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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019**  
**English (Compulsory)**  
**GOLDEN PETAL**

Day & Date: Thursday, 07-11-2019  
 Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing the correct alternatives.**

**08**

- 1) She liked \_\_\_\_\_ books you gave her.
 

a) A	b) An
c) The	d) no article
- 2) Charlie Chaplin's first film was titled as \_\_\_\_\_.
 

a) The Little Tramp	b) Making a Living
c) The Kid Auto Races	d) The Tramp
- 3) Nachiketa's father chose only the \_\_\_\_\_ cows to give away.
 

a) Young	b) Old
c) Expensive	d) Beautiful
- 4) As a matter of compensation \_\_\_\_\_ of Shanti Tigga was offered job with the police.
 

a) Son	b) Daughter
c) Broker	d) Sister
- 5) How are the 'Strains of triumph' described?
 

a) Distant	b) Near
c) Loud	d) Soft
- 6) This is the pilot who saved Japan in the II world war. The underlined word is \_\_\_\_\_ pronoun.
 

a) Distributive	b) Reflexive
c) Relative	d) Demonstrative
- 7) Sir Thomas Wyatt was born in \_\_\_\_\_.
 

a) 1501	b) 1502
c) 1503	d) 1504
- 8) Not one of all the \_\_\_\_\_ Host.
 

a) Red	b) Yellow
c) Purple	d) Blue

**Q.2 Answer the following questions briefly. (Any Four)**

**12**

- 1) How did the New York writer describe Charlie in his review after release of the first film?
- 2) Which wing of army did Shanti Tigga join? At what age?
- 3) What is the structure of the poem 'I Find No Peace'?
- 4) What made Nachiketa feel troubled?
- 5) What was the reaction of adivasi groups on Shanti Tigga's death?
- 6) What was Nachiketa's third boon? What was the reaction of Yama to Nachiketa's request?

**Q.3 Answer the following questions. (Any One)**

1) What are the points that you need to keep in mind when you are encoding a message?

**OR**

2) Write a message to the principal of your college, explaining to him why you are unable to pay all the fee in one installment. Use proper vocabulary, language and specify the medium.

**Q.4 'Discuss the three 'M' approaches to make effective communication.**

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**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019**  
**English (Compulsory)**  
**GOLDEN PETAL**

Day & Date: Thursday, 07-11-2019  
 Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternative given below. 14**

- 1) Charlie Chaplin was of \_\_\_\_\_ years old, when he entered in the film industry.
  - a) 31
  - b) 29
  - c) 35
  - d) 25
- 2) Charlie Chaplin was signed with \_\_\_\_\_ dollars a week by the keystone production company.
  - a) 160
  - b) 150
  - c) 170
  - d) 151
- 3) Charlie Chaplin was born in \_\_\_\_\_.
  - a) 1924
  - b) 1915
  - c) 1914
  - d) 1920
- 4) Shanti Tigga joined the Territorial Army at the age of \_\_\_\_\_.
  - a) 27
  - b) 35
  - c) 28
  - d) 31
- 5) Shanti Tigga was awarded by \_\_\_\_\_ for her extra ordinary achievements.
  - a) Smt. Indira Gandhi
  - b) Smt. Pratibha Patil
  - c) Smt. Sushama Swaraj
  - d) Smt. Sonia Gandhi
- 6) Shanti Tigga was kidnapped on May 29 \_\_\_\_\_.
  - a) 2011
  - b) 2010
  - c) 2012
  - d) 2013
- 7) When the \_\_\_\_\_ dies our soul continues to exists.
  - a) heart
  - b) body
  - c) mind
  - d) voice
- 8) Nachiketa waited at the gates of Yama for \_\_\_\_\_ days without food or water.
  - a) 4
  - b) 2
  - c) 5
  - d) 3
- 9) Vajasrawas told Nachiketa to go to Yama out of \_\_\_\_\_.
  - a) anger and annoyance
  - b) sadness and melancholy
  - c) love and affection
  - d) strength and admiration
- 10) The poem I Find No Peace is written by \_\_\_\_\_.
  - a) Sir Charles
  - b) Sir Thomas Wyatt
  - c) Sir Alfred Wyatt
  - d) Sir Thomas Kyd
- 11) Emily Dickinson is from \_\_\_\_\_.
  - a) Africa
  - b) America
  - c) England
  - d) Ireland

- 12) Are you staying at \_\_\_\_\_ Bristol Hotel?  
a) an  
b) in  
c) the  
d) a
- 13) Last week, I \_\_\_\_\_ him twice in connection of the purchase of the car.  
a) Met  
b) Meet  
c) Meeting  
d) Will meet
- 14) Ram has written all the information in his book. What is the tense of the sentence?  
a) Present defect  
b) Past perfect  
c) Present perfect continuous tense  
d) Past perfect continuous tense

**Q.2 Answer any four of the following questions.** **16**

- a) How did Chaplin get his first role in the films?
- b) Describe the get up of Charlie Chaplin.
- c) What did Shanti Tigga's relative feel about - her death?
- d) Describe the first woman Jawan - Shanti Tigga in your words.
- e) What did Nachiketa learn from Yama Deva?
- f) What were the three boons that Nachiketa ask of the God of Death?

**Q.3 Answer any two of the following questions.** **12**

- a) What is the theme of the poem - I Find No Peace?
- b) What is the theme of the poem - Success is counted sweetest?
- c) Describe in detail what is communication.
- d) You forgot to do your homework and got scolded by the teacher. State possible causes for it.

**Q.4 Answer any one of the following questions.** **14**

Explain where and why the following communication channels are used in making communication effective Email, Video calls, Mobile phones, radio and movies.

**OR**

Why do you think we need language skills and vocabulary to communicate our thoughts to others?

**Q.5 Define communication. What makes communication effective?** **14**



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**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019  
FUNDAMENTAL OF COMPUTER**

Day & Date: Friday, 08-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) The Mark-I Computer is also known as \_\_\_\_\_.
  - a) American Sequence controlled calculator
  - b) Automatic sequence calculating controller
  - c) American sequence controlled computer
  - d) Automatic sequence controlled calculator
- 2) The third generation computer was made with \_\_\_\_\_.
  - a) Vacuum tube
  - b) Ic
  - c) Transistor
  - d) Bio chips
- 3) \_\_\_\_\_ software manages computer hardware.
  - a) Application software
  - b) Antivirus
  - c) System software
  - d) None of these
- 4) Magnetic tape is \_\_\_\_\_ storage device.
  - a) Random
  - b) Sequential accessed
  - c) Track
  - d) None of these
- 5) Program designed to perform specific task is called \_\_\_\_\_.
  - a) System software
  - b) Application Software
  - c) Utility software
  - d) Operating system
- 6) \_\_\_\_\_ is the volatile memory of computer.
  - a) RAM
  - b) ROM
  - c) Both (a) and (b)
  - d) None of these
- 7) \_\_\_\_\_ is one of the scanning input device.
  - a) Joystick
  - b) MICR
  - c) Keyboard
  - d) None of these
- 8) Number of the pixels on the screen is its \_\_\_\_\_.
  - a) dot pitch
  - b) Resolution
  - c) Depth
  - d) None of these
- 9) Which of the following is a primary storage device?
  - a) Magnetic tape
  - b) Magnetic disk
  - c) Optical disk
  - d) None of these
- 10) When more than processes are running concurrently on a system \_\_\_\_\_.
  - a) Batched system
  - b) Real-time system
  - c) Multiprogramming system
  - d) Multiprocessing
- 11) \_\_\_\_\_ translate one program instruction at a time into a machine language.
  - a) Compiler
  - b) Simulator
  - c) Interpreter
  - d) CPU

- 12) Which enable us to send the same letter to different persons?
  - a) Macros
  - b) Template
  - c) Mail merge
  - d) None of these
- 13) Power point presentations are widely used as \_\_\_\_\_.
  - a) Project presentation by students
  - b) Note outline for teachers
  - c) Communication of planning
  - d) All of above
- 14) To copy a text \_\_\_\_\_ shot cut key is used.
  - a) Ctrl+C
  - b) Ctrl+O
  - c) Ctrl+V
  - d) Ctrl+S

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) List out characteristics of the computers.
  - 2) Write various types of software.
  - 3) What is Multiprogramming?
  - 4) List various uses of Microsoft Power Point.
  - 5) State any two internal and external DOS command.
- B) Write Notes. (Any Two) 06**
- 1) Multitasking
  - 2) Mouse
  - 3) Application Area of computer
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) What is primary Memory? Explain its types.
  - 2) Differentiate between first and second generation of computer.
  - 3) What are different types of operating system?
- B) Answer the following questions. (Any One) 06**
- 1) What is Linux? Explain features of Linux.
  - 2) Explain Hard disk drive.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Define ROM. List the types of ROM.
  - 2) Explain the components of the Windows Operating system.
  - 3) What is printer? Explain Laser printer.
- B) Answer the following questions. (Any One) 04**
- 1) Write various function used in MS-Excel.
  - 2) List the various types of input devices. Explain the MICR.
- Q.5 Answer the following questions. (Any Two) 14**
- a) What is computer? Explain the block diagram of computer.
  - b) What is an Operating system? Explain various services provides by an O.S.
  - c) What is mail merge? Explain the steps for creating mail merge.

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**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019**  
**PROGRAMMING USING C**

Day & Date: Saturday, 09-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which of the following is not a valid variable name declaration?  
a) int \_\_a3;                                      b) int \_\_3a;  
c) int \_\_A3;                                      d) None of the mentioned
- 2) All keywords in C are in \_\_\_\_\_.  
a) Lower Case letters                              b) Upper Case letters  
c) Camel Case letters                              d) None of the mentioned
- 3) What is the size of an int data type?  
a) 4 Bytes    b) 8 Bytes  
c) Depends on the system/compiler      d) Cannot be determined
- 4) Which of the header file used the sqrt() function contain \_\_\_\_\_.  
a) stdio.h    b) stdlib.h  
c) math.h    d) all of the above
- 5) An Array is the set of same or different data types of elements.  
a) True    b) False
- 6) C Language is developed by \_\_\_\_\_.  
a) Dennis Ritchie                                      b) Martin Richards  
c) Ken Thomson                                      d) none of the mentioned
- 7) Variable name should not contain any symbol except \*.  
a) True    b) False
- 8) \_\_\_\_\_ construct is used to specify a loop with a test at top of statement block.  
a) while    b) for  
c) do-while    d) both a and b
- 9) A vector is a \_\_\_\_\_ dimensional array.  
a) One    b) Two  
c) Multi    d) Both a and b
- 10) Which of the following is post conditioned loop?  
a) if    b) for  
c) while    d) do while
- 11) Which is the only function all c program contains, \_\_\_\_\_.  
a) main()    b) getch()  
c) printf()    d) none of these
- 12) A variable name cannot start with \_\_\_\_\_.  
a) number    b) character  
c) underscore    d) none of the above



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**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019  
LINEAR ELECTRONICS – I**

Day & Date: Monday, 11-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) In Bridge rectifier \_\_\_\_\_ diodes are used.
  - a) 2
  - b) 4
  - c) 1
  - d) 3
- 2) The electrolyte capacitor uses \_\_\_\_\_ for plate.
  - a) ceramic
  - b) mica
  - c) aluminum
  - d) paper
- 3) The time constant of RC circuit is \_\_\_\_\_.
  - a) RC
  - b) R/C
  - c) C/R
  - d) None of these
- 4) The rectifier is used to convert \_\_\_\_\_.
  - a) ac to dc
  - b) dc to dc
  - c) ac to ac
  - d) None of these
- 5) The collector base junction of transistor is always \_\_\_\_\_.
  - a) both B & D
  - b) reverse
  - c) none of these
  - d) forward
- 6) In P-type semi-conductors \_\_\_\_\_ are majority charge carriers.
  - a) Electrons
  - b) Holes
  - c) Both A and B
  - d) None of these
- 7) The Emitter of transistor is \_\_\_\_\_ doped.
  - a) Lightly
  - b) Heavily
  - c) Both A and B
  - d) None of these
- 8) CMRR = \_\_\_\_\_.
  - a) AC/AD
  - b) AD/AC
  - c) Both A and B
  - d) None of these
- 9) Audio Frequency range \_\_\_\_\_.
  - a) 20 to 20KHZ
  - b) 20 to 30KHZ
  - c) 20 to 20MHZ
  - d) None of these
- 10) The Unit of inductor is \_\_\_\_\_.
  - a) Ohm
  - b) Henry
  - c) Farad
  - d) Volt
- 11) \_\_\_\_\_ is Active component.
  - a) Capacitor
  - b) Inductor
  - c) Diode
  - d) Resister

- 12) Transformer transfer energy as \_\_\_\_\_.  
 a) AC to AC  
 b) AC to DC  
 c) DC to DC  
 d) None of these
- 13) op amp 741 is \_\_\_\_\_ pin IC.  
 a) 8  
 b) 18  
 c) 16  
 d) 20
- 14) \_\_\_\_\_ type of device is used to increase the strength of signal.  
 a) Amplifier  
 b) Rectifier  
 c) Oscillator  
 d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define Oscillator.
- 2) Draw the diagram of full wave rectifier
- 3) State ohms law.
- 4) Draw circuit diagram of half wave rectifier.
- 5) State Kirchoff's current law

**B) Write Notes. (Any Two) 06**

- 1) Explain carbon composition resistor.
- 2) Explain the color coding of resistor.
  - i) 330 ohm
  - ii) 220 ohm
- 3) What do you mean by rectifier? Give their types.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Explain step up & step down transformer.
- 2) Give the relation between  $\alpha$  &  $\beta$ .
- 3) Explain direct coupled amplifier.

**B) Answer the following questions. (Any One) 06**

- 1) Explain full wave rectifier with diagram.
- 2) Explain in detail energy band diagram of (insulator, conductor, semiconductor).

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain feedback concept.
- 2) Explain zener diode as voltage regulator.
- 3) Explain with diagram op amp as inverting amplifier.

**B) Answer the following questions. (Any One) 04**

- 1) Explain construction of PN junction.
- 2) Explain with block diagram UPS.

**Q.5 Answer the following questions. (Any Two) 14**

- a) Explain the biasing methods and IV characteristics of PN junction diode.
- b) Explain CE configuration of transistor with circuit diagram and characteristics.
- c) Explain in detail charging and discharging capacitors.

