable example ?
- 3) Explain sleep and join method of thread.

B) What is static polymorphism ? Write a C# program to overload print () method using integer, double and string parameter. **4**

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

- 1) What is reflection ? Explain System. Type Class with its property.
- 2) Explain need of operator overloading with suitable example.
- 3) Write a C# program to demonstrate use of DirectoryInfo Class.

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

- 1) Explain thread life cycle in detail.
  - 2) What are the different exception classes in C# ? Write a program to handle System.InvalidCastException.
  - 3) What is interface ? Write a C# program to implement multiple inheritance.
-



<b>Seat No.</b>	
---------------------	--

**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017  
DATA COMMUNICATIONS AND NETWORKING – II (Paper – I)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternative.

**14**

- 1) \_\_\_\_\_ Server allow Linux systems to access shared files and printers on Windows systems.  
a) Tux  
b) Squid  
c) Samba  
d) FTP
- 2) \_\_\_\_\_ is used in the delivery of voice communications and multimedia sessions on the internet.  
a) GPRS  
b) VOIP  
c) GPS  
d) GSM
- 3) \_\_\_\_\_ partition holds the LINUX Kernel.  
a) Boot  
b) Root  
c) Home  
d) None
- 4) \_\_\_\_\_ operates at the physical layer of the OSI protocol hierarchy.  
a) Hubs  
b) Repeaters  
c) Routers  
d) Bridges
- 5) \_\_\_\_\_ is a suitable transport protocol for multicasting.  
a) TCP  
b) IP  
c) UDP  
d) ARP

**P.T.O.**



- 6) Which of the following network devices/systems translates data from one format to another ?
- a) Hub
  - b) Repeaters
  - c) Gateway
  - d) NIC
- 7) SMTP uses \_\_\_\_\_ port number.
- a) 22
  - b) 80
  - c) 21
  - d) None
- 8) \_\_\_\_\_ is a for secure exchange of information between a web server and web browser.
- a) TLS
  - b) PGP
  - c) SSL
  - d) SET
- 9) Class \_\_\_\_\_ addresses were designed for small organizations.
- a) B
  - b) C
  - c) D
  - d) A
- 10) In \_\_\_\_\_ cryptography, same key is used for encryption and decryption.
- a) Asymmetric key
  - b) Public key
  - c) Private key
  - d) Protected key
- 11) Piconet can have \_\_\_\_\_ stations.
- a) 7
  - b) 8
  - c) 5
  - d) None
- 12) \_\_\_\_\_ layer handles user authentication and nonrepudiation issues in network security.
- a) Physical
  - b) Data link
  - c) Application
  - d) Transport
- 13) \_\_\_\_\_ provides authentication by the use of digital certificates.
- a) SET
  - b) SSL
  - c) TLS
  - d) PGP
- 14) \_\_\_\_\_ is the measurement and statistical analysis of people's physical and behavioural characteristics.
- a) Biometrics
  - b) Smart cards
  - c) Passwords
  - d) None





2. Answer the following (**any 7**). **14**
- 1) What is a predictive encoding ?
  - 2) What is meant by encryption and decryption ?
  - 3) What is the use of gateways in network ?
  - 4) Which are the three modes for operating of TELNET ?
  - 5) Which are the various services of SET ?
  - 6) Which are the various services offered by GPRS ?
  - 7) What is a proxy ARP ?
  - 8) Explain functionalities of S/MIME.
  - 9) Explain ALERT protocol.
3. A) Answer the following (**any 2**). **10**
- 1) Explain substitution cipher with example.
  - 2) Mention the uses of UDP.
  - 3) Explain the types of bridges.
- B) Convert following IP address into dotted decimal notation and recognize their class. **4**
- 1) 11011111.00011111.11110010.11110000
  - 2) 11110000.00001111.11001100.00110011
4. Answer the following (**any 2**). **14**
- 1) Explain IPv4 with diagram of IP packet.
  - 2) Explain PGP in detail.
  - 3) Explain Samba server in detail.
5. Answer the following (**any 2**). **14**
- 1) Explain security services in detail.
  - 2) Explain Bluetooth with its applications.
  - 3) Explain video compression in detail.
-



Seat No.	
----------	--

**B.Sc. (ECS) (Part – III) (Semester – VI) (New CGPA) Examination, 2017  
COMPUTER SCIENCE (Paper – II)  
Database Management System – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives : **14**

1) \_\_\_\_\_ is collection of operations that performs a single logical task in database application.

- A) Interaction                                      B) Operation  
C) Transaction                                     D) None of the above

2) Declare  
fvar number := null; svar number := 5  
Begin  
goto << fproc>>  
if fvar is null then  
<< fproc>>  
svar := svar + 5  
end if ;  
End;

What will be the value of svar after the execution ?

- A) Error    B) 10  
C) 5    D) None of the above

3) If a transaction acquires shared lock, then it can perform \_\_\_\_\_ operation.

- A) read    B) write  
C) read and write                                D) update

4) Which of the following has “all or none” property ?