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**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019  
DIGITAL ELECTRONICS (Paper – I)**

Day & Date: Wednesday, 13-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.****14**

- 1) IC 7432 is \_\_\_\_\_ type gate.
 

a) NOR	b) NAND
c) OR	d) XOR
- 2) IC \_\_\_\_\_ is an decoder.
 

a) 74148	b) 74138
c) 74154	d) 74151
- 3) Full adder uses \_\_\_\_\_ gate.
 

a) AND,XOR	b) OR,NAND
c) AND,NOT	d) OR,XOR,AND
- 4) Base of octal no system is \_\_\_\_\_.
 

a) 2	b) 4
c) 8	d) 16
- 5) IC \_\_\_\_\_ is shift register.
 

a) 7495	b) 7490
c) 74138	d) 74150
- 6) Race condition occurs in \_\_\_\_\_ flip flop.
 

a) JK	b) RS
c) D	d) None of these
- 7) The excess 3 code of 7 is \_\_\_\_\_.
 

a) 1111	b) 1010
c) 1000	d) 0101
- 8) \_\_\_\_\_ is circuit with many input and one output.
 

a) Multiplexer	b) Demultiplexer
c) Encoder	d) Decoder
- 9) BCD equivalent for 77 is \_\_\_\_\_.
 

a) 01110111	b) 01111000
c) 01110101	d) 01010111
- 10) In T flip flop JK input are \_\_\_\_\_.
 

a) 1 , 1	b) 1 , 0
c) 0 , 1	d) 0 , 0
- 11) \_\_\_\_\_ no of flip flops are used to store 2 bits.
 

a) 1	b) 2
c) 3	d) 4

- 12) Half adder is used to make addition of \_\_\_\_\_ bits.
  - a) 2
  - b) 3
  - c) 4
  - d) 8
- 13) Total no of gates in IC 7402 are \_\_\_\_\_.
  - a) 2
  - b) 3
  - c) 4
  - d) 6
- 14) The NAND gate is \_\_\_\_\_ gate.
  - a) Basic
  - b) Universal
  - c) Inverter
  - d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Explain decimal no system.
- 2) Write binary rules for division.
- 3) Draw logic diagram of full adder.
- 4) Explain concept of race around condition.
- 5) Explain twos compliment with example.

**B) Write Notes on (Any Two) 06**

- 1) Explain gray code.
- 2) Explain 2 variable K- map.
- 3) Explain T flip flop

**Q.3 A) Answer the following questions. (Any two) 08**

- 1) Explain K- map for 3 variables.
- 2) Explain error detection.
- 3) Explain SISO register.

**B) Answer the following questions. (Any One) 06**

- 1) Explain any three basic gate with symbol.
- 2) Explain D Morgan’s theorem.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain octal no system with example.
- 2) Explain adder using basic gate with diagram.
- 3) Explain 3 bit down counter.

**B) Answer the following questions. (Any One) 04**

- 1) Explain mod 5 counter.
- 2) Explain decimal to binary conversion.

**Q.5 Answer the following questions. (Any Two) 14**

- a) Explain clocked RS flip flop using NAND.
- b) Explain parallel adder / sub tractor.
- c) Explain hexadecimal to binary and binary to octal. conversion



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**B.Sc. (E.C.S.) (Semester – I) (Old) (CBCS) Examination Oct/Nov-2019  
DISCRETE STRUCTURE**

Day & Date: Thursday, 14-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) In adjacency matrix of graph  $G$ , if all the diagonal elements are 0 and all non-diagonal elements are 1 then graph  $G$  is \_\_\_\_\_ graph.
  - a) null
  - b) multi
  - c) complete
  - d) none of these
- 2) The graph  $G \oplus G$  is \_\_\_\_\_; where  $G$  is simple graph.
  - a) Null graph
  - b) Graph  $G$  itself
  - c) Complete graph
  - d) Multi graph
- 3) Dijkstra's algorithm is used to find \_\_\_\_\_.
  - a) Shortest spanning tree
  - b) Eulerian circuit
  - c) Hamiltonian circuit
  - d) Shortest path
- 4) In a tree there exists \_\_\_\_\_ path in between every pair of vertices.
  - a) unique
  - b) no
  - c) more than one
  - d) exact two
- 5) A binary tree has always \_\_\_\_\_ number of vertices.
  - a) even
  - b) odd
  - c) any
  - c) infinite
- 6) If  $|A| = 37$ ,  $|B| = 23$  and  $|A \cup B| = 48$  then  $|A \cap B| =$  \_\_\_\_\_.
  - a) 108
  - b) 62
  - c) 12
  - d) Can not be determined
- 7) A trail which covers all the edges of a connected graph  $G$  is called as \_\_\_\_\_.
  - a) Closed trail
  - b) Hamiltonian trail
  - c) Eulerian circuit
  - d) Eulerian trail
- 8) The number of edges in complete graph  $K_8$  is \_\_\_\_\_.
  - a) 28
  - b) 56
  - c) 64
  - d) 32
- 9) A null graph having 'n' vertices is \_\_\_\_\_ regular graph.
  - a) n
  - b) n-1
  - c) 0
  - d) None of these
- 10) If a simple graph  $G_1$  has 'a' number of vertices and 'b' number of edges. A simple graph  $G_2$  has 'c' number of vertices and 'd' number of edges then the number of edges in the graph  $G_1 \times G_2$  are \_\_\_\_\_.
  - a) a.b + c.d
  - b) ac + bd
  - c) ad + bc
  - d) ac

- 11) If a connected graph  $G$  has 5 cut edges and 6 vertices then edge connectivity of the graph  $G$  is \_\_\_\_\_.
  - a) 5
  - b) 6
  - c) 4
  - d) 1
- 12) \_\_\_\_\_ is a particular case of Hamiltonian graph.
  - a) Travelling salesman problem
  - b) Chinese postman problem
  - c) Koningberg's 7 bridge problem
  - d) Fleury's problem
- 13) A connected graph is a tree if it has \_\_\_\_\_.
  - a) exactly one circuit
  - b) more than one circuit
  - c) no any circuit
  - d) none of these
- 14) Order of recurrence relation  $a_n + 5a_{n-2} + 3a_{n-1} = 0$  is \_\_\_\_\_.
  - a) 1
  - b) 2
  - c) 3
  - d) 4

**Q.2 A) Answer the following questions. (Any Four)**

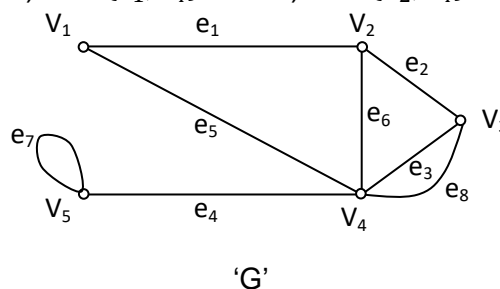
**08**

- 1) Draw the graph  $K_{3,2}$  and  $K_4$ .
- 2) Draw a graph which is both Eulerian and Hamiltonian.
- 3) State the principle of mutual inclusion-exclusion for 3 sets.
- 4) Define vertex deleted subgraph. Give one example.
- 5) Define trail and path.

**B) Answer the following questions. (Any Two)**

**06**

- 1) From the following graph  $G$ , draw the graphs
  - i)  $G - V_1$
  - ii)  $G - \{e_1, e_4\}$
  - iii)  $G - \{V_2, V_4\}$

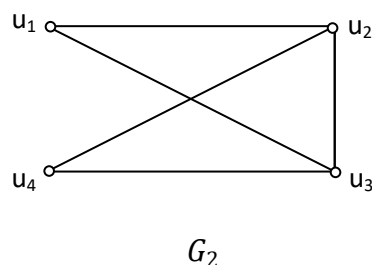
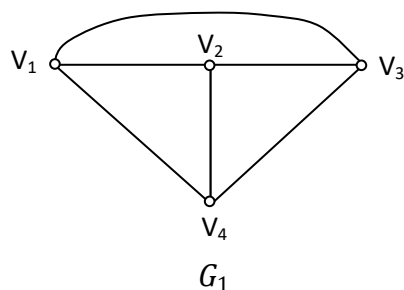


- 2) Prove that a binary tree has odd number of vertices.
- 3) Define Eulerian circuit, Hamiltonian path and Eulerian trail.

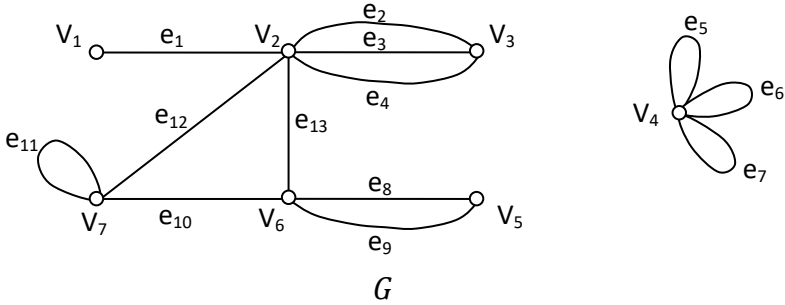
**Q.3 A) Answer the following questions. (Any Two)**

**08**

- 1) From the following graphs  $G_1$  and  $G_2$  draw the graph  $G_1 \times G_2$ . Also find number of edges in  $G_1 \times G_2$ .



2) Write adjacency matrix and incidence matrix for the following graph  $G$ .

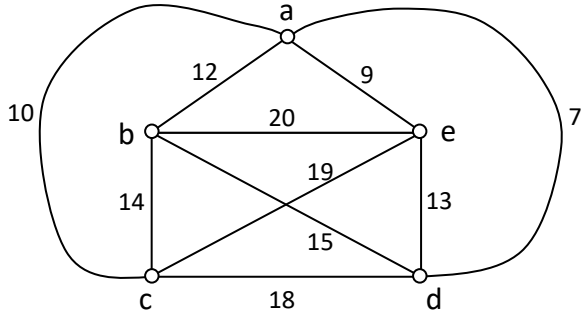


3) Define eccentricity of a vertex, radius, centre and diameter of a connected graph.

**B) Answer the following questions. (Any One)**

06

1) Starting from vertex 'a' solve the following Travelling Salesman Problem. Also find minimum distance traveled.

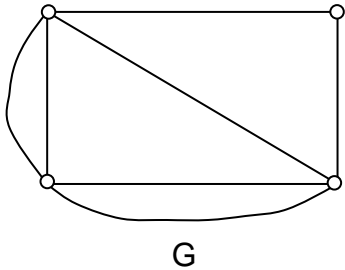


2) Prove that in any graph  $G$ , the number of odd degree vertices is even.

**Q.4 A) Answer the following questions. (Any Two)**

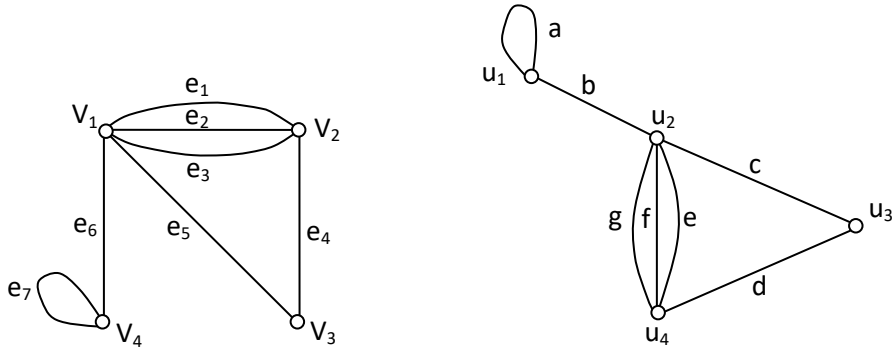
10

1) By using Fleury's algorithm, trace and write Eulerian circuit in the following connected graph  $G$ .



2) Prove that, in a binary tree having 'n' vertices, the number of pendant vertices are  $\frac{n+1}{2}$

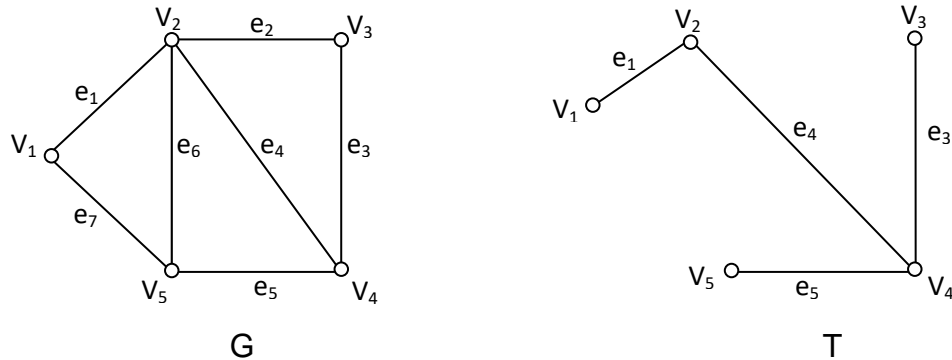
3) Determine whether the following graphs are isomorphic or not.



**B) Answer the following question. (Any One)**

04

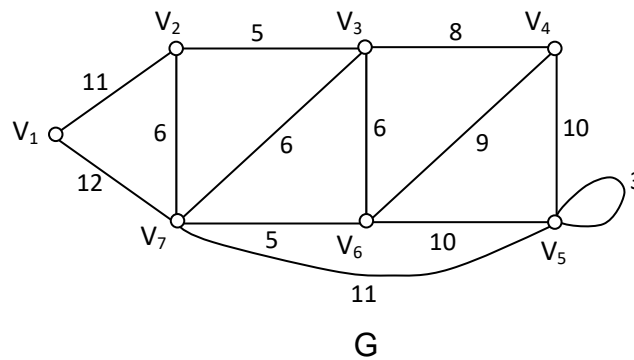
- 1) Define bipartite graph and complete bipartite graph with suitable example.
- 2) Find all branches and chords of following connected graph G w.r.t. spanning tree T. Hence draw all fundamental circuits.



**Q.5 Answer the following questions. (Any Two)**

14

- a) By using Kruskal's algorithm find shortest spanning tree and its weight for the following weighted connected graph G.



- b) Define the following terms.
  - 1) Complement of a graph
  - 2) Edge deleted subgraphs
  - 3) Ring sum of two graphs
  - 4) Simple graph
- c) State and prove principle of mutual inclusion-exclusion for three sets A, B and C.

Seat  
No.

**B.Sc. (E.C.S.) (Semester – I) (Old) (CBCS) Examination Oct/Nov-2019**  
**NUMERICAL METHODS**

Day & Date: Friday, 15-11-2019  
 Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below** **14**

- 1) The equation  $\tan x - x = 0$  is \_\_\_\_\_ equation.
  - a) linear
  - b) tangent
  - c) transcendental
  - d) none of these
- 2) If we represent the system of m-linear equation in n-variables in the form of augmented matrix its order is \_\_\_\_\_.
  - a)  $m \times n$
  - b)  $m \times (n + 1)$
  - c)  $(m + 1) \times n$
  - d)  $m \times (n - 1)$
- 3) Simpson's  $\frac{1}{3}$  rd rule is obtained by putting  $n =$  \_\_\_\_\_ in general quadrature formula.
  - a) 1
  - b) 2
  - c) 3
  - d) 4
- 4) Order of column matrix is \_\_\_\_\_.
  - a)  $1 \times n$
  - b)  $n \times n$
  - c)  $m \times n$
  - d)  $n \times 1$
- 5) Runge Kutta II order method is used to solve \_\_\_\_\_ equation.
  - a) Differential
  - b) Integral
  - c) Linear
  - d) Interpolating
- 6)  $1 + \Delta =$  \_\_\_\_\_.
  - a)  $E^{-1}$
  - b)  $\frac{1}{E}$
  - c)  $E$
  - d)  $\nabla$
- 7) Inverse of matrix 'A' exist iff \_\_\_\_\_.
  - a)  $|A| = 1$
  - b)  $|A| = \infty$
  - c)  $|A| \neq 0$
  - d) None of these
- 8) The one of the roots of the equation  $f(x) = x^2 - 4x - 10 = 0$  lies in the interval \_\_\_\_\_.
  - a) (5, 6)
  - b) (-1, 0)
  - c) (4, 5)
  - d) (3, 4)
- 9)  $0.8467 E_3 \times 0.9876 E_4$  \_\_\_\_\_.
  - a)  $0.8362 E_7$
  - b)  $8.3620 E_1$
  - c)  $0.8362 E_{12}$
  - d)  $0.8362 E_{-1}$

- 10) One of the root of the equation  $f(x) = 0$  lies in the interval  $(a, b)$  if  $f(a)$  and  $f(b)$  have \_\_\_\_\_ signs.  
 a) same    b) opposite  
 c) positive     d) negative
- 11) In Runge Kutta II order method  $k_2 =$  \_\_\_\_\_.  
 a)  $hf(x_0 - h)$                                       b)  $hf(x_0 - h, y_0 - k_1)$   
 c)  $hf(x_0 + h, y_0 + k_1)$                          d)  $hf(x_0, y_0)$
- 12) Homogenous system of linear equation is \_\_\_\_\_.  
 a) Always inconsistent                              b) Never consistent  
 c) Always consistent                                 d) Both b and c
- 13)  $E^n f(x) =$  \_\_\_\_\_.  
 a)  $f(a + x)$                                          b)  $f(x - nh)$   
 c)  $f(x + nh)$                                          d)  $f(x - h)$
- 14) \_\_\_\_\_ method is used to solve ordinary differential equation.  
 a) Taylor's series                                      b) Gauss-seidal  
 c) Bisection    d) Regulafalsi

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define homogenous system of linear equations.
- 2) Prove that  $E\nabla = \Delta$ .
- 3) Write augmented matrix for the following system of linear equations.  
 $x + 2y + 3z = 3; -2y + 3z = 7; 2x + y = 6$
- 4) Write Trapezoidal rule for integration.
- 5) Define shift operator E and inverse shift operator  $E^{-1}$ .

**B) Answer the following questions. (Any Two) 06**

- 1) Define
  - i) Absolute error
  - ii) Relative error
  - iii) Percentage error
- 2) Determine the given matrix is invertible or not.

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

- 3) State Newtons - Forward difference formula and prepare the forward difference table for the following data.

$x$	2	4	6	8	10
$f(x)$	5	17	37	65	101

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Solve the following system of linear equations by using Gauss elimination method.

$$\begin{aligned} 2x + 3y - z &= 6 \\ x - y + 2z &= 3 \\ x + y + z &= 4 \end{aligned}$$

- 2) Show that

$$\Delta \left[ \frac{f(x)}{g(x)} \right] = \frac{g(x) \Delta f(x) - f(x) \Delta g(x)}{g(x+h) \cdot g(x)}$$

- 3)  $\frac{dy}{dx} = xy, y(0) = 1$  estimate  $y(0.4)$  by Eulers method (use  $h=0.1$ )

**B) Answer the following questions. (Any One) 06**

- 1) Find the approximate value of root of equation  $x^3 - 4x - 9 = 0$  by bisection method take only four iterations.
- 2) Write an algorithm to solve system of m-linear equations in n- variables by using Gauss-elimination method.

**Q.4 A) Answer the following (Any Two) 10**

- 1) Derive Newton-Raphson formula to find root of the equation  $f(x) = 0$ .
- 2) Given that  $\frac{dy}{dx} = x + y$ ,  $y(1) = 0$ , obtain Taylor's series for  $y(x)$  to compute  $y(1.1)$  correct upto 4 decimal places.
- 3) Evaluate  $\int_0^7 e^x dx$  by trapezoidal rule take  $h = 1$

**B) Answer the following questions. (Any One) 04**

- 1) Evaluate the following. Write your answer in normalized floating point form.
  - i)  $0.7656 E5 + 0.6896 E4$
  - ii)  $0.8692 E3 - 0.4653 E2$
  - iii)  $3.1428 E - 2 \times 2.1819 E4$
  - iv)  $0.7172 E5 \div 0.21660 E - 3$
- 2) Evaluate  $\left[\frac{\Delta^2}{E}\right] x^3$  take  $h = 1$

**Q.5 Answer the following questions. (Any Two) 14**

- a) By using Newton's forward difference interpolation formula find  $f(0.21)$  from the following data.

$x$	0.20	0.22	0.24	0.26
$y = f(x)$	1.6596	1.6698	1.6804	1.6912

- b) Evaluate  $\int_0^4 (1 + x^2) dx$  by dividing the interval into 8 equal parts by using Simpson's  $\frac{1}{3}$  rd rule.
- c) Use Range Kutta fourth order method to obtain the value of  $y$  at  $x = 0.2$  for the differential equation  $\frac{dy}{dx} = 1 + y^2$  with initial condition  $x_0 = 0$  and  $y_0 = 0$  take  $h = 0.2$





- 11) For negatively skewed distribution \_\_\_\_\_.
  - a)  $\mu_3 > 3$
  - b)  $\mu_3 = 3$
  - c)  $\mu_3 < 3$
  - d)  $\mu_3$  does not exist
- 12) The sum of squares of deviations taken from mean is \_\_\_\_\_.
  - a) Maximum
  - b) Minimum
  - c) Zero
  - d) Negative
- 13) If mean is 5 and Variance is 9 then C.V. is \_\_\_\_\_.
  - a)  $(5/9) \times 100$
  - b)  $(5/3) \times 100$
  - c)  $(3/5) \times 100$
  - d)  $(9/5) \times 100$
- 14) The measure of dispersion that based on extreme observations is \_\_\_\_\_.
  - a) Range
  - b) Variance
  - c) S.D.
  - d) C.V.

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define variance.
- 2) If mean is 32.1 and mode is 35.4 then find the median.
- 3) Find 1<sup>st</sup> quartile for 12, 25, 14, 24, 20, 17, 30, 32.
- 4) Define Median.
- 5) Given :  $n = 10, \sum X = 25, \sum X^2 = 313$ , find S.D.

**B) Answer the following questions. (Any Two) 06**

- 1) Calculate SD from following data  
280, 180, 96, 98, 104, 75, 80, 94
- 2) The price of brand A of tea is Rs. 120 per kg and price of brand B of tea is Rs. 90 per kg. if these two brands are mixed together in the ratio of 3:4 than find the price of average mixture.
- 3) If first three moments of a distribution about two are 1, 22 and 10 then find 3<sup>rd</sup> order central moments.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Write the procedure to construct the less than Ogive.
- 2) Given :  $Q_1 = 35, Q_2 = 43, Q_3 = 62$ , comment on skewness of distribution.
- 3) Find mode from following distribution

Class	10-20	20-30	30-40	40-50	50-60
Frequency	5	10	15	9	3

**B) Answer the following questions. (Any One) 06**

- 1) Explain the concept of Stratified sampling and give illustrative example
- 2) Compute Q.D. of following data.

X	1	2	3	4	5
F	2	5	10	3	1

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) The marks of 25 students are given below

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	2	7	10	---	1

- Calculate missing frequency and hence find mean.
- 2) Explain the concept of Dispersion.
- 3) The 1<sup>st</sup> four raw moments of a distribution are 2, 15, 110, 540 respectively, comment of kurtosis.

**B) Answer the following questions. (Any One)****04**

- 1) Define Census method and state its limitations.
- 2) The A. M. of salary of all workers in a factory was Rs. 5000. The A. M. of salary of male and female workers was Rs. 6200 and Rs. 4200 respectively. Find ratio of male and female workers in the factory.

**Q.5 Answer the following questions. (Any Two)****14**

- a) Find mode graphically for the following distribution.

Class	10-20	20-30	30-40	40-50	50-60
Freq.	5	8	15	10	4

- b) Define skewness, explain types of skewness. State different measures of skewness.
- c) For the frequency distribution Bowley's coefficient of skewness is 0.6. the sum of first quartiles is 100 and median is 38. Find the two quartiles.

Seat  
No.

**B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination Oct/Nov-2019**  
**PROBABILITY THEORY – I**

Day & Date: Monday, 18-11-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) A captain and vice-captain out of 11 players team of cricket can be chosen in \_\_\_\_\_ ways.
  - a)  ${}^{11}P_2$
  - b)  ${}^{11}P_9$
  - c)  ${}^{11}C_2$
  - d)  ${}^{11}C_9$
- 2) Number of ways in which 5 different balls can be put in 4 different boxes, such that any ball can be placed in any box and any box contains any number of balls is \_\_\_\_\_.
  - a)  $4^5$
  - b)  $5^4$
  - c)  ${}^5P_4$
  - d)  ${}^5C_4$
- 3) Permutations means arrangement of objects in a row such that order of arrangement is \_\_\_\_\_.
  - a) important
  - b) not important
  - c) particular
  - d) none of these
- 4) If  ${}^nC_x = {}^nC_y$ , then \_\_\_\_\_.
  - a)  $x = y$
  - b)  $x = (n - y)$
  - c)  $y = (n - x)$
  - d) all of these
- 5) A coin is tossed two times. If A: getting 3 heads, then A is \_\_\_\_\_ events.
  - a) impossible
  - b) certain
  - c) sure
  - d) none of these
- 6) An unbiased dice is rolled. If A: getting even number and B: getting odd number, then A and B are \_\_\_\_\_ events.
  - a) equally likely
  - b) mutually exclusive
  - c) exhaustive
  - d) all of these
- 7) If event A is sub-set of event B, then \_\_\_\_\_.
  - a)  $P(A) \leq P(B)$
  - b)  $P(A) < P(B)$
  - c)  $P(A) + P(B) = 1$
  - d) none of these
- 8)  $P(A/A) = \underline{\hspace{2cm}}$ , where A is any event defined on sample space.
  - a) 1
  - b) 0
  - c) any real number lies between 0 and 1
  - d) none of these
- 9) If  $F(x)$  is c.d.f of discrete r.v. X, then  $P(a \leq X \leq b) = \underline{\hspace{2cm}}$ , where a and b are the constants.
  - a)  $F(b) - F(a) + P(a)$
  - b)  $F(b) - F(a)$
  - c)  $F(b) - F(a) - P(a)$
  - d) none of these

- 10) If  $P(x) = (1/k)$ , for  $x = 1, 2, 3, 4$  is a p.m.f. of discrete r.v.  $X$ , then  $k = \underline{\hspace{2cm}}$ .
  - a) 4
  - b) 10
  - c) 3
  - d) 6
- 11) For a discrete r.v.  $X$ ,  $\text{Var}(-aX + b) = \underline{\hspace{2cm}}$ , where  $a$  and  $b$  are constants.
  - a)  $-a^2\text{Var}(X)$
  - b)  $a^2\text{Var}(X)$
  - c)  $a^2\text{Var}(X) + b$
  - d)  $a\text{Var}(X) + b$
- 12) A discrete r.v.  $X$  taking values  $2, 4, 6$  has uniform distribution, then  $E(X) = \underline{\hspace{2cm}}$ .
  - a) 5.5
  - b) 4
  - c) 6
  - d) none of these
- 13) A discrete r.v.  $X$  has binomial distribution with parameters  $(n, P)$ , then  $\underline{\hspace{2cm}}$ .
  - a)  $P =$  probability of success in any trial
  - b)  $n =$  number of times a trial is repeated
  - c)  $E(X) > \text{Var}(X)$
  - d) all of these
- 14) A discrete r.v.  $X$  has Poisson distribution, then  $\underline{\hspace{2cm}}$ .
  - a) Mean = variance
  - b) Mean > Variance
  - c) Mean < variance
  - d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define – Probability
- 2) Define – Conditional probability
- 3) Given:  $P(A) = 0.3, P(B) = 0.4$ . Find  $P(A \cup B)$  if  $A$  and  $B$  are mutually exclusive events.
- 4) A discrete r.v.  $X$  has hypergeometric distribution with parameters  $(2, 4, 7)$ . State  $E(X)$ .
- 5) Find 'k' if following is p.m.f. of discrete r.v.  $X$

X	5	10	15	20
P(X)	k	0.2k	0.4k	0.6k

**B) Answer the following questions. (Any Two) 06**

- 1) State limitations of classical definition of probability.
- 2) Find value of 'n' if  ${}^nC_2 + {}^nP_2 = 135$
- 3) A discrete r.v.  $X$  has Poisson distribution with  $P(X=4)=P(X=5)$ , find parameter of distribution.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) State addition and multiplication principles of counting and give illustrative example.
- 2) Two coins are tossed at a time. Let  $A$ : getting head on first coin and  $B$ : getting head on second coin. Test independence of  $A$  and  $B$ .
- 3) Following is the p.m.f. of discrete r.v.  $X$

X	4	6	8	10	12	14
P(x)	0.10	0.12	0.13	0.21	0.19	0.25

**B) Answer the following questions. (Any One) 06**

- 1) Define – Binomial distribution, state its mean, variance and additive property.
- 2) In how many ways 8 persons are to be invited to a party from 9 friends and 6 relatives, so that at least 4 relatives are included.

- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Define – Cumulative distribution function (c.d.f.) of a discrete r.v. and state its properties.
  - 2) A box contains 16 tomatoes of which 7 are rotten. A sample of 5 tomatoes is selected at random without replacement. Find probability of getting at least 4 rotten tomatoes.
  - 3) Given:  $P(A) = 0.4$ ,  $P(B) = 0.6$  and  $P(A \cup B) = 0.7$  Find  $P(A/B)$  and  $P(B/\bar{A})$

- B) Answer the following questions. (Any One) 04**
- 1) Define - Discrete uniform distribution, state its mean and variance.
  - 2) Find  $P(X > 8)$  if  $X \rightarrow B(10, 0.45)$

- Q.5 Answer the following questions. (Any Two) 14**
- 1) Define Poisson distribution, state the conditions under which Poisson distribution is limiting case of Binomial distribution. Give three real life examples where Poisson distribution is applicable.
  - 2) A box contains 4 black and 7 white balls. Two balls are drawn at random without replacement. Find probability that second ball drawn will be black.
  - 3) Following is the p.m.f. of discrete r.v. X

X	0.1	0.2	0.3	0.4	0.5	0.6
P(x)	0.12	0.1+k	0.2+k	0.05+k	0.15	0.2

Find

- i) value of k
- ii) mean
- iii) variance

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**English**  
**GOLDEN PETAL**

Day & Date: Saturday , 05-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.****14**

- 1) The school of \_\_\_\_\_ was set up by the priest Lorenzo Millani.  
a) Barcelona  
b) Barbiana  
c) Balonia  
d) Brabilano
- 2) Letter to a Teacher was published originally in \_\_\_\_\_.  
a) 1966  
b) 1968  
c) 1967  
d) 1965
- 3) My Duty to My Neighbour was taken from the book \_\_\_\_\_ of Sir Earnest Barker.  
a) Life Importance  
b) Importance of Life  
c) Essential of Life  
d) Values of Life
- 4) Sir Earnest Barker was elected as a member of \_\_\_\_\_ party in the year 1936.  
a) Loyalist  
b) Liberal  
c) Legal  
d) Labour
- 5) Tigers are troubled by \_\_\_\_\_ and do not lie long in one position.  
a) people  
b) animals  
c) files  
d) leaves
- 6) Jim Corbett was born in \_\_\_\_\_.  
a) 1875  
b) 1885  
c) 1895  
d) 1850
- 7) Sarojini Naidu was known as \_\_\_\_\_ of India.  
a) Maina  
b) Nightingale  
c) Bulbul  
d) Sparrow
- 8) Weavers were making the clothes of \_\_\_\_\_ at break of day.  
a) new born baby  
b) brides  
c) farmers  
d) bridegrooms
- 9) Maya Angelou was born in \_\_\_\_\_.  
a) 1922  
b) 1928  
c) 1925  
d) 1920
- 10) \_\_\_\_\_ becomes my close companion, and anger follows in its wake.  
a) My father  
b) My friend  
c) Disbelief  
d) My mother
- 11) The \_\_\_\_\_ of Taj Mahal is very touchy to everyone.  
a) Syte  
b) Cite  
c) Sigte  
d) Site

- 12) There are so many \_\_\_\_\_ are going on television.  
a) Cereals    b) Serials  
c) Cerials    d) Syrials
- 13) The India’s victory over Australia, the team spirit had \_\_\_\_\_.  
a) a lion’s share                                        b) up and moves  
c) bitter to swallow                                    d) a goat’s share
- 14) The custom of having two wives is \_\_\_\_\_.  
a) polygamy    b) bigamy  
c) bygamy     d) beygamy

**Q.2 Attempt any four of the following questions. 16**

- 1) How does the student writer proves that his teachers knows very little about actual life?
- 2) How is the school different from the student’s home?
- 3) Why does the author feel he has been a bad townsman?
- 4) Why is there an element of patronage in the idea of social service?
- 5) How was the narrator able to cough in the presence of a tiger?
- 6) Why did Jim Corbett feel guilty after killing the tiger?