- A) automicity                                      B) consistency  
C) isolation                                         D) durability



- 5) Which of the following is not a recovery technique ?
- A) deferred update                      B) immediate update  
C) two phase commit                      D) recovery management
- 6) \_\_\_\_\_ is alternative of log based recovery.
- A) disk recovery                      B) shadow paging  
C) disk shadowing                      D) crash recovery
- 7) Deadlock exists in the system if and only if the wait for graph \_\_\_\_\_
- A) has a cycle in it  
B) has a path from first node to last node  
C) is a tree  
D) none of the mentioned
- 8) \_\_\_\_\_ of the following is not a proper state of transaction.
- A) Partially aborted                      B) Partially committed  
C) Aborted                      D) Committed
- 9) It possible to open a cursor which is in a package in another procedure ?
- A) True                      B) False
- 10) The \_\_\_\_\_ kind of parameter does not have default value.
- A) In                      B) Out  
C) Check                      D) None of these
- 11) The pre-defined exception TOO MANY ROWS raised when \_\_\_\_\_
- A) Memory was run out  
B) Incompatible types  
C) Select statements return more than one row  
D) None of the above
- 12) Which of the following is not correct about user defined exceptions ?
- A) must be declared  
B) must be raised explicitly  
C) raised automatically in response to oracle error  
D) none of the above



- 13) What are the different events which cause to fire the trigger ?
- A) Define, create
  - B) Drop, comment
  - C) Insert, update, delete
  - D) All of the above

- 14) Using procedure you can return more than one value.
- A) True
  - B) False

2. Solve **any seven** : **14**

- 1) Give the need of serializability.
- 2) Give the names of states in transaction.
- 3) Define cursor.
- 4) Write syntax of package.
- 5) List the attributes used in explicit cursor.
- 6) Give any two applications of trigger.
- 7) What is difference between % type and % rowtype ?
- 8) How to avoid network traffic problem using PL/SQL ?
- 9) What are the drawbacks of shadow-paging technique ?

3. A) Solve **any two**. **10**

- 1) What is exception ? List out pre-defined exceptions. Give one example.
- 2) Explain deadlock detection in details.
- 3) Explain the use of % rowcount attribute of explicit cursor with suitable example.

B) Write note on checkpoints. **4**

4. Solve **any two** questions. **14**

- 1) Why recovery is needed ? Explain recovery methods.
- 2) What is serializability ? Explain types of serializability.
- 3) Write PL/SQL trigger for generating primary key.

5. Solve **any two** questions. **14**

- 1) Explain parameterized cursor with example.
  - 2) Write a PL/SQL code for find out perfect number by using function.
  - 3) Explain log based recovery in detail.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017**  
**COMPUTER SCIENCE (Paper – III)**  
**Advanced Java**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternatives : **14**
- 1) All servlet classes are required to be mapped and configured in web.xml  
a) True b) False
  - 2) Which of the following is efficient than statement due to pre-compilation of SQL ?  
a) CallableStatement b) PreparedStatement  
c) Both a and b d) None of the above
  - 3) Which of the following is true about servlets ?  
a) Servlets execute within the address space of a Web server.  
b) Servlets are platform-independent because they are written in Java  
c) The full functionality of the Java class libraries is available to a servlet  
d) All of the above
  - 4) Session is instance of which class ?  
a) Session b) HttpSession  
c) HttpSession d) ServletSession
  - 5) The following specifies the advantages of it is lightweight. It supports pluggable look and feel.  
a) Swing b) AWT  
c) Both a & b d) None of the above



- 6) Which of these class is used to create servers that listen for either local or remote client programs ?
  - a) httpServer
  - b) ServerSockets
  - c) MimeHeader
  - d) HttpResponse
- 7) How many JDBC driver types does sun define ?
  - a) One
  - b) Two
  - c) Three
  - d) Four
- 8) A jsp is transformed into a \_\_\_\_\_
  - a) Java servlet
  - b) Java applet
  - c) Both a and b
  - d) None of these
- 9) \_\_\_\_\_ is the deployment descriptor file in servlet.
  - a) servlet.xml
  - b) web.xml
  - c) servlet.html
  - d) WEB-INF.xml
- 10) \_\_\_\_\_ method is used to set the size of window.
  - a) setHeight ()
  - b) setWidth ()
  - c) setSize
  - d) Both a and b
- 11) Which classes are used for connection-less socket programming ?
  - a) DatagramSocket
  - b) DatagramPacket
  - c) Both a and b
  - d) None of the above
- 12) By Default Tomcat runs on port
  - a) 1080
  - b) 8080
  - c) 8081
  - d) 9090
- 13) In URL query string, parameter pairs are separated using \_\_\_\_\_ symbol.
  - a) ?
  - b) =
  - c) &
  - d) None of these
- 14) JComboBox uses \_\_\_\_\_ Event to select an item form it.
  - a) Window
  - b) Action
  - c) Item
  - d) None of these



2. Solve **any seven** : **14**
- 1) What is the difference between doGet() and doPost() ?
  - 2) Explain hidden form field.
  - 3) Explain JTabbedPane.
  - 4) Explain plug-in action element.
  - 5) List out the scriptlet tags.
  - 6) Thin driver.
  - 7) Explain java.net package.
  - 8) Explain use of Filter interface.
  - 9) List out the JSTL tags.
3. A) Solve **any two** : **10**
- 1) Explain Servlet Life Cycle.
  - 2) Explain prepared Statement with an example.
  - 3) Explain working of TCP/IP.
- B) Design a servlet page to handle HttpSession. **4**
4. Solve **any two** : **14**
- 1) What is JSTL ? Explain Core Tag Library.
  - 2) Write a servlet to display "Hello TYBCS"
  - 3) Explain JApplet Life Cycle.
5. Solve **any two** : **14**
- 1) Design a JFrame to demonstrate JCheck Box Control.
  - 2) Explain Datagram in detail.
  - 3) Write a program to make database connection with oracle using thin driver.
-



Seat No.	
----------	--

**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017  
COMPLIER CONSTRUCTION (Paper – IV)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternative for the following : **14**
- 1) One complete scan of the source language is called \_\_\_\_\_
    - a) Pass
    - b) Phase
    - c) Both a and b
    - d) None of these
  - 2) \_\_\_\_\_ generators generate lexical analyzer.
    - a) Parser generator
    - b) Data flow engines
    - c) Scanner generator
    - d) Automatic code
  - 3) \_\_\_\_\_ set of rules describe the token.
    - a) Tokens
    - b) Patterns
    - c) Lexemes
    - d) None of these
  - 4) In \_\_\_\_\_ parsing the parse tree is generated from top to bottom.
    - a) Topdown parser
    - b) Bottomup parser
    - c) Both a and b
    - d) None of these
  - 5) The parser that uses collection of recursive procedures for parsing the given input string is called \_\_\_\_\_
    - a) Recursive descent parser
    - b) Shift reduce parser
    - c) LL (1) parser
    - d) LR parser
  - 6) \_\_\_\_\_ is defined as the set of terminal symbol that appear immediately the right of A.
    - a) First()
    - b) Goto()
    - c) Closure()
    - d) Follow()





- 7) The syntax directed definition that uses only synthesized attributes is called \_\_\_\_\_
- a) S-attributed definition                      b) L-attributed definition  
c) Both a and b                                      d) None of these
- 8) \_\_\_\_\_ allocation is done for all data objects at compile time.
- a) Static    b) Stack  
c) Heap    d) None of these
- 9) A \_\_\_\_\_ is a context grammar together with attributes and rules.
- a) Syntax-Directed Definition                  b) S-attributed definition  
c) L-attributed definition                        d) All of the above
- 10) \_\_\_\_\_ represents the pattern for number.
- a)  $[a-zA-Z][a-zA-Z0-9]^*$                       b)  $[0-9][0-9]^*$   
c)  $<=|>|==|>=$                                   d) None of these
- 11) For the grammar  $S \rightarrow (L) \mid a \mid L \rightarrow L, S \mid S$  the  $\text{First}(L) =$  \_\_\_\_\_
- a)  $\{(,)\}$     b)  $\{(,),a\}$   
c)  $\{),a\}$     d)  $\{(,a\}$
- 12) Backtracking and no backtracking are occur on \_\_\_\_\_
- a) Topdown parser                                b) Bottomup parser  
c) Both a and b                                    d) None of these
- 13) \_\_\_\_\_ is a translation scheme in which the type of each expression is obtained from the types of subexpressions.
- a) Type checking                                b) Type analysis  
c) Both a and b                                    d) None of these
- 14) \_\_\_\_\_ is a compiler which performs the recompilation of only modified source rather than compiling the whole source program.
- a) Cross compiler                                b) Boot strapping compiler  
c) One pass compiler                            d) Incremental compiler



2. Answer the following (**any 7**) : **14**

- 1) Define Incremental Compiler.
- 2) Define Lexemes.
- 3) What is shift-reduce and reduce-reduce conflict ?
- 4) What is need of semantic analysis ?
- 5) Write the SDD for the following grammar.

$S \rightarrow EN$

$E \rightarrow E+T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow \text{digit} \mid (E)$

$N \rightarrow ;$

- 6) What is Symbol Table ?
- 7) Define Basic Blocks.
- 8) Explain Pre-Header.
- 9) Generate the Three address code for a following expression.

$X := a + b * c + d ;$

3. A) Answer the following (**any 2**) : **10**

- 1) Consider the CFG as,

$S \rightarrow EN$

$E \rightarrow E+T$

$E \rightarrow E-T$

$E \rightarrow T$

$T \rightarrow T * F$

$T \rightarrow T / F$

$T \rightarrow F$

$F \rightarrow (E)$

$F \rightarrow \text{digit}$

$N \rightarrow ;$

Construct parse tree and annotated parse tree for the input string  $5 * 6 + 7 ;$



2) Consider the following grammar,

$S \rightarrow aABe$   $A \rightarrow Abc|b$   $B \rightarrow d$

Find the Handles for the String “abbcd”.

3) Explain Activation Record in detail.

B) Explain the concept of Input Buffering.

4

4. Answer the following (any 2) :

14

1) Find out SLR parse table for the following grammar :

$E \rightarrow E+T|T$

$T \rightarrow T^*F|F$

$F \rightarrow (E)|id$

2) Construct the DAG for the following block.