**Q.3 Attempt any two of the following questions. 12**

- 1) What do you learn about the work of weavers from the poem ‘Indian Weavers’?
- 2) What is the country of no return?
- 3) What are the benefits of blogs?
- 4) What is an email? What are the principles of email writing?

**Q.4 Attempt any one of the following question. 14**

- a) Write the script of an interview for the post of a clerk in Eureka Borbes Company.

**OR**

- b) Write the script of group discussion on the topic – Importance of Cleanliness involving various participants.

**Q.5 You are the secretary of an NGO - Global Society. You have arranged annual meeting of all members. Draft an agenda and minutes of the meeting held on 25 January 2019. 14**

Seat No.	
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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
FUNDAMENTALS OF PROGRAMMING USING C AND C++ – I**

Day & Date: Friday, 08-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 08**

- 1) "C++" programs are converted into machine language with the help of \_\_\_\_\_.
  - a) Editor
  - b) Assembler
  - c) Compiler
  - d) Operating system
- 2) The \_\_\_\_\_ variable stores multiple values of same data type only.
  - a) Constant
  - b) String
  - c) Array
  - d) None of these
- 3) C++ follows \_\_\_\_\_ approach.
  - a) Top-down
  - b) Bottom-up
  - c) Top-up
  - d) Bottom-down
- 4) ++a is an example of \_\_\_\_\_.
  - a) Post-increment
  - b) Pre-increment
  - c) Post-decrement
  - d) Pre-decrement
- 5) What is correct syntax of loop?
  - a) For(initialization; condition; increment/decrement)
  - b) For(increment/decrement; initialization; condition)
  - c) For(initialization, condition, increment/decrement)
  - d) None of these
- 6) To eliminate the cost of calls to small function, C++ proposes a new features called \_\_\_\_\_.
  - a) Call by reference
  - b) Inline function
  - c) Reference variable
  - d) Default argument
- 7) Pointer is nothing but variable used to hold memory address of another variable.
  - a) True
  - b) false
- 8) Which keyword is used for structure definition?
  - a) structure\_def
  - b) struct
  - c) def\_struct
  - d) none of these

**Q.2 Answer the following questions. (Any Four) 08**

- a) Explain difference between Procedure Oriented Programming and Object Oriented Programming.
- b) List out different rules to declare variable in C language.
- c) What is the difference between entry-controlled and exit-controlled loop?
- d) State the syntax printf() function and scanf() function.
- e) What is reference variable?
- f) List out operators in C++.



- Q.3 Answer the following questions. (Any Two) 08**
- a) Explain conditional statements.
  - b) What is inline function? Explain with example.
  - c) What is data type? Explain data type in C language detail.
- Q.4 Answer the following questions. (Any Two) 08**
- a) What is array of structure? Explain with example.
  - b) What is function? List out types of function. Explain function returning value with example.
  - c) Write a program to find out factorial of any number.
- Q.5 Answer the following questions. (Any One) 08**
- a) What is array? Explain types of array with examples.
  - b) What is pointer? Write a program that swaps two number using pointers.

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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**INTRODUCTION TO WEB DESIGNING**

Day & Date: Monday, 07-10-2019  
 Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) \_\_\_\_\_ is a common attribute for <a> tag and <link> tag.
  - a) src
  - b) href
  - c) name
  - d) target
- 2) External CSS has \_\_\_\_\_ file extension.
  - a) .html
  - b) .css
  - c) .css.html
  - d) both a & b
- 3) \_\_\_\_\_ tag is used to define different form elements.
  - a) <form>
  - b) <textarea>
  - c) <input>
  - d) None of these
- 4) MAN Stands for \_\_\_\_\_.
  - a) Metropolitan Area Network
  - b) Metro Area Network
  - c) Metropolitan All Network
  - d) None of these
- 5) \_\_\_\_\_ event handler executes a when an image is stopped from loading before completely loaded.
  - a) onAbort
  - b) onChange
  - c) onReset
  - d) onUnload
- 6) JavaScript language attributes writes within \_\_\_\_\_ tag.
  - a) <head>
  - b) <html>
  - c) <style>
  - d) <script>
- 7) The <input> type date display date on browser in \_\_\_\_\_ format.
  - a) dd/mm/yyyy
  - b) mm/dd/yyyy
  - c) yyyy/mm/dd
  - d) yyyy/dd/mm
- 8) \_\_\_\_\_ attribute of <img> tag is used to display alternate text for image.
  - a) alternate
  - b) alter
  - c) alt
  - d) altText
- 9) Which of the following property is used to set the background image of an element?
  - a) background-img
  - b) background-image
  - c) backgroundimage
  - d) background-color
- 10) In JavaScript 6 % 2 will return the \_\_\_\_\_ value.
  - a) 0
  - b) 3
  - c) 2
  - d) 6
- 11) \_\_\_\_\_ attribute of <frame> tag is used to insert another file in frame.
  - a) href
  - b) src
  - c) rows
  - d) cols

- 12) ID attribute is preceded by \_\_\_\_\_ sign.  
a) @   b) &  
c) \*   d) #
  
- 13) \_\_\_\_\_ tag is used to display pattern is predefined pattern.  
a) <pre>   b) <p>  
c) <b>   d) <pattern>
  
- 14) Which of the following attribute is used to create server side image mapping?  
a) usemap   b) amp  
c) name   d) ismap

**Q.2 A) Answer the following (Any Four)   08**

- 1) List out the text formatting tags.
- 2) Define Internet? Write any two uses of internet.
- 3) What is variable? Which keyword is used to declare variable in JavaScript.
- 4) What is opacity?
- 5) What is Navigator object? List properties of Navigator in JavaScript.

**B) Write Notes on (Any Two)   06**

- 1) <frameset> tag
- 2) String function in JavaScript
- 3) DOCTYPE

**Q.3 A) Answer the following (Any two)   08**

- 1) What is Selector, Property and value? Explain with example.
- 2) What is hyperlink? Explain with example.
- 3) What is LAN? Explain advantages and disadvantages.

**B) Answer the following (Any One)   06**

- 1) What is List? Explain types of list tag with example.
- 2) What is DOM? Explain document object with example.

**Q.4 A) Answer the following (Any Two)   10**

- 1) What is user define function? Explain function syntax with example.
- 2) What is topology? Explain with types.
- 3) Explain css properties for background with example.

**B) Answer the following (Any One)   04**

- 1) Write a JavaScript program to check given number is Armstrong.
- 2) Write a program to demonstrate Math functions.

**Q.5 Answer the following (Any two)   14**

- a) What is animation? Explain animation tag with example.
- b) Design a student registration form and apply appropriate validation on form elements.
- c) Explain <table> tag with example.

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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**INTRODUCTION TO PROGRAMMING USING C – II**

Day & Date: Wednesday, 09-10-2019  
 Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct given below. 14**

- 1) What is the meant by 'a' in the following operation?  
`fp = fopen("Random.txt", "a");`
  - a) Attach
  - b) Append
  - c) Amend
  - d) Add
- 2) Size of a union is determined by size of the \_\_\_\_\_.
  - a) First member in the union
  - b) Last member in the union
  - c) Biggest member in the union
  - d) Sum of the sizes of all members
- 3) Which of the following is a correct format for declaration of function?
  - a) return-type function-name(argument type);
  - b) return-type function-name(argument type) { }
  - c) return-type (argument type)function-name;
  - d) Both (a) and (b)
- 4) Which function gives the current position of the file?
  - a) fseek()
  - b) fsetpos()
  - c) ftell()
  - d) rewind()
- 5) A data structure that can store related information of different data types together is \_\_\_\_\_.
  - a) Array
  - b) String
  - c) Structure
  - d) All of these
- 6) Which one is used during memory deallocation in C?
  - a) remove(p);
  - b) delete(p);
  - c) free(p);
  - d) terminate(p);
- 7) A structure member is generally accessed using the \_\_\_\_\_.
  - a) address operator
  - b) dot operator
  - c) comma operator
  - d) ternary operator
- 8) #include is called \_\_\_\_\_.
  - a) Preprocessor directive
  - b) Inclusion directive
  - c) File inclusion directive
  - d) None of the mentioned
- 9) Union contains related information of the same data type only, \_\_\_\_\_.
  - a) True
  - b) False
- 10) What is the default return type if it is not specified in function definition?
  - a) void
  - b) int
  - c) double
  - d) short int
- 11) \_\_\_\_\_ of the following is a storage specifier?
  - a) enum
  - b) union
  - c) auto
  - d) volatile

- 12) The parameters in a function calling 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) 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])

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Give the difference between local and global variables.
- 2) Write the syntax for getc() and putc().
- 3) Define self-referential structure.
- 4) What is the difference between malloc() and calloc().
- 5) Write syntax for function prototyping.

**B) Write Notes on (Any Two) 06**

- 1) What are the differences between structure and union?
- 2) Explain pointer to pointer with example.
- 3) What are the advantages of pre-processor?

**Q.3 A) Answer the following questions. (Any two) 08**

- 1) Write a program to implement copy command in file.
- 2) Explain dynamic memory allocation in detail.
- 3) Illustrate the difference between call by value and call by reference.

**B) Answer the following question. (Any One) 06**

- 1) Explain array of structure with example.
- 2) Write a program to read and write data for binary file.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain types of function according to argument accepted and return type.
- 2) How to pass structure to the function? Explain with suitable example.
- 3) What is function? Explain function recursion with example.

**B) Answer the following question. (Any One) 04**

- 1) Explain various operations perform on a file.
- 2) Explain sizeof() and typedef with example.

**Q.5 Answer the following questions. (Any two) 14**

- a) Write a program to read integer numbers from user and store into the file "Number", reopen and read the same file copy odd numbers into "odd" file and even numbers into "even" file.
- b) What are the different storage classes? Explain with example.
- c) Explain command line argument with the help of example.

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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**LINEAR ELECTRONICS – II**

Day & Date: Thursday, 10-10-2019  
 Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) \_\_\_\_\_ uses trigger input to change state.
  - a) AMV
  - b) BMV
  - c) oscillator
  - d) none of these
- 2) Capacitor is tapped in \_\_\_\_\_ oscillator.
  - a) PSO
  - b) Colpitts
  - c) Hartley
  - d) WBO
- 3) IC 555 has \_\_\_\_\_ no pin as output.
  - a) 6
  - b) 1
  - c) 3
  - d) 2
- 4) Humidity sensor detects \_\_\_\_\_ in air.
  - a) Water
  - b) Temp.
  - c) Co2
  - d) H
- 5) Thermocouple sensor has minimum range \_\_\_\_\_ degree.
  - a) 270
  - b) 1700
  - c) 2700
  - d) 3700
- 6) RC network in PSO has phase shift of \_\_\_\_\_.
  - a) 60
  - b) 90
  - c) 180
  - d) 360
- 7) PLA uses AND, and \_\_\_\_\_ gate for construction.
  - a) OR
  - b) NOT
  - c) NOR
  - d) XOR
- 8) DMOSFET uses \_\_\_\_\_ on gate side.
  - a) CO<sub>2</sub>
  - b) SiO<sub>2</sub>
  - c) Al<sub>2</sub>O<sub>2</sub>
  - d) GeO<sub>2</sub>
- 9) Hartley Oscillator converts signal from \_\_\_\_\_.
  - a) dc to dc
  - b) ac to dc
  - c) dc to ac
  - d) ac to ac
- 10) IR sensor consists of \_\_\_\_\_ a Transmitter.
  - a) Diode
  - b) zener
  - c) LED
  - d) photodiode
- 11) Output impedance of JFET is \_\_\_\_\_.
  - a) low
  - b) small
  - c) high
  - d) zero

- 12) RTD is \_\_\_\_\_ device.
- |              |              |
|--------------|--------------|
| a) passive   | b) active    |
| c) inductive | d) resistive |
- 13) EMOSFET operates \_\_\_\_\_ mode.
- |              |                  |
|--------------|------------------|
| a) depletion | b) enhancement   |
| c) D and E   | d) none of these |
- 14) The drain resistance of JFET is output voltage/ \_\_\_\_\_.
- |                   |                  |
|-------------------|------------------|
| a) Output Current | b) Input current |
| c) Voltage        | d) None of these |

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) Define Precision.
  - 2) Write difference between FET and BJT.
  - 3) Explain Fan Out.
  - 4) Define oscillator.
  - 5) Write application Thermister.
- B) Write notes on. (Any Two) 06**
- 1) Explain Humidity sensor.
  - 2) Draw the diagram of PLA
  - 3) Explain Barkhausen criteria.
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Explain Bistable multivibrator using IC 555.
  - 2) Explain FPLA with example.
  - 3) Explain IR sensor.
- B) Answer the following questions. (Any One) 06**
- 1) Explain Thermocouple.
  - 2) Explain Wein Bridge Oscillator with diagram.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Explain PAL and FPGA.
  - 2) Explain Monostable multivibrator using IC741.
  - 3) Explain Induction motor.
- B) Answer the following questions. (Any One) 04**
- 1) Explain EMOSFET.
  - 2) Explain CPLD.
- Q.5 Answer the following questions. (Any Two) 14**
- a) Explain phase shift oscillator.
  - b) Explain Pressure and Proximity sensor.
  - c) Explain working and characteristic of n channel JFET.