$a := b * c$

$d := b$

$e := d * c$

$b := e$

$f := b + c$

$g := f + d$

3) Explain principle sources of optimization.

5. Answer the following (any 2) :

14

1) Write the following expression in syntax tree, postfix notation and Three address code of intermediate representations.

$(a - b) * (c + d) - (a + b)$

2) Explain Peephole optimization.

3) Test whether following grammar is LL (1) or not.

$E \rightarrow E+T|T$

$T \rightarrow TF|F$

$F \rightarrow F^*T|a|b.$

---



Seat No.	
-------------	--

**B.Sc. – III (ECS) (Semester – VI) (New CGPA) Examination, 2017  
WEB TECHNOLOGY AND E-COMMERCE – II (Paper – V)**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose **correct** alternatives.

**14**

- 1) We can manage the states in ASP.NET application using \_\_\_\_\_
  - a) Session object
  - b) Application object
  - c) View state
  - d) All of above
- 2) \_\_\_\_\_ .dll translate XML to SQL in IIS.
  - a) SQLISAPI.dll
  - b) SQLXML.dll
  - c) SQLIIS.dll
  - d) LISXML.dll
- 3) Mode of storing ASP.net session \_\_\_\_\_
  - a) inproc
  - b) stateserver
  - c) sqlserver
  - d) all of above
- 4) \_\_\_\_\_ is faster and consume lesser memory.
  - a) SqlDataReader
  - b) Dataset
  - c) Data Adapter
  - d) None
- 5) \_\_\_\_\_ mode stores Session data in ASP.Net.
  - a) StateServer
  - b) Session Object
  - c) InProcess
  - d) All of the above
- 6) AJAX stands for \_\_\_\_\_
  - a) Asynchronous java script and XML
  - b) Asynchronous java and XML
  - c) Asymmetric java script and XML
  - d) None



- 7) We can have only one Global.asax file per project.
  - a) Yes
  - b) No
  
- 8) The \_\_\_\_\_ control provides to display different image on page each time it is loaded.
  - a) Repeater
  - b) Image
  - c) ImageMap
  - d) Adrotator
  
- 9) \_\_\_\_\_ of the following are the benefits of E-marketing.
  - a) Speed
  - b) Reach and Penetration
  - c) Ease and Efficiency
  - d) All
  
- 10) \_\_\_\_\_ is simply the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash.
  - a) M-Banking
  - b) O-Banking
  - c) E-Banking
  - d) Both a and c
  
- 11) \_\_\_\_\_ is not a member of ADODB Command object.
  - a) ExecuteScalar
  - b) ExecuteStream
  - c) Open
  - d) ExecuteReader
  
- 12) \_\_\_\_\_ authentication is best suited for a corporate network.
  - a) Windows
  - b) Form
  - c) User
  - d) All
  
- 13) \_\_\_\_\_ is not a site navigation technique.
  - a) Tree
  - b) Menu
  - c) Querystring
  - d) SiteMap
  
- 14) The GridView control in ASP.NET has which of the following features.
  - a) Automatic data binding
  - b) Automatic paging
  - c) Both a and b
  - d) None of these

2. Answer the following (**Any seven**):

14

- 1) Explain Hidden Field Control.
- 2) Define Tracing.



- 3) Explain E-Diversity.
- 4) Define stored procedure.
- 5) Explain User. Identity.
- 6) Explain XML ? List uses of XML.
- 7) What is AJAX ?
- 8) Explain Data Adapter.
- 9) Explain Http.

3. A) Answer the following **(Any two)** : **10**
- 1) What are the features of electronic markets ?
  - 2) Explain different Executing commands in ADO.NET.
  - 3) Write a short note on EDI.
- B) Write a difference between HTTP and HTTPS. **4**
4. Answer the following **(Any two)** : **14**
- 1) Explain different state management technique with example.
  - 2) Explain Data Reader and Data Adapter with example.
  - 3) Explain ADO.NET architecture with diagram.
5. Answer the following **(Any two)** : **14**
- 1) Explain different site Navigation technique in asp.net.
  - 2) List the advantages of AJAX and explain timer control with example.
  - 3) Write a short note on :
    - A) E-Shop
    - B) Electronic Newspapers
    - C) Internet Banking.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – VI) Examination, 2017  
(New CGPA)  
Paper – VI : VISUAL PROGRAMMING AND APPLICATION  
SOFTWARE – II**

Time : 2.30 Hours

Total Marks : 70

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

1. Choose the **correct** alternative. **14**
- 1) Which of the following is the necessary condition for implementing delegates ?
    - a) Class declaration
    - b) Inheritance
    - c) Run-time Polymorphism
    - d) Exceptions
  - 2) Which of the following assemblies can be stored in Global Assembly Cache ?
    - a) Private Assemblies
    - b) Friend Assemblies
    - c) Shared Assemblies
    - d) Public Assemblies
  - 3) LINQ query can work with \_\_\_\_\_
    - a) DataSet
    - b) List<T>
    - c) Array
    - d) All of the above
  - 4) Crystal reports are divided into \_\_\_\_\_ parts.
    - a) 2
    - b) 4
    - c) 5
    - d) 6
  - 5) IDE stands for \_\_\_\_\_
    - a) Integrated Development Environment
    - b) Integral Development Environment
    - c) Integral Deployment Environment
    - d) Internal Development Environment