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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**DIGITAL ELECTRONICS AND MICROPROCESSOR – II**

Day & Date: Friday, 11-10-2019  
 Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) IC 1208 is \_\_\_\_\_ bit DAC.
 

a) 12	b) 8
c) 4	d) 2
- 2) \_\_\_\_\_ is volatile memory.
 

a) ROM	b) PROM
c) EPROM	d) SRAM
- 3) 8085 is \_\_\_\_\_ bit microprocessor.
 

a) 4	b) 8
c) 16	d) 32
- 4) Binary weighted network is \_\_\_\_\_.
 

a) DAC	b) ADC
c) flash ADC	d) None of these
- 5) ADC 0800 is \_\_\_\_\_ bit ADC.
 

a) 2	b) 4
c) 8	d) 12
- 6) Bipolar memory cell uses \_\_\_\_\_.
 

a) MOS	b) CMOS
c) FET	d) BJT
- 7) \_\_\_\_\_ is used in data acquisition system.
 

a) ADC	b) DAC
c) DAM	d) None of these
- 8) 8085 is \_\_\_\_\_ pin IC.
 

a) 8	b) 14
c) 20	d) 40
- 9) IC 2764 is \_\_\_\_\_ EPROM chip.
 

a) 2K X 8	b) 8K X 8
c) 1K X 8	d) 4K X 8
- 10) 8085 has \_\_\_\_\_ no of addressing modes.
 

a) 5	b) 10
c) 15	d) 25
- 11) To access 2K memory \_\_\_\_\_ no of address line.
 

a) 16	b) 12
c) 8	d) 4
- 12) MVI A, 90H is \_\_\_\_\_ addressing mode.
 

a) register	b) direct
c) implied	d) immediate



- 13) \_\_\_\_\_ is arithmetic instruction of 8085.  
 a) ADI   b) LXI  
 c) MVI    d) ANI
- 14) Dynamic memory cell uses \_\_\_\_\_ to store information.  
 a) resistor   b) inductor  
 c) capacitor   d) diode

- Q.2    A)    Answer the following questions. (Any Four)   08**  
 1)    Classify memory  
 2)    What is function of system bus.  
 3)    Write specification of DAC.  
 4)    Explain memory cell.  
 5)    Explain concept of ADC.
- B)    Write notes (Any Two)   06**  
 1)    Explain I/O mapped I/O.  
 2)    Explain flash memory.  
 3)    Explain R-2R ladder.
- Q.3    A)    Answer the following questions. (Any two)   08**  
 1)    Explain memory parameters.  
 2)    Explain features of 8085 microprocessor.  
 3)    Explain assembly language program.
- B)    Answer the following questions. (Any One)   06**  
 1)    Explain memory organization.  
 2)    Explain arithmetic instruction of 8085.
- Q.4    A)    Answer the following questions. (Any Two)   10**  
 1)    Explain binary weighted DAC.  
 2)    Explain types of read only memory.  
 3)    Explain addressing modes of 8085.
- B)    Answer the following questions. (Any One)   04**  
 1)    Explain read operation of memory.  
 2)    Explain data transfer instruction of 8085.
- Q.5    Answer the following questions. (Any two)   14**  
 a)    Explain architecture of 8085.  
 b)    Explain successive approximation analog to digital converter.  
 c)    Explain static and dynamic RAM memory.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**MATHEMATICAL ALGEBRA**

Day & Date: Saturday, 12-10-2019  
Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) If every element of the set A is related to unique element of the set B then the relation R from A to B is called as \_\_\_\_\_.
  - a) Universal relation
  - b) Identify relation
  - c) Void relation
  - d) Function
- 2) A relation R defined on a set A is called as partial ordering relation, if R is \_\_\_\_\_.
  - a) Reflexive, symmetric and transitive
  - b) Reflexive, anti-symmetric and void
  - c) Reflexive, anti-symmetric and identify
  - d) None of these
- 3) Truth value of the double implication is true if and only if \_\_\_\_\_.
  - a) Both the statements are true
  - b) Both the statements are false
  - c) Both a and b
  - d) Neither a nor b
- 4) Let \* be the binary operation defined on the set Z by  $a * b = a + b + 5$ , for all  $a, b \in z$  then identify element w.r.t. operation '\*' is \_\_\_\_\_.
  - a) -5
  - b) 5
  - c)  $5^{-1}$
  - d) None of these
- 5) The imaginary part of complex number  $z = (-5 + 2i) - (3 - 6i)$  is \_\_\_\_\_.
  - a) 8i
  - b) -8i
  - c) -8
  - d) None of these
- 6) In generalized principle of mathematical induction,  $p(4)$  is true for all  $n \geq 4$ , is called as \_\_\_\_\_.
  - a) Induction hypothesis
  - b) Basis for induction
  - c) Finite induction
  - d) Logical induction
- 7) Which of the following is a statement?
  - a)  $x \leq 7$
  - b)  $x^2 = 16$ , for  $x = 3$
  - c) Bring that pen
  - d)  $x$  is an even integer
- 8) A function  $f: A \rightarrow B$  is onto function then \_\_\_\_\_.
  - a) Co-domain is subset of it's range
  - b) Range is subset of co-domain
  - c) Range of function f = it's co-domain
  - d) Range of function f = it's domain
- 9) A relation R defined on the set A is \_\_\_\_\_ if  $(a, b) \in R, (b, c) \in R$  implies that  $(a, c) \in R$ , for  $a, b, c \in A$ 
  - a) Anti-symmetric
  - b) Asymmetric
  - c) Transitive
  - d) Equivalence

- 10) If  $z_1$  and  $z_2$  are any two complex numbers then  $\arg. (z_1 \cdot z_2) = \underline{\hspace{2cm}}$ .
- a)  $\arg \cdot z_1 + \arg \cdot z_2$                       b)  $\arg \cdot z_1 \cdot \arg \cdot z_2$   
 c)  $\arg z_1 - \arg z_2$                       d)  $\arg. z_1 \div \arg. z_2$
- 11) If 'e' is the identify element w.r.t. binary operation \* defined on the set A then  $a, b \in A$ , 'b' is called as inverse of element 'a' if  $a * b = b * a = \underline{\hspace{2cm}}$ .
- a) b    b) e  
 c) a    d)  $a^{-1}$
- 12) The least positive number for which the statement  $2^{n-1} < n!$  is true is  $\underline{\hspace{2cm}}$ .
- a) 0    b) 1  
 c) 2    d) 3
- 13) Inverse of the statement  $q \rightarrow p$  is  $\underline{\hspace{2cm}}$ .
- a)  $p \rightarrow q$                                   b)  $\sim p \rightarrow \sim q$   
 c)  $\sim q \rightarrow \sim p$                               d)  $q \rightarrow p$
- 14) If every element of set A is related to every element of the set B then relation R is known as  $\underline{\hspace{2cm}}$  relation.
- a) void    b) identity  
 c) reflexive                                      d) universal

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) State the first principle of mathematical induction
- 2) Define modulus and argument of a complex number  $z = x + iy$ .
- 3) Draw digraph of relation  
 $R = \{(a, a), (a, b), (b, a), (b, c), (b, d), (c, a), (c, d), (d, b), (d, a)\}$  defined on the set  $A = \{a, b, c, d\}$ .
- 4) Define one - one function
- 5) Prepare truth table for the statement  $(\sim p \rightarrow q) \leftrightarrow (p \wedge q)$ .

**B) Answer the following questions. (Any Two) 06**

- 1) Let  $\sim$  be an equivalence relation defined on the set A. Prove that any two equivalence classes are either disjoint or identical.
- 2) Let  $z_1 = a + ib$  and  $z_2 = c + id$  be any two complex numbers then show that  $\overline{z_1 + z_2} = \bar{z}_1 + \bar{z}_2$ .
- 3) State both the DeMorgan's laws in logic. Hence prove any one of them by preparing truth table.

**Q.3 A) Answer the following questions. (Any two) 08**

- 1) By using principle of mathematical induction show that,  $1 \times 2 \times 3 + 2 \times 3 \times 4 + 3 \times 4 \times 5 + \dots + n(n+1)(n+2) = \frac{n(n+1)(n+2)(n+3)}{4}$  for all  $n \geq 1$ .
- 2) Determine whether the following statement is tautology or contradiction or neither  
 $[p \rightarrow \sim(q \leftrightarrow \sim r)] \wedge [(p \wedge q) \rightarrow \sim r]$ .
- 3) Show that addition of three complex numbers is associative.

**B) Answer the following questions. (Any One) 06**

- 1) Show that the function  $f: Q \rightarrow Q$  defined by  $f(x) = \frac{10x-7}{3}$ ; for all  $x \in Q$  is bijective.
- 2) Define equivalence relation, symmetric relation and anti-symmetric relation.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Find real and imaginary part of the complex number  $z = \left(\frac{4-5i}{-1-3i}\right)^2$
- 2) Let  $a, b \in \mathbb{Q}$ . Let  $*$  be the binary operation defined on the set  $\mathbb{Q}$  by  $a * b = \frac{a+b}{3}$ ; check whether the operation  $*$  is commutative and associative.
- 3) Test the validity of the following argument.

$$p \leftrightarrow \sim q, \sim p \rightarrow r, \sim r \vdash p \rightarrow \sim q$$

**B) Answer the following questions. (Any One) 04**

- 1) Show that composition of two one-one functions is also one-one.
- 2) Let  $A = \{1,2,3,4,5, \}$ . Let  $R$  be the relation defined on the set  $A$  by  $aRb$  if and only if  $|a - b| \leq 4$ , for  $a, b \in A$ . Write relation  $R$ . Also write matrix of relation  $R$ .

**Q.5 Answer the following questions. (Any two) 14**

- a) Define transitive closure. Hence find transitive closure of the relation  $R = \{(x, x), (x, w), (y, x), (x, y), (z, z), (w, z), (w, w)\}$  defined on the set  $A$  by using Warshall's algorithm.
- b) If  $z_1, z_2 \in \mathbb{C}$  then show that  $\left|\frac{z_1}{z_2}\right| = \frac{|z_1|}{|z_2|}$  and  $\arg\left(\frac{z_1}{z_2}\right) = \arg z_1 - \arg z_2$
- c) State generalized principle of finite induction. Hence show that  $(2n + 1) \leq 2^n$ , for all  $n \geq 3$ .



- 11) An A.P. is special type of \_\_\_\_\_.
- T.P.
  - L.P.P
  - A.P.
  - None of these
- 12) Long form of T.P. is \_\_\_\_\_.
- Transparent Problem
  - Transportation Problem
  - Transformer Problem
  - Transportation Profit
- 13) In an IBFS of T.P. the number of occupied cells must be \_\_\_\_\_ where  $m$  is the number of rows and  $n$  be number of columns.
- $m - n + 1$
  - $m - n - 1$
  - $m + n - 1$
  - $mn - 1$
- 14) If constraints in given LPP is ' $\leq$ ' type then in order to make it an equation it require addition of \_\_\_\_\_ variable on the left hand side of such constraint.
- Surplus
  - Slack
  - Artificial
  - None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- Define Decision variable.
- Define Balance A.P.
- Write the formula to find index number for occupied cells and an opportunity cost for unoccupied cells.
- Define standard form of L.P.P.
- Convert the following A.P. of maximize type into minimize type.

$$\begin{bmatrix} 70 & 75 & 40 & 60 \\ 81 & 17 & 82 & 37 \\ 40 & 82 & 80 & 47 \\ 18 & 22 & 51 & 75 \end{bmatrix}$$

**B) Answer the following questions. (Any Two) 06**

- Write structure of  $3 \times 4$  T.P. in details.
- When we arrive at optimum solution in case of T.P. and A.P.
- Define canonical form of L.P.P. with suitable example.

**Q.3 A) Answer the following questions. (Any Two) 08**

- Write the Dual of following L.P.P.  
Minimize,  $z = x + 3y + 2z$ , subject to,  
 $x + 3y + z \geq 5, x + 3z \geq 5, y \geq 6$   
 $x, y, z \geq 0$
- Write a note on unbalanced T.P.
- Solve the following A.P. to minimize the cost.

$$\begin{array}{r} \\ \text{A} \\ \text{B} \\ \text{C} \end{array} \begin{array}{ccc} \text{I} & \text{II} & \text{III} \\ \begin{bmatrix} 11 & 17 & 08 \\ 09 & 07 & 12 \\ 13 & 16 & 15 \end{bmatrix} \end{array}$$

**B) Answer the following questions. (Any One) 06**

- Solve following L.P.P. by graphical method.  
Minimize;  $z = 4x + 2y$ , subject to,  
 $4x + y \geq 20$   
 $2x + y \geq 14$   
 $x + 6y \geq 18$   
 $x, y \geq 0$

2) Find IBFS of following T.P. by using VAM.

	$W_1$	$W_2$	$W_3$	$W_4$	$a_i$
$F_1$	5	2	4	3	22
$F_2$	4	8	1	6	15
$F_3$	4	6	7	5	18
$b_j$	12	7	17	19	

**Q.4 A) Answer the following questions. (Any Two)**

10

1) Solve the following A.P. to minimize the cost.

	X	Y	Z	W
I	18	22	26	30
II	12	17	22	27
III	12	17	22	27
IV	0	7	14	21

- 2) Write a short note on degeneracy in T.P.  
 3) Define feasible solution of L.P.P. and optimum solution of L.P.P. Also define alternate optimum solution of L.P.P.

**B) Answer the following questions. (Any One)**

04

1) Find IBFS by least cost method.

	$W_1$	$W_2$	$W_3$	$a_i$
$F_1$	75	80	85	100
$F_2$	90	75	82	150
$F_3$	82	97	84	200
$b_j$	75	125	250	

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

**Q.5 Answer the following questions. (Any Two)**

14

a) Solve the following L.P.P. by simplex method.

Maximize  $z = 5x_1 + 3x_2$ , subject to  
 $3x_1 + 5x_2 \leq 15$   
 $6x_1 + 2x_2 \leq 24$   
 $x_1; x_2 \geq 0$

b) Solve the following A.P. to maximize the profit.

	I	II	III	IV	V
P	30	37	40	28	40
Q	40	24	27	21	36
R	40	32	33	30	35
S	25	38	40	36	36
T	29	32	41	34	39

c) Find IBFS. Hence find the optimum solution by using MODI.

	$F_1$	$F_2$	$F_3$	$F_4$	$a_i$
$W_1$	6	5	8	5	30
$W_2$	5	11	9	7	40
$W_3$	8	9	7	13	50
$b_j$	35	28	32	25	120

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**B.Sc. (E.C.S.) (Semester - II) (CBCS) Examination Oct/Nov-2019**  
**DESCRIPTIVE STATISTICS - II**

Day & Date: Tuesday, 15-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

- Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Each question carry equal marks.  
4) Soundless calculator is allowed.  
5) Graph paper will be supplied on request.

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Karl Pearson's coefficient of correlation gives \_\_\_\_\_ of linear relationship between two variables.
  - a) magnitude
  - b) direction
  - c) magnitude and direction
  - d) None of these
- 2) If  $r_{xy} = 0.2$  then  $r_{uv} =$  \_\_\_\_\_ where  $u = \left(\frac{X-30}{10}\right)$  and  $v = \left(\frac{25-Y}{15}\right)$ 
  - a) 0.2
  - b) - 0.2
  - c) 0.15
  - d) None of these
- 3) If two variables are changes in proportion, then there is \_\_\_\_\_ correlation between them.
  - a) perfect + ve
  - b) perfect - ve
  - c) perfect + ve or - ve
  - d) None of these
- 4) The lines of regression X on Y and Y on X are coincides, then  $r_{xy} =$  \_\_\_\_\_.
  - a) +1
  - b) -1
  - c)  $\pm 1$
  - d) None of these
- 5) The equation of line of regression Y on X is  $4X + 3Y = 40$ , then  $b_{yx} =$  \_\_\_\_\_.
  - a)  $-(4/3)$
  - b)  $(4/3)$
  - c)  $(3/4)$
  - d)  $-(3/4)$
- 6) If  $b_{yx} = -0.5$  and  $b_{xy} = -1.25$ , then  $r_{xy} =$  \_\_\_\_\_.
  - a)  $-\sqrt{0.625}$
  - b)  $\sqrt{0.625}$
  - c)  $\sqrt{-0.625}$
  - d) None of the above
- 7) If  $r_{12} = r_{13} = 0$  then  $R_{1.23} =$  \_\_\_\_\_.
  - a) 1
  - b) 0
  - c) unpredictable
  - d) None of these
- 8) The partial regression coefficient \_\_\_\_\_ denotes the rate of change in  $X_2$  per unit change in  $X_1$ .
  - a)  $b_{21.3}$
  - b)  $b_{12.3}$
  - c)  $b_{23.1}$
  - d) None of these
- 9) Let  $X_1 = 45 + 3X_2 - 4X_3$  be the equation of plane of regression  $X_1$  on  $X_2$  and  $X_3$ . If  $X_3$  increases by 1 unit (keeping  $X_2$  constant)  $X_1$  will \_\_\_\_\_.
  - a) increases by 3 units
  - b) decreases by 3 units
  - c) increases by 4 units
  - d) decreases by 4 units



- 10) Periodic variations whose period is less than 1 year are known as \_\_\_\_\_ variations.  
 a) seasonal  
 b) cyclical  
 c) random  
 d) None of these
- 11) In \_\_\_\_\_ phase of cyclical variation the business activities shows increasing trend.  
 a) prosperity  
 b) recession  
 c) depression  
 d) recovery
- 12) \_\_\_\_\_ price index number uses quantities in current period as weights.  
 a) Laspeyre's  
 b) Paasche's  
 c) Fisher's  
 d) all of these
- 13) If  $\sum p_1 = 150$ ,  $\sum p_0 = 75$  then price index number is \_\_\_\_\_.  
 a) 2  
 b) 200  
 c) 150  
 d) None of these
- 14) Let L, P and F denotes the Laspeyre's, Paasche's and Fisher's index numbers. The true relation between L, P and F is \_\_\_\_\_.  
 a)  $L < F < P$   
 b)  $P < F < L$   
 c) (a) and (b) both  
 d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define - Time series.
- 2) Define - Index number.
- 3) Given:  $Cov(X, Y) = -84$ ,  $Var(X) = 100$ ,  $Var(Y) = 256$  Find  $r_{xy}$ .
- 4) Given:  $\bar{X} = 24$ , the equation of line of regression Y on X is  $4X + 2Y = 156$ , find  $\bar{Y}$ .
- 5) Given:  $r_{12} = r_{13} = r_{23} = 0.5$ , find  $R_{1,23}$

**B) Write Notes. (Any Two) 06**

- 1) Fisher's index number
- 2) Types of correlation
- 3) Random variation

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) State properties of regression coefficients.
- 2) Find Spearman's rank correlation coefficient between X and Y and interpret the result.

X	20	17	30	45	24	38
Y	50	42	33	22	39	18

- 3) Compute price index number for 2005 by average of relatives method.

Commodity	A	B	C	D	E
Price in 2004	25	154	180	218	112
Price in 2005	30	125	205	2230	130

**B) Answer the following questions. (Any One) 06**

- 1) Derive equation of line of regression by least square method.
- 2) Given:  $\sigma_1 = 5$ ,  $\sigma_2 = 3$ ,  $\sigma_3 = 7$ ,  $\bar{X}_1 = 50$ ,  $\bar{X}_2 = 37$ ,  $\bar{X}_3 = 63$ ,  $r_{12} = 0.45$ ,  $r_{13} = 0.4$ ,  $r_{23} = 0.5$   
 Obtain equation of plane of regression  $X_1$  on  $X_2$  and  $X_3$  and estimate  $X_1$  for  $X_2 = 50$  and  $X_3 = 70$ .

**Q.4 A) Answer the following questions. (Any Two)** **10**

- 1) Explain scatter diagram method of studying correlation between two variables.
- 2) Obtain trend values by assuming 4 yearly cycle from the following time series.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sales (1000 Rs.)	14	18	22	26	23	27	30	32	31	34

- 3) The equations of lines of regression are  $5X + 4Y = 200$  and  $3X + 6Y = 21$ . Find  $\bar{X}$ ,  $\bar{Y}$  and  $r_{xy}$ .

**B) Answer the following questions. (Any One)** **04**

- 1) Explain concept of multiple regression.
- 2) Obtain Fisher's price index number from the following data.

Community	Base period		Current period	
	Price (in 1000Rs.)	Qty. (in 100Kg.)	Price (in 1000Rs.)	Qty. (in 100Kg.)
AB	175	5	200	7
BC	200	9	195	10
CD	80	4.2	90	3.2

**Q.5 Answer the following questions. (Any Two)** **14**

- a) State and explain the problems in construction of index number.
- b) Fit second degree parabola to the following time series and obtain trend values.

Year	2010	2011	2012	2013	2014
Profit (in 10000Rs.)	56	66	80	98	120

- c) Given:  $n = 10$ ,  $\sum X = 155$ ,  $\sum Y = 144$ ,  $\sum X^2 = 2965$ ,  $\sum Y^2 = 2690$ ,  $\sum XY = 2605$ . Obtain equations of line of regression and hence estimate Y when X=20 and X when Y=18.





- 3) The joint pmf of  $(X, Y)$  is
- $$P(X, Y) = \frac{2X + 3Y}{24} \quad \begin{array}{l} \text{if } X = 1, 2 \\ Y = 0, 2 \end{array}$$
- $$= 0 \quad \text{if o. w.}$$

Find  $E(X)$

**Q.3 A) Attempt any two of the following questions. 08**

- 1) Define uniform distribution. State mean and variance of it.
- 2) Define pdf of r.v.  $X$ . verify whether the following function is pdf or not.

$$f(X) = 2 \quad \text{if } 0 \leq X \leq \frac{1}{2}$$

$$= 0 \quad \text{if o. w.}$$

- 3) Let r.v.  $X$  have an exponential distribution with mean  $\theta = 4$ . Find  $P(X \leq 2)$

**B) Attempt any one of the following question. 06**

- 1) Write the test procedure for testing equality of two population means.
- 2) The joint pmf of  $(X, Y)$  is

$$P(X, Y) = \frac{(X + 2Y)}{45} \quad \begin{array}{l} \text{if } X = 1, 3, 5 \\ Y = 0, 1, 2 \end{array}$$

$$= 0 \quad \text{if o. w.}$$

Find:

- i) Marginal probability distribution of  $X$
- ii) Marginal probability distribution of  $Y$
- iii)  $P(X = 3/Y = 2)$

**Q.4 A) Attempt any two of the following questions. 10**

- 1) Define cumulative distribution function of r.v.  $X$ . State any three properties of it.
- 2) In a hospital 138 female babies and 162 male babies were born in a month. Do these figures confirm to the hypothesis that male and female are born in equal proportion.
- 3) The joint pmf of  $(X, Y)$  is

X \ Y	1	2
0	$\frac{2}{24}$	$\frac{4}{24}$
2	$\frac{8}{24}$	$\frac{10}{24}$

Test variables  $X$  and  $Y$  are independent?

**B) Attempt any one of the following question. 04**

- 1) Define mathematical expectation and variance of continuous r.v.  $X$ .
- 2) If  $X \rightarrow U[a, b]$  with mean 3 and variance 3. Find parameters " $a$ " and " $b$ ".

**Q.5 Attempt any two of the following questions. 14**

- 1) Write test procedure for testing equality of two population proportion.
- 2) Define normal distribution. State important properties of it.
- 3) A r.v.  $X$  has pdf given by

$$f(X) = C X^2 \quad \text{if } 0 \leq X \leq 1$$

$$= 0 \quad \text{if o. w.}$$

Find:

- 1) The value of  $C$
- 2)  $E(X)$
- 3)  $V(X)$

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**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019**  
**OBJECT ORIENTED PROGRAMMING USING C++**

Day & Date: Saturday, 05-10-2019  
 Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Friend function can access \_\_\_\_\_ data of class.
  - a) private
  - b) public
  - c) protected
  - d) All of these
- 2) Wrapping of data and functions into a single unit is called as \_\_\_\_\_.
  - a) Constructor
  - b) data encapsulation
  - c) polymorphism
  - d) inheritance
- 3) In public derivation of class, private data of base class becomes \_\_\_\_\_ for derived class.
  - a) Private
  - b) Public
  - c) protected
  - d) not inherited
- 4) Compile time polymorphism is achieved by \_\_\_\_\_.
  - a) Function overloading
  - b) operator overloading
  - c) Both (a) and (b)
  - d) Virtual function
- 5) << is called \_\_\_\_\_.
  - a) insertion operator
  - b) Extraction operator
  - c) object
  - d) external operator
- 6) When a virtual function is redefined by the derived class, it is called \_\_\_\_\_.
  - a) overloading
  - b) overriding
  - c) Rewriting
  - d) none of the above
- 7) While overloading unary operators using member function, it requires \_\_\_\_\_ argument(s).
  - a) zero
  - b) one
  - c) two
  - d) Three
- 8) The members declared in the \_\_\_\_\_ section of class can be accessed by any function from outside world.
  - a) public
  - b) private
  - c) protected
  - d) none
- 9) The single copy of \_\_\_\_\_ data of class is common to all objects.
  - a) inline
  - b) private
  - c) static
  - d) friend
- 10) Abstract class contains at least one \_\_\_\_\_ function.
  - a) Virtual
  - b) Friend
  - c) Pure virtual
  - d) None of the above
- 11) In protected derivation of class, public data of base class becomes \_\_\_\_\_ for derived class.
  - a) private
  - b) public
  - c) protected
  - d) not inherited

- 12) A constructor is executed automatically at the time of \_\_\_\_\_.  
 a) Declaration of an object                      b) use of an object  
 c) Declaration of a class                        d) use of a class
- 13) What is the syntax for inheritance of class?  
 a) class name  
 b) class name : access specifier  
 c) class name : access specifier class name  
 d) none of the above
- 14) Default values for a function are specified when \_\_\_\_\_.  
 a) function is declared                          b) function is defined  
 c) (a) and (b)                                      d) none of the above

**Q.2 A) Answer the following (Any Four) 08**

- 1) What is file?
- 2) Write rules for declaring constructor.
- 3) Write note on default arguments.
- 4) State any two differences between C and C++.
- 5) Write syntax of class definition.

**B) Write Notes on (Any Two) 06**

- 1) command line arguments
- 2) this pointer
- 3) destructor

**Q.3 A) Answer the following (Any two) 08**

- 1) Explain static member functions.
- 2) Explain rules for operator overloading.
- 3) Write a program to accept information of five student (roll\_no, name and marks) and display it on screen using array of objects.

**B) Answer the following (Any One) 06**

- 1) What is friend function? Write a program to show the use of friend function.
- 2) What is constructor? Explain the use of constructor with suitable program.

**Q.4 A) Answer the following (Any Two) 10**

- 1) What are file pointers? Explain get-pointers and put-pointers.
- 2) Explain object oriented programming principles.
- 3) Explain different parameter passing techniques in C++.

**B) Answer the following (Any One) 04**

- 1) Explain different file opening modes with example.
- 2) Write a program in C++ to implement any one unary operator overloading with member.

**Q.5 Answer the following (Any two) 14**

- a) What is runtime polymorphism? Explain how it is achieved in C++ with suitable example.
- b) Explain parameterized constructor with suitable program.
- c) What are the access specifiers in C++? Explain various access levels.

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**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019**  
**SOFTWARE ENGINEERING**

Day & Date: Monday, 07-10-2019  
 Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Modifying the software to match changes in the ever changing environment is called \_\_\_\_\_ maintenance.
  - a) Preventive
  - b) Adaptive
  - c) Corrective
  - d) Perfective
- 2) The most important feature of spiral model is \_\_\_\_\_.
  - a) Risk management
  - b) Quality management
  - c) Performance management
  - d) Efficiency management
- 3) "Black" refers in the black box testing means?
  - a) I-O is hidden
  - b) Design is hidden
  - c) User is hidden
  - d) All of these
- 4) In \_\_\_\_\_ Model, development should be done in specified time frame.
  - a) Incremental
  - b) Waterfall
  - c) RAD
  - d) Spiral
- 5) Which one of the following are data validation checks?
  - a) Length check
  - b) Type check
  - c) Range check
  - d) All of the above
- 6) Software feasibility is based on which of the following?
  - a) Business and marketing concerns
  - b) Cope, constraints, market
  - c) Technology, finance, time, resources
  - d) None of these
- 7) \_\_\_\_\_ is an object that has its own unique identity.
  - a) Relationship
  - b) Entity
  - c) Attribute
  - d) None of these
- 8) Problem identification is done during \_\_\_\_\_ phase.
  - a) system design
  - b) systems analysis
  - c) system test
  - d) All of the above
- 9) In \_\_\_\_\_ system the interaction between various subsystems cannot be defined with certainty.
  - a) Open
  - b) Closed
  - c) Deterministic
  - d) Probabilistic
- 10) \_\_\_\_\_ is graphical representation of decision tables.
  - a) Data base
  - b) Decision Tree
  - c) Flowchart
  - d) ERD



- 11) The process of getting the data to the computer for processing is called as \_\_\_\_\_.
  - a) Data Collection
  - b) Recording Data
  - c) Data element
  - d) Data
- 12) Which of the following coupling uses the same global data?
  - a) Control coupling
  - b) Stamp coupling
  - c) Data coupling
  - d) Content coupling
- 13) \_\_\_\_\_ gives defining the flow of the data through and organization or a company or series of tasks that may or may not represent computerized processing.
  - a) System process
  - b) System flowchart
  - c) System design
  - d) Structured System
- 14) \_\_\_\_\_ feasibility focuses on the existing computer hardware, software & resources.
  - a) Technical
  - b) Economic
  - c) Organizational
  - d) Operational

**Q.2 A) Answer the following Questions. (Any Four) 08**

- 1) What are the benefits of Case tools?
- 2) What is software engineering? List out software characteristics.
- 3) State the principles of flow charting.
- 4) Distinguish between Physical & Abstract Systems.
- 5) Define Entity and Attribute.

**B) Write the Notes on (Any Two) 06**

- 1) Structured English
- 2) Feasibility study
- 3) Software quality - Reliability and Efficiency

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) What is the use of a data flow diagram? Explain DFD Symbol.
- 2) Draw an ER diagram for Library System.
- 3) Solve Decision Tree example-  
Bookstores get a trade discount of 25%; for orders from libraries and individuals, 5% allowed on orders of 6-14 copies per book title; 10% on orders for 15-29 copies per book title; 15% on orders for 30 copies or more per book title.

**B) Answer the following questions. (Any One) 06**

- 1) What is Data Dictionary? Explain each component of data dictionary?
- 2) Explain V shape Model.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain the various roles played by the system analyst.
- 2) Explain Fact finding techniques.
- 3) Explain 4NF and 5NF.

**B) Answer the following questions. (Any One) 04**

- 1) Discuss the problems faced during software maintenance.
- 2) Draw the HIPO chart for college admission system.