- 6) Properties can be viewed in two ways
- a) Alphabetic and Categorized
  - b) Alphabetic and Numeric
  - c) Numeric and Alphanumeric
  - d) None of these
- 7) Which of the following provides quick access to commonly used commands in the programming environment ?
- a) Toolbox
  - b) Object browser
  - c) Toolbar
  - d) None of these
- 8) \_\_\_\_\_ control is used to display text, but user cannot change it directly.
- a) Textbox
  - b) Label
  - c) Listbox
  - d) Command button
- 9) \_\_\_\_\_ is a collection of code which translates application request into physical operation on data store.
- a) Database
  - b) Data provider
  - c) Interface
  - d) None of these
- 10) An event has \_\_\_\_\_ as default return type.
- a) No return type for events
  - b) String
  - c) Double
  - d) Integer
- 11) To display an icon during runtime in the notification area using \_\_\_\_\_
- a) ToolTip
  - b) Iconview
  - c) Notify
  - d) NotifyIcon
- 12) \_\_\_\_\_ assemblies can be used by different non related application.
- a) Shared Assembly
  - b) Private assemble
  - c) Multi-module
  - d) Local assembly
- 13) Which windows displays a list of all forms and modules making up your application ?
- a) Project window
  - b) Properties window
  - c) Form layout window
  - d) All of the above
- 14) \_\_\_\_\_ provides an organized view of files related to a project.
- a) Properties window
  - b) Solution Explorer
  - c) Toolbox
  - d) All of these





2. Answer the following (**any 7**) **14**
- 1) What is selection and projection in LINQ ?
  - 2) What is MDI ?
  - 3) What is Custom Control ?
  - 4) What is event ?
  - 5) What is DLL ?
  - 6) What is Multicast delegate ?
  - 7) What is difference between key down and key press ?
  - 8) What is Assembly ?
  - 9) What is purpose of crystal report ?
3. A) Answer the following (**any 2**) : **10**
- 1) What is use of delegates ? Write simple example of delegate in C# .
  - 2) Explain types of assemblies.
  - 3) Explain various types of crystal report.
- B) Explain any two controls in C#. **4**
4. Answer the following (**any 2**) : **14**
- 1) Describe Multicast event with example.
  - 2) Explain LINQ query with example.
  - 3) Write windows application that will accept number in textbox and show message given no is prime or not.
5. Answer the following (**any 2**) : **14**
- 1) How to use LINQ to SQL to execute stored procedure ?
  - 2) Demonstrates declaration, instantiation of a delegate.
  - 3) Write progress bar and Scrollbar in C#.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – I : Data Communication and Networking – II**

Time : 2 Hours

Total Marks : 50

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

1. Choose **correct** alternatives. **10**

1) IP address \_\_\_\_\_ the address.

- |                   |                         |
|-------------------|-------------------------|
| a) Is the same as | b) Has no relation with |
| c) Means          | d) None of the above    |

2) In cryptography, what is cipher ?

- a) Algorithm for performing encryption and decryption
- b) Encrypted message
- c) Both (a) and (b)
- d) None of the mentioned

3) POP stands for.

- |                          |                         |
|--------------------------|-------------------------|
| a) Protocol On Procedure | b) Post Office Protocol |
| c) Page Off Procedure    | d) Post Open Protocol   |

4) Which protocol works at the internet layer and provides and provides connection service between hosts ?

- |        |        |
|--------|--------|
| a) IP  | b) ARP |
| c) TCP | d) UDP |

P.T.O.



- 5) Bluetooth is the wireless technology for \_\_\_\_\_
- a) Local Area Network
  - b) Personal Area Network
  - c) Wide Area Network
  - d) Metropolitan Area Network
- 6) When displaying the web page, the application layer uses \_\_\_\_\_
- a) HTTP protocol
  - b) FTP protocol
  - c) SMTP protocol
  - d) None of these
- 7) \_\_\_\_\_ protocol is used to access data on WWW.
- a) FTP
  - b) POP3
  - c) SMTP
  - d) HTTP
- 8) Which protocol is used to find the hardware address of a local device ?
- a) RARP
  - b) ARP
  - c) TCP
  - d) UDP
- 9) SMTP uses \_\_\_\_\_ port number.
- a) 79
  - b) 69
  - c) 25
  - d) 80
- 10) ARP is part of \_\_\_\_\_
- a) Network layer
  - b) Physical layer
  - c) Application layer
  - d) Transport layer

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

**10**

- 1) What is VPN ?
- 2) Explain POP.
- 3) Define Encryption and Decryption.
- 4) Explain Proxy server.
- 5) What is Repeater ?
- 6) What is Switch ?

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

**6**

- 1) Explain Digital Signature.
- 2) Explain Transport mode of IP security.
- 3) What is RARP ?

B) Which are the responsibilities of Network Administrator.

**4**



4. Answer **any two** of the following : 10
- 1) Explain Bluetooth.
  - 2) Explain PGP in detail.
  - 3) Explain authentication mechanism biometrics.
5. Answer **any two** of the following : 10
- 1) Explain Wi-Fi network.
  - 2) Explain E-mail security in detail.
  - 3) Explain UDP in detail.
-



Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017**  
**Paper – II : DATABASE MANAGEMENT SYSTEM – II**

Time : 2 Hours

Total Marks : 50

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

1. Choose **correct** alternatives : **10**
- 1) \_\_\_\_\_ of transactions improve the throughput of transactions, system utilization and reduce waiting time of transactions.
    - a) atomicity
    - b) consistency
    - c) concurrent execution
    - d) none of the above
  - 2) Two phase locking protocol can be implemented by using a \_\_\_\_\_
    - a) a system clock
    - b) logical counter
    - c) both a and b
    - d) none of the above
  - 3) Only one \_\_\_\_\_ lock can be placed on a resource at a time.
    - a) Exclusive
    - b) Shared
    - c) Both
    - d) None of above
  - 4) In 2 phase locking protocol all locks are acquired in \_\_\_\_\_ phase.
    - a) growing phase
    - b) shrinking phase
    - c) transaction phase
    - d) all of above
  - 5) The point of synchronization between the database and the transaction log file is \_\_\_\_\_
    - a) Median point
    - b) Check point
    - c) UNDO and REDO
    - d) None of the above



- 6) \_\_\_\_\_ ensures that concurrently executing transactions are isolated from one another, so that each has impression that no other transaction is executing concurrently with it.
- a) Isolation
  - b) Atomicity
  - c) Committed
  - d) Durability
- 7) The \_\_\_\_\_ attribute is used to declare variable based on definition of column.
- a) %rowtype
  - b) %type
  - c) Type
  - d) Int
- 8) When a transaction never progress then we say that it is
- a) aborted
  - b) starved
  - c) shared
  - d) locked
- 9) Two actions on same data object are conflict if one of them
- a) read
  - b) write
  - c) read/write
  - d) none of them
- 10) The process of restoring the database to a correct state in the event of a failure is known as \_\_\_\_\_
- a) database recovery
  - b) database modification
  - c) transaction
  - d) none of them

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

10

- 1) What is transaction ?
- 2) Give the difference between % type and %rowtype.
- 3) Define check point.
- 4) Write a definition of timestamp.
- 5) Write use of out parameter in PL/SQL.
- 6) Write a syntax of stored procedure.



3. A) Answer **any two** of the following : **6**
- 1) Write a PL\SQL procedure for check given number is palindrome or not.
  - 2) Explain different types of cursor attributes.
  - 3) Discuss any three predefined exception.
- B) Explain the concept of time stamp ordering protocol. **4**
4. Answer **any two** of the following. **10**
- 1) What is cursor ? Give the advantages of cursor.
  - 2) How two phase locking protocol work ? Explain with e.g.
  - 3) What is use of trigger ? Explain with example.
5. Answer **any two** of the following. **10**
- 1) Differentiate procedure and function with suitable example.
  - 2) Create a PL\SQL package which contain one function and one procedure.
  - 3) Explain log based and shadow based recovery.
-



Seat No.	
-------------	--

**B.Sc. (Entire Computer Science) – III (Semester – VI) (Old)  
Examination, 2017  
ADVANCED JAVA (Paper – III)**

Time : 2 Hours

Total Marks : 50

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

1. Choose **correct** alternatives : **10**

- 1) \_\_\_\_\_ is used to execute pre-compiled SQL statement.  
a) Statement b) PreparedStatement  
c) Both a and b d) None of these
  
- 2) \_\_\_\_\_ symbol is used to append query string in URL.  
a) ? b) &  
c) = d) Append
  
- 3) \_\_\_\_\_ object allows you to navigate each row of the result.  
a) Statement b) Connection  
c) CallableStatement d) Resultset
  
- 4) Swing components are light weight component in java.  
a) True b) False
  
- 5) \_\_\_\_\_ is EJB-persistent object representing the data-store record.  
a) Entity b) Query  
c) EntityManager d) Interface
  
- 6) Servlets can responds to any types of requests.  
a) True b) False





7) A \_\_\_\_\_ provides a scrollable view of a component in java swing.

- |                |                |
|----------------|----------------|
| a) JTabbedPane | b) JScrollPane |
| c) JToolBar    | d) JOptionPane |

8) JFrame Class has \_\_\_\_\_ default layout.

- |               |                  |
|---------------|------------------|
| a) FlowLayout | b) BorderLayout  |
| c) GridLayout | d) None of these |

9) \_\_\_\_\_ method is invoked by server through the service () method.

- |                 |                  |
|-----------------|------------------|
| a) doPost()     | b) doGet()       |
| c) Both a and b | d) None of these |

10) Is ErrorPage is the attribute of page directive ?

- |         |          |
|---------|----------|
| a) True | b) False |
|---------|----------|

2. Attempt **any five** :

**10**

- 1) What is thin Driver ?
- 2) Define cookies in servlet. Write its Syntax.
- 3) What is the use of ActionEvent class.
- 4) What is the use of request object in JSP. Write its syntax.
- 5) What is the use of scriptlet tag in JSP. Write its syntax.
- 6) Define Session Beans.