**Q.5 Answer the following (Any Two) 14**

- a) Draw the CLD and first level DFD for Mark sheet printing system.
- b) Explain the different methods of conversions from old system to new system
- c) What do you mean by Software Testing? Explain different types of testing techniques.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
FUNDAMENTALS OF PROGRAMMING USING C AND C++ – II**

Day & Date: Saturday, 09-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 08**

- 1) What does a class in C++ holds?
  - a) data
  - b) functions
  - c) both data & functions
  - d) none of the mentioned
- 2) Syntax for Pure Virtual Function is \_\_\_\_\_.
  - a) virtual void show()==0
  - b) void virtual show()==0
  - c) virtual void show()=0
  - d) void virtual show()=0
- 3) C++ Programming employs \_\_\_\_\_ programming approach.
  - a) bottom-up
  - b) procedural
  - c) top-down
  - d) all of these
- 4) Which among the following is called first, automatically, whenever an object is created?
  - a) Class
  - b) Constructor
  - c) New
  - d) Trigger
- 5) The following feature supports extensibility and reusability of classes \_\_\_\_\_.
  - a) Inheritance
  - b) operator overloading
  - c) function overloading
  - d) data encapsulation
- 6) The process of deriving a class from another derived class is \_\_\_\_\_.
  - a) single inheritance
  - b) multilevel inheritance
  - c) multiple inheritance
  - d) none of the above
- 7) The members of a class \_\_\_\_\_.
  - a) by default are public
  - b) are made private by declaring as private
  - c) by default are private
  - d) none of the above
- 8) The following operators cannot be overloaded \_\_\_\_\_.
  - a) scope resolution operator
  - b) size of operator
  - c) conditional operator
  - d) all of the above

**Q.2 Attempt any four of the following questions. 08**

- a) What is macro?
- b) Write syntax for a class declaration.
- c) What do you mean by function overloading?
- d) Differentiate between static memory and dynamic memory allocation.
- e) Define exception? How exception is handled in C++?
- f) What is pure virtual function?

- Q.3 Attempt any two of the following questions. 08**
- a) Write a program for multiple inheritance.
  - b) Explain access specifiers used in C++.
  - c) What is the use of new and delete operator.
- Q.4 Attempt any two of the following questions. 08**
- a) Write a program for Constructor overloading.
  - b) Explain Preprocessor Directives with example.
  - c) Write a program to accept and display student information using class.
- Q.5 Attempt any one of the following questions. 08**
- a) What is polymorphism? How it is achieved in C++?
  - b) Define constructor. Explain types of constructors in detail.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019  
OPERATING SYSTEM**

Day & Date: Wednesday, 09-10-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which scheduler select which processes should be brought into the ready queue?
  - a) real-term
  - b) long-term
  - c) mid-term
  - d) short-term
- 2) Bring a page into memory when it is needed are called \_\_\_\_\_.
  - a) demand memory
  - b) demand paging
  - c) page fault
  - d) page segmentation
- 3) Multiprogramming system:
  - a) are easier to develop the single programming systems
  - b) execute each job faster
  - c) execute the more jobs in the same time period
  - d) are used only one large mainframe computers
- 4) Which is not the function of operating system?
  - a) memory management
  - b) disk management
  - c) application management
  - d) virus protection
- 5) What are the requirements for the solution to critical section problem?
  - a) mutual exclusion
  - b) progress
  - c) bounded waiting
  - d) all of above
- 6) What is thrashing?
  - a) A high paging activity is called thrashing
  - b) A high executing activity is called thrashing
  - c) A extremely long process is called thrashing
  - d) A extremely long virtual memory is called thrashing
- 7) The Banker's algorithm is used \_\_\_\_\_.
  - a) to rectify deadlock
  - b) to detect deadlock
  - c) to prevent deadlock
  - d) to solve deadlock
- 8) Paging is implemented in \_\_\_\_\_.
  - a) operating system
  - b) h/w
  - c) s/w
  - d) All of them
- 9) Copying a process from memory to disk to allow space for other processes is called \_\_\_\_\_.
  - a) swapping
  - b) deadlock
  - c) demand paging
  - d) page fault
- 10) A page fault occurs when \_\_\_\_\_.
  - a) the deadlock happens
  - b) the segmentation starts
  - c) the page is found in memory
  - d) the page is not found in memory

- 11) The O.S. kept the information of files in a table called \_\_\_\_\_.
  - a) File Folder Table(FFT)
  - b) File Index Table(FIT)
  - c) File Allocation Table(FAT)
  - d) Directory Index Table(DIT)
- 12) Virtual memory is \_\_\_\_\_.
  - a) extremely large main memory
  - b) extremely large secondary memory
  - c) an illusion of extremely large main memory
  - d) an illusion of extremely large secondary memory
- 13) Which of the following is the allocation method of a disk space?
  - a) contiguous allocation
  - b) linked allocation
  - c) indexed allocation
  - d) all of above
- 14) What do you mean by memory compaction?
  - a) Combine multiple equal memory holes into one big hole
  - b) Combine multiple small memory holes into one big hole
  - c) Divide big memory hole into small holes
  - d) divide memory hole by 2

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define deadlock
- 2) What is critical section?
- 3) Define process scheduling
- 4) Define overlays
- 5) Define multiprogramming

**B) Write Notes on (Any Two) 06**

- 1) Swapping
- 2) System call
- 3) Preemptive and Non-preemptive scheduling

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Define file. Explain at least three types of file.
- 2) Define process and explain its various states.
- 3) Solve the following problem by using preemptive SJF

Process	P1	P2	P3	P4
Arrival Time	0	1	2	3
CPU Burst Time(msec.)	8	4	9	5

Perform the following operations:

- i) Draw Gantt chart for the schemes
- ii) Calculate average waiting time

**B) Answer the following questions. (Any One) 06**

- 1) State the scheduling algorithm criteria's.
- 2) Define semaphore with its operations.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) What is concept of free space management and explain its techniques?
- 2) Explain FIFO page replacement algorithm with example.
- 3) What is segmentation?

**B) Answer the following questions. (Any One) 04**

- 1) What is wait-for-graph?
- 2) Note on Time Sharing operating system

**Q.5 Answer the following questions. (Any two)**

- a) Define operating system and explain services provided by operating system.
- b) Explain PCB with neat labeled diagram.
- c) Consider the following scenario of the system

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P <sub>0</sub>	0	1	0	7	5	3	3	3	2
P <sub>1</sub>	2	0	0	3	2	2			
P <sub>2</sub>	3	0	2	9	0	2			
P <sub>3</sub>	2	1	1	2	2	2			
P <sub>4</sub>	0	0	2	4	3	3			

Perform the following operations by using Banker's algorithm

- 1) What will be the content of the Need matrix?
- 2) Is the system in safe state? If Yes, then what is the safe sequence?

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Set P

**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019**  
**DATA STRUCTURES**Day & Date: Thursday, 10-10-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.**Q.1 Fill in the blanks by choosing correct alternatives given below.**

14

- 1) The complexity of linear search algorithm is \_\_\_\_\_.
  - a)  $O(n)$
  - b)  $O(\log n)$
  - c)  $O(n^2)$
  - d)  $O(n \log n)$
- 2) \_\_\_\_\_ data structure is useful for polynomial manipulations.
  - a) queue
  - b) stack
  - c) linked list
  - d) both a) and b)
- 3) In a linked list, insertion can be done as \_\_\_\_\_.
  - a) beginning
  - b) middle
  - c) end
  - d) all of these
- 4) \_\_\_\_\_ algorithm is useful to solve Traveling Salesman Problem (TSP).
  - a) Greedy
  - b) Branch and bound
  - c) Dynamic programming
  - d) none of these
- 5) Which of the following is an application of queue?
  - a) Reversal of string
  - b) Evaluation of Postfix expression
  - c) CPU scheduling
  - d) Matching parenthesis in an expression
- 6) Which of the following data structure store the homogeneous data elements?
  - a) pointer
  - b) list
  - c) array
  - d) none of these
- 7) \_\_\_\_\_ is non linear data structure.
  - a) stack
  - b) queue
  - c) linked list
  - d) none of these
- 8) Which of the following is not the part of ADT description?
  - a) data
  - b) operations
  - c) both a) and b)
  - d) none of the above
- 9) \_\_\_\_\_ Multiway search tree allows random as well as sequential access.
  - a) B-tree
  - b) B+ tree
  - c) Threaded
  - d) Extended
- 10) Header node always stores address of \_\_\_\_\_ Node.
  - a) first
  - b) middle
  - c) second last
  - d) last
- 11) The balance factor of each node of AVL tree is in the range.
  - a) 1,2,3
  - b) 0,1,2
  - c) -1,0,1
  - d) both a) and b)

- 12) The quick sort algorithm exploit \_\_\_\_\_ design technique.
  - a) overflow
  - b) backtracking
  - c) dynamic programming
  - d) divide and conquer
- 13) The node of doubly linked list contains \_\_\_\_\_ parts.
  - a) One
  - b) Two
  - c) Three
  - d) Zero
- 14) \_\_\_\_\_ sort method uses divide and conquer strategy.
  - a) Bubble
  - b) Selection
  - c) Insertion
  - d) Quick

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) What is dynamic memory allocation?
  - 2) What is doubly circular linked list?
  - 3) Write any two differences between stack and queue.
  - 4) What is strictly binary tree?
  - 5) What is time and space complexity?
- B) Write notes on. (Any Two) 06**
- 1) Explain B+ tree.
  - 2) What is data structure? Write its importance.
  - 3) List out application of tree data structure.
- Q.3 A) Answer the following questions. (Any two) 08**
- 1) What is Circular Queue? Explain following operation on circular queue.
    - i) insert()
    - ii) remove()
  - 2) Explain AVL tree rotations.
  - 3) Explain node delete operation of binary search tree with following cases:
    - i) deleting leaf node
    - ii) deleting node having one child
- B) Answer the following questions. (Any One) 06**
- 1) What is input Restricted Dequeue? Implement it's remove\_right() operation.
  - 2) Explain linear search method with example.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Implement function that reverses doubly linear linked list.
  - 2) Explain 'Radix sort' with example.
  - 3) Write an algorithm that convert infix expression to prefix expression.
- B) Answer the following questions. (Any One) 04**
- 1) Explain ADT for stack data structure.
  - 2) Write a program that finds subtraction of two matrices.
- Q.5 Answer the following questions. (Any two) 14**
- a) What is traversal? Explain all tree traversal methods with example.
  - b) Write a program to implement linear queue using array.
  - c) Write a program to implement binary search method.



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**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019  
EMBEDDED SYSTEM - I**

Day & Date: Friday, 11-10-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) The ARM has \_\_\_\_\_ bus architectures.
  - a) Address bus
  - b) Port bus
  - c) AMBA bus
  - d) None of these
- 2) The embedded system is designed by using \_\_\_\_\_ type of device.
  - a) Microprocessor
  - b) Microcontroller
  - c) D.S.P.
  - d) All of these
- 3) SPI stands for \_\_\_\_\_.
  - a) Serial peripheral interface
  - b) Serial and parallel interface
  - c) Synchronous peripheral interface/ interconnect
  - d) None of these
- 4) The data is read from the pipe in \_\_\_\_\_ order.
  - a) FIFO
  - b) FILO
  - c) LIFO
  - d) All of these
- 5) ARM has \_\_\_\_\_ type of controller.
  - a) RISC
  - b) CISC
  - c) Both a and b
  - d) None of these
- 6) \_\_\_\_\_ type of RAM is designed by using flip-flop.
  - a) Static
  - b) Dynamic
  - c) Virtual
  - d) Both a and b
- 7) \_\_\_\_\_ are the type of semaphore.
  - a) Binary
  - b) Counting
  - c) Both a and b
  - d) none of these
- 8) In LCD interfacing \_\_\_\_\_ pin are used for data read write operation.
  - a) R/W
  - b) E
  - c) RS
  - d) VCC
- 9) In \_\_\_\_\_, type of communication the data can transfer and receive with same clock frequency.
  - a) Serial asynchronous communication
  - b) Serial synchronous communication
  - c) Serial communication
  - d) Parallel communication
- 10) Kernel is the \_\_\_\_\_ of the operating system.
  - a) Brain
  - b) Heart
  - c) Both a and b
  - d) None of these

- 11) 8086 microprocessor has \_\_\_\_\_ bit processor.
  - a) 8 bit
  - b) 16 bit
  - c) 32 bit
  - d) 64 bit
- 12) \_\_\_\_\_ type of timer used to automatic restart or reboot the system.
  - a) Timer 0
  - b) Timer 1
  - c) Watchdog timer
  - d) None of these
- 13) C Programme are converted into machine level language by using \_\_\_\_\_.
  - a) Compiler
  - b) Interpreter
  - c) Operating system
  - d) None of these
- 14) 8051 microcontroller has \_\_\_\_\_ byte of data memory (RAM).
  - a) 128 byte
  - b) 256 byte
  - c) 64 byte
  - d) 1 kb

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define embedded system.
- 2) What is Watchdog timer in embedded system?
- 3) What is scheduler?
- 4) Draw the block diagram of embedded system.
- 5) State the different types of ARM development tools.

**B) Write short notes. (Any Two) 06**

- 1) Write any three features of embedded system.
- 2) Give the recent trends in embedded system.
- 3) Types of I/O Ports in embedded system.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Explain the designing challenges in the embedded system.
- 2) Write a note on flash memory.
- 3) Give the different applications of embedded system.

**B) Write short notes. (Any one) 06**

- 1) Explain in detail serial and parallel communication protocols. (any four)
- 2) Explain in detail ARM Core Data Flow Model.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain DMA with diagram.
- 2) Write a note on multitasking and multiprocessing.
- 3) Explain the concept Exception handling in ARM.

**B) Write short notes. (Any one) 04**

- 1) Give the features of 8051 microcontroller.
- 2) Give the difference between CISC and RISC.

**Q.5 Answer the following questions. (Any Two) 14**

- a) Explain in detail the interfacing of LCD (16\*2) display with 8051 microcontroller.
- b) Explain the concept of 3 stage pipeline in ARM organization.
- c) Write a note on Memory Mapping.