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

**6**

- 1) What is ResultSet ? Explain methods of ResultSet.
- 2) Write a servlet program to display "Welcome to Servlet" message on browser.
- 3) Explain JComboBox with its constructors.

B) Design a JFrame to implement MouseListener interface.

**4**



4. Attempt **any two** : **10**

- 1) Write a JBBC program to display Book details having price < 100 using prepared statement.
- 2) Explain session management in servlet with example.
- 3) Explain deployment descriptor in servlet with example.

5. Attempt **any two** : **10**

- 1) What is JSTL ? Explain Core Tag Library in detail.
  - 2) Create an html page [user interface] for capturing Book information. This form will accept data from the user and display the same upon page submission using JSP.
  - 3) What is Listener ? Explain the different types of listener interfaces used in event handling.
-



Seat No.	
-------------	--

**B.Sc. (ECS) (Part – III) (Semester – VI) (Old) Examination, 2017**  
**COMPUTER SCIENCE**  
**Compiler Construction (Paper – IV)**

Time : 2 Hours

Total Marks : 50

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

1. Choose the **correct** alternatives. **10**

- 1) A bottom up parser generates \_\_\_\_\_
  - a) Right most derivations
  - b) Right most derivations in reverse
  - c) Leftmost derivations
  - d) Leftmost derivations in reverse
  
- 2) Which of the following is used for grouping of characters into tokens ?
  - a) Parser
  - b) Code optimizer
  - c) Code generator
  - d) Scanner
  
- 3) In a syntax directed translation scheme, if values of an attribute of a node are a function of the attributes of its children, then attribute is called \_\_\_\_\_
  - a) Canonical attribute
  - b) Synthesized attribute
  - c) Inherited attribute
  - d) None of these
  
- 4) Concept which can be used to identify loops is \_\_\_\_\_
  - a) Dominators
  - b) Reducible graphs
  - c) Depth first ordering
  - d) All of these

P.T.O.



- 5) A compiler that runs on one machine and produces code for a different machine is called \_\_\_\_\_
- a) One pass compilation                      b) Two pass compilation  
c) Cross compilation                         d) None of these
- 6) A parse tree showing the values of attributes at each node is called an \_\_\_\_\_
- a) Derivation tree                              b) Directed acyclic graph  
c) Annotated parse tree                        d) All of the above
- 7) An important component of semantic analysis is \_\_\_\_\_
- a) Code checking                                b) Type checking  
c) Flush checking                                d) All of the above
- 8) A memory allocates and deallocates storage as needed at runtime from data areas known as \_\_\_\_\_
- a) Heap    b) Stack  
c) Static     d) All of these
- 9) Which of the following parser is most powerful ?
- a) Operator precedence                        b) Canonical LR  
c) LALR     d) SLR
- 10) \_\_\_\_\_ values of actual parameters are passed to caller procedure in call by value.
- a) R     b) L  
c) Both a and b                                  d) None of these

2. Attempt **any five** :

10

- 1) Give general form of three address code with an example.
- 2) Define handle with an example.
- 3) Construct DAG for expression ?  $x - x * (y + z) - (y + z) * w$ .
- 4) Define
  - a) Tokens
  - b) Patterns
- 5) Give the name of back patching functions.
- 6) Explain case statements.



3. A) Attempt **any two**. 6
- 1) Explain in details factors affecting pass structure of compiler.
  - 2) What does the activation record ? Explain field of it.
  - 3) What is backtracking ? Explain backtracking with example.
- B) Construct the predictive parsing table for the following grammar. 4

$$G = ( \{E, E', T, T', F\}, \{+, *, (, ), id, num\}, P, E)$$

Where P :

- $E \rightarrow TE'$
- $E' \rightarrow +TE' \mid \epsilon$
- $T \rightarrow FT'$
- $T' \rightarrow *FT' \mid \epsilon$
- $F \rightarrow (E) \mid id \mid num$

4. Attempt **any two**. 10
- 1) Explain in details storage allocation strategies.
  - 2) What is code optimization ? Explain in details principal source of optimization.
  - 3) What is intermediate code generation ? Explain types of three address code implementation of statements.

5. Attempt **any two**. 10
- 1) What is bottom-up parser ? Explain in detail shift reduce parsing using stack implementation.
  - 2) Construct annotated parse tree for the expression :  $3 * 5 + 4n$  using following production.

Production	Semantic rule
$L \rightarrow E_n$	print (E.val)
$E \rightarrow E_1 + T$	$E.val := E_1.val + T.val$
$E \rightarrow T$	$E.val := T.val$
$T \rightarrow T_1 * F$	$T.val := T_1.val * F.val$
$T \rightarrow F$	$T.val := F.val$
$F \rightarrow (E)$	$F.val := F.val$
$F \rightarrow digit$	$F.val := digit.lexval$

- 3) Explain in details issue in the design of a code generator.
-



Seat No.	
-------------	--

**B.Sc. (Entire Computer Science) – III (Semester – VI) (Old)  
Examination, 2017  
SUB-WEB TECHNOLOGY AND E-COMMERCE – II (Paper – V)**

Time : 2 Hours

Total Marks : 50

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

1. Choose **correct** alternatives. **10**

- 1) \_\_\_\_\_ object store state data that is accessible to any user who connects to your Web application.
  - a) Application
  - b) Session
  - c) Cookies
  - d) Query string
- 2) \_\_\_\_\_ is the process of granting access to the users based on identity.
  - a) Authorization
  - b) Authentication
  - c) Allow
  - d) Deny
- 3) You can add as many Content Place Holders to a Master Page as you need
  - a) True
  - b) False
- 4) By default, ASP.NET store SessionIDs in \_\_\_\_\_
  - a) Global Variable
  - b) Database
  - c) Cache
  - d) Cookies
- 5) EDI is used to provide number of offering available in market.
  - a) True
  - b) False



- 6) Inter-organizational transactions are generally a \_\_\_\_\_ Trade Cycle.
- a) Cash
  - b) Debit
  - c) Credit
  - d) Repeat
- 7) \_\_\_\_\_ is an inter-organizational information system that allows participating buyers and sellers to exchange information about price and product offerings
- a) I-commerce
  - b) EDI
  - c) Search
  - d) E-market
- 8) Airline reservation system is an example of E-Market.
- a) True
  - b) False
- 9) Way of advertising a web presence and getting customers in through the door include, \_\_\_\_\_
- a) Link on Portal
  - b) Malls
  - c) Site Name
  - d) All of the above
- 10) Session mode that stores session Information in Current Application Domain is \_\_\_\_\_
- a) inProc
  - b) StateServer
  - c) Sqlserver
  - d) State

2. Attempt **any five**.

10

- 1) Define debugging. How to use F5 debugging ?
- 2) Explain Application object with syntax.
- 3) Define EDI with Trade Cycle.
- 4) Explain User.IsInRole and User.Identity.
- 5) Explain Login control with syntax.
- 6) Explain HTTPCookies with an example.



3. A) Attempt **any two** : **6**
- 1) Explain Page level tracing with an example.
  - 2) Explain ADO.Net Classes in detail.
  - 3) Explain Internet banking with supply chain.
- B) Explain Data Reader Object. Write a code to read student record from “Student” table using Data Reader Object. **4**
4. Attempt **any two** : **10**
- 1) Define E-Business. Explain Virtual Auctions with supply chain.
  - 2) Define Exception. Write a code to handle exception at page level.
  - 3) Explain E-Shop in detail.
5. Attempt **any two** : **10**
- 1) Define state. Explain client-side state management techniques in detail.
  - 2) Explain E-Market with trade cycle. Explain usage and future of E-Market.
  - 3) Define master page and content page. Write a code for nested master page.
-





Seat No.	
-------------	--

**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017  
Paper – VI : VISUAL PROGRAMMING AND APPLICATION  
SOFTWARE– II**

Time : 2 Hours

Total 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 statements is incorrect about delegate ?
  - A) Delegates are reference types
  - B) Delegates are object oriented
  - C) Delegates are type-safe
  - D) Only one method can be called using a delegate
  
- 2) An Event is \_\_\_\_\_
  - A) The result of a users action
  - B) Result of a party
  - C) Code to force users action
  - D) None of above
  
- 3) Select the namespace which should be included while making use of LINQ operations
  - A) System.Text
  - B) System.Collections.Generic
  - C) System.Linq
  - D) None of the mentioned
  
- 4) A GUI :
  - A) uses buttons, menus and icons
  - B) should be easy for a user to manipulate
  - C) stands for Graphic Use Interaction
  - D) Both A and B
  
- 5) Which is not a property of the Common control class ?
  - A) Show
  - B) BackColor
  - C) Font
  - D) Name
  
- 6) The default event of TextBox is \_\_\_\_\_
  - A) TextChanged
  - B) Leave
  - C) Click
  - D) Paint



- 7) LINQ stands for Language Information Query.  
A) True B) False
- 8) \_\_\_\_\_ are the components of assembly.  
A) Manifest B) Type Metadata C) MSIL code D) All of these
- 9) \_\_\_\_\_ is the extension of crystal report.  
A) .cs B) .aspx C) .rpt D) .rpts
- 10) \_\_\_\_\_ is the value of DropDownStyle property for ComboBox  
A) DropDown B) DropDownList C) MultipleList D) Both A and B

2. Attempt **any five** of the following : **10**
- 1) Define MDI.
  - 2) Give the list of keyboard events.
  - 3) List 4 properties of ListBox control.
  - 4) Define assembly.
  - 5) How to add button to form at run time ?
  - 6) Syntax of event declaration.
3. A) Attempt **any two** of the following : **6**
- 1) Explain the concept of deployment.
  - 2) What is delegate ? Explain types of delegates.
  - 3) Explain Radio Button with an example.
- B) Write program to implement multicast delegate. **4**
4. Attempt **any two** of the following. **10**
- 1) What is LINQ to SQL ? How to filter value using LINQ to SQL ?
  - 2) What is custom control ? Give an example of custom control.
  - 3) Create a windows application to find out given number is Armstrong or not.
5. Attempt **any two** of the following. **10**
- 1) Explain components of assembly.
  - 2) Explain the steps to create simple crystal report.
  - 3) What is event ? Demonstrate with suitable example.
-