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**B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination Oct/Nov-2019**  
**ADVANCED MICROPROCESSOR**

Day & Date: Saturday, 12-10-2019  
Time: 03:00 PM To 05:30 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) In Asynchronous communication \_\_\_\_\_ number of stop bits.
 

a) 0	b) 1
c) 2	d) 3
- 2) Intel 8089 is \_\_\_\_\_ Processor.
 

a) IOP	b) CPU
c) PPI	d) Both a & b
- 3) Polling is \_\_\_\_\_ type of Interrupt.
 

a) Hardware	b) Software
c) Both a & b	d) None of these
- 4) OPR Select \_\_\_\_\_ bits are used.
 

a) One	b) Three
c) Five	d) Six
- 5) MVI A,64 is \_\_\_\_\_ type of Addressing mode Instruction.
 

a) Register Addressing	b) Relative Addressing
c) Immediate Addressing	d) Direct Addressing
- 6) SKIP Instruction is \_\_\_\_\_ address Instruction.
 

a) One	b) Two
c) Three	d) Zero
- 7) \_\_\_\_\_ Memory is an internal Memory.
 

a) Primary	b) Secondary
c) CPU Register	d) Cache Memory
- 8) 128 Byte RAM chip has \_\_\_\_\_ address lines.
 

a) 8	b) 7
c) 9	d) 11
- 9) FSM has 13 primary \_\_\_\_\_.
 

a) Input	b) Output
c) Input and Output	d) None of these
- 10) \_\_\_\_\_ contain address of next Instruction to be executed.
 

a) SP	b) AR
c) PC	d) MC
- 11) \_\_\_\_\_ is Program Control Instruction.
 

a) JMP	b) ROL
c) SHRA	d) ADD
- 12) Stack is accessed from one end only called as \_\_\_\_\_.
 

a) PUSH	b) POP
c) IP	d) Top of Stack

- 13) Mean Time before Failure related to \_\_\_\_\_.
- |                |                |
|----------------|----------------|
| a) Reliability | b) Access Time |
| c) Cost        | d) Capacity    |
- 14) Data Stored on Magnetic tape in \_\_\_\_\_ tracks.
- |                 |                 |
|-----------------|-----------------|
| a) Circular     | b) Longitudinal |
| c) Semicircular | d) Spiral       |

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) Write any Four Characteristics of Memory.
  - 2) Define Communication Interface.
  - 3) Define Interrupt.
  - 4) Write down Arithmetical Instruction.
  - 5) Write down definition of Stack.
- B) Answer the following questions. (Any Two) 06**
- 1) Explain Data transfer Instruction.  
i) MOV ii) IN iii) OUT
  - 2) What is mean by cache memory and types of cache?
  - 3) Explain CPU-IOP communication.
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Explain Memory Hierarchy.
  - 2) Explain Register and Memory Stack.
  - 3) Explain Asynchronous Data transfer and Strobe Method.
- B) Answer the following questions. (Any One) 06**
- 1) Explain Data Manipulation Instruction.
  - 2) Explain any four types of Addressing Modes.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) With Suitable diagram explain General Register Organization.
  - 2) Explain State table Method.
  - 3) Explain Combinational and Sequential ALU.
- B) Answer the following questions. (Any One) 04**
- 1) Explain Segmentation in Virtual Memory.
  - 2) Explain Sequence Counter Method.
- Q.5 Answer the following questions. (Any Two) 14**
- a) Explain Bit Slice Processors.
  - b) What is DMA? Explain DMA transfer with block diagram?
  - c) Explain Virtual Memory in detail.

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination Oct/Nov-2019**  
**OBJECT ORIENTED PROGRAMMING USING JAVA**

Day & Date: Saturday, 19-10-2019  
 Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) A variable declared inside the for loop control cannot be referenced outside the loop.
  - a) True
  - b) False
- 2) All the bitwise operators have the same level of precedence in java.
  - a) True
  - b) False
- 3) The default value for char type variable is \_\_\_\_\_.
  - a) '\u0020'
  - b) '\u00ff'
  - c) " "
  - d) '\u0000'
- 4) What is wrong in the following class definitions?
 

```
abstract class print
{
    abstract show( );
}
class Display extends print
{
}
```

  - a) Nothing is wrong
  - b) Wrong. Method show( ) should have a return type
  - c) Wrong. Method show( ) is not implemented in Display
  - d) Wrong. Display does not contain any members
- 5) Which of the following control expressions are valid for an if statement?
  - a) an integer expression
  - b) a boolean expression
  - c) either a or b
  - d) Neither a nor b
- 6) A package is a collection of \_\_\_\_\_.
  - a) classes
  - b) Interfaces
  - c) editing tools
  - d) classes and interfaces
- 7) The concept of multiple inheritance is implemented in java by \_\_\_\_\_.
  - a) extending two or more classes
  - b) implementing two or more interfaces
  - c) extending one class and implementing one or more interfaces
  - d) All the above
- 8) The methods wait( ) and notify( ) are defined in \_\_\_\_\_.
  - a) java.lang.String
  - b) java.lang.Runnable
  - c) java.lang.Object
  - d) java.lang.Thread
- 9) Which of the following methods can be used to change the size of component?
  - a) dimension( )
  - b) setSize( )
  - c) area( )
  - d) resize( )

- 10) When we implement the Runnable interface, we must define the method
  - a) start( )
  - b) inti( )
  - c) run( )
  - d) runnable( )
- 11) Primitive data types may be converted into objects types by using the \_\_\_\_\_ classes.
  - a) Object
  - b) Vector
  - c) Wrapper
  - d) None of these
- 12) The Writer class is an \_\_\_\_\_ class which acts as a base class for all the other writer stream classes.
  - a) Static
  - b) Abstract
  - c) Public
  - d) Private
- 13) The collections framework which is contained in the \_\_\_\_\_.
  - a) java.collection
  - b) java.util
  - c) java.net
  - d) None of These
- 14) A \_\_\_\_\_ is a collection of related records placed in a particular area on the disk.
  - a) Array
  - b) Vector
  - c) File
  - d) None of these

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) Define Vector class.
  - 2) Explain try & catch.
  - 3) Explain run( ) method.
  - 4) Define interface.
  - 5) Explain visibility control.
  - 6) Explain enhanced for loop.
- B) Write notes. (Any Two) 06**
- 1) JVM
  - 2) Final variables & Methods, Final Classes
  - 3) Overriding Methods
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Write a program to demonstrate the Command Line Arguments.
  - 2) Explain thread life cycle.
  - 3) Write a program to demonstrate the use of constructors.
- B) Answer the following questions. (Any One) 06**
- 1) Explain java features.
  - 2) Write a program to handle the user defined exceptions.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Write a program to implements interfaces.
  - 2) Write a program to implements thread methods.
  - 3) Explain swing components JTextBox, Jradio, JList.
- B) Answer the following questions. (Any One) 04**
- 1) Write a program for design login form using swing components.
  - 2) Write a program to implements multiple catch blocks.
- Q.5 Answer the following questions. (Any Two) 14**
- 1) Define & Explain inheritance types.
  - 2) Write a program that implements runtime polymorphism.
  - 3) Write a program to copy one file content into another file.

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination Oct/Nov-2019  
DBMS USING ORACLE**

Day & Date: Saturday, 02-11-2019  
Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) A \_\_\_\_\_ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.
  - a) Procedures
  - b) Triggers
  - c) Functions
  - d) None of the mentioned
- 2) Specialization is \_\_\_\_\_ process.
  - a) Bottom up
  - b) Top Down
  - c) Left Right
  - d) None of the above
- 3) \_\_\_\_\_ join condition contains an equality operator.
  - a) Cross Join
  - b) Cartesian
  - c) Equi Join
  - d) None of the above
- 4) The \_\_\_\_\_ constraint can only be applied at column level.
  - a) Foreign key
  - b) Primary key
  - c) Not null
  - d) None of Above
- 5) Relationships among relationships can be represented in an E-R model using \_\_\_\_\_.
  - a) Aggregation
  - b) Association
  - c) Weak entity sets
  - d) Weak relationship sets
- 6) What is degree of table with 10 row and 5 columns?
  - a) 10
  - b) 5
  - c) 15
  - d) 50
- 7) Grant and revoke are \_\_\_\_\_ statements.
  - a) DDL
  - b) TCL
  - c) DCL
  - d) DML
- 8) To change column value in a table the \_\_\_\_\_ command can be used.
  - a) create
  - b) insert
  - c) alter
  - d) update
- 9) In a dirty read problem \_\_\_\_\_.
  - a) one transaction reads an uncommitted value of another transaction
  - b) one transaction reads the committed value for another transaction
  - c) one transaction reads another transaction
  - d) one transaction commits another transaction
- 10) Which of the following has "all-or-none" property?
  - a) Atomicity
  - b) Durability
  - c) Isolation
  - d) All of the mentioned

- 11) In a two-phase locking protocol, a transaction release locks in \_\_\_\_\_ phase.
  - a) shrinking phase
  - b) growing phase
  - c) running phase
  - d) initial phase
- 12) Which type of cursor is automatically declared by Oracle every time an SQL statement is executed?
  - a) An Implicit
  - b) An Explicit
  - c) Both A & B
  - d) None of the above
- 13) Which of the following is used to input the entry and give the result in a variable in a procedure?
  - a) Put and get
  - b) Get and put
  - c) Out and In
  - d) In and out
- 14) Which SQL function is used to count the number of rows in a SQL query?
  - a) COUNT()
  - b) NUMBER()
  - c) SUM()
  - d) COUNT(\*)

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) Draw the state diagram of a transaction.
  - 2) What are the advantages of DBMS?
  - 3) What is view?
  - 4) Define the term:
    - i) Tuple
    - ii) Domain
  - 5) List database users
- B) Write Notes. (Any Two) 06**
- 1) Schemas and instances
  - 2) SQL Index
  - 3) Network data model
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Write a PL/SQL block to check given number is prime or not.
  - 2) What is transaction? Explain its ACID property.
  - 3) Explain String function with example.
- B) Answer the following questions. (Any One) 06**
- 1) Explain the various operator used in SQL.
  - 2) Explain primary key and foreign key constraints with example.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) What is sub query? Explain its type with example.
  - 2) Explain PL/SQL procedure with example.
  - 3) Explain 2- tier and 3-tier client server architecture.
- B) Write Notes. (Any One) 04**
- 1) Explain the Group by and having clause with example.
  - 2) What is DDL? Explain Alter commands with example.
- Q.5 Answer the following questions. (Any Two) 14**
- a) What is SQL Join? Explain types of join with example.
  - b) What is a cursor? Explain explicit cursor and its attributes with example.
  - c) What is serializability? Explain view serializable schedule.



<b>Seat No.</b>	
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**B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination Oct/Nov-2019**  
**LINUX OPERATING SYSTEM**

Day & Date: Monday, 04-11-2019  
Time: 08:00 AM to 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Octal representation of rw- -w- rw - permission are \_\_\_\_\_.  
 a) 644  
 b) 646  
 c) 626  
 d) 654
- 2) Which of the following is the features of Linux operating system?  
 a) multiuser  
 b) multi process  
 c) multi tasking  
 d) All of these
- 3) Which of the following symbols represents redirection?  
 a) \_\_\_\_  
 b) <  
 c) &  
 d) |
- 4) \_\_\_\_\_ symbol matches only a single character in file.  
 a) ?  
 b) \*  
 c) \_  
 d) none of these
- 5) What command is used with Vi editor to delete a single character?  
 a) x  
 b) y  
 c) a  
 d) z
- 6) In Linux file system \_\_\_\_\_ is the top level directory.  
 a) home  
 b) root  
 c) bin  
 d) etc
- 7) A user can change his password using pwd command.  
 a) True  
 b) False
- 8) To change the priority of a job we can use the \_\_\_\_\_ command.  
 a) nice  
 b) pr  
 c) set  
 d) priority
- 9) LILO stands for \_\_\_\_\_.  
 a) Linux boot loader  
 b) Is a tool used to boot the kernel  
 c) Linux Loader  
 d) None of these
- 10) Which of the following tool is used to partition your hard drive?  
 a) mkfs  
 b) fsck  
 c) mount  
 d) fdisk
- 11) Which option of ls command used to view hidden file?  
 a) -i  
 b) -d  
 c) -r  
 d) -a
- 12) A process can run only in background.  
 a) True  
 b) False



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**B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination Oct/Nov-2019**  
**COMPUTER GRAPHICS**

Day & Date: Wednesday, 23-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which of the following character generation method requires special computer software to convert bit pattern of character.
  - a) Stroke
  - b) Starburst
  - c) Bitmap
  - d) Dot matrix
- 2) Which term refers to the sharpness or clarity of an image?
  - a) Pitch
  - b) Pixel
  - c) Signal
  - d) Resolution
- 3) Video graphics array standard is \_\_\_\_\_.
  - a) 640 x 480 pixels
  - b) 670 x 580 pixels
  - c) 1280 x 1024 pixels
  - d) 800 x 600 pixels
- 4) Consider 'Sx' and 'Sy' are scaling parameters used in Scaling. If  $S_x = S_y$  then \_\_\_\_\_.
  - a) Size of image decreases
  - b) Size of image increases
  - c) Uniform Scaling is done
  - d) None of these
- 5) \_\_\_\_\_ is equivalent graphics function to `clrscr()` in textual mode.
  - a) `clrgraph()`
  - b) `cleargraph()`
  - c) `cleardevice()`
  - d) `clrall()`
- 6) The general expression for translation in homogeneous coordinate system is?
  - a)  $P' = T + P$
  - b)  $P' = T * P$
  - c)  $P' = T - P$
  - d) both a and b
- 7) Let  $(x_k, y_k)$  be the present point. In DDA line algorithm, if slope ' $m$ ' > 1 then next point is determined by \_\_\_\_\_.
  - a)  $x_{k+1} = x_k + 1$        $y_{k+1} = y_k + m$
  - b)  $x_{k+1} = x_k + 1$        $y_{k+1} = y_k + (1/m)$
  - c)  $x_{k+1} = x_k + (1/m)$        $y_{k+1} = y_k + 1$
  - d)  $x_{k+1} = x_k + 1$        $y_{k+1} = y_k + 1$
- 8) The transformation that slants the shape of a graphics object is called \_\_\_\_\_.
  - a) Translation
  - b) Scaling
  - c) Rotation
  - d) Shear
- 9) Which of the following algorithm uses floating arithmetic to rasterize the line?
  - a) DDA
  - b) Bresenham's
  - c) Both a and b
  - d) None of these

- 10) Which of the following is not a part of computer graphics?
  - a) Pixel
  - b) line
  - c) polygon
  - d) sound
- 11) In which file, image definition is stored in terms of pixel intensity values?
  - a) Frame buffer
  - b) Display file
  - c) Pseudo file
  - d) Metafile
- 12) \_\_\_\_\_ is Cartesian co-ordinate point is equivalent to homogeneous co-ordinate point (78, 12, 3).
  - a) (24,4)
  - b) (26,5)
  - c) (26,4)
  - d) (24,5)
- 13) Which of the following graphics function that retrieves colour value of pixel?
  - a) setpixel( )
  - b) putpixel()
  - c) getcolor()
  - d) getpixel( )
- 14) \_\_\_\_\_ is maximum value on Y-axis in Turbo 'C' graphics mode.
  - a) 480
  - b) 640
  - c) 479
  - d) 639

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) List out advantages and disadvantages of Plotter.
- 2) Write syntax and use of floodfill().
- 3) What are the merits and demerits of DDA algorithm?
- 4) What is interactive and non-interactive computer graphics?
- 5) What is display controller? List out different tasks performed by it.

**B) Write short notes on (Any Two) 06**

- 1) CRT
- 2) 2D shearing transformation
- 3) Starburst character generation method

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Digitize the line with end points (20, 10) and (30, 18) using DDA algorithm.
- 2) A line segment having end points (3, 2) and (7, 2) is rotated anticlockwise by an angle  $90^\circ$ . Find rotation matrix and the resultant points after rotation.
- 3) Differentiate between raster scan and random scan display.

**B) Answer the following questions. (Any One) 06**

- 1) What is aliasing? Briefly explain anti-aliasing methods.
- 2) Find the final co-ordinates of a figure bounded by the co-ordinates (1, 1), (3, 4), (5, 7) and (10, 3) when scaled by 2 units in X-direction and 3 units in Y-direction.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) If polygon is translated by 2 units in X-direction and 3 units in Y-direction then we get A'(5,11), B'(9,9), C'(9,4) and D'(5,5). Apply inverse transformation and find its original end points.
- 2) Explain DDA circle drawing algorithm with example.
- 3) Explain 2D reflection in details.

**B) Answer the following questions. (Any One) 04**

- 1) Write an algorithm to insert command in display file.
- 2) Write a graphics program in 'C' language that translates pentagon.

**Q.5 Answer the following questions. (Any Two)**

- 1) Explain Bresenham's line drawing algorithm. And rasterize the line segment having end points A(4,9) and B(8,14) using Bresenham's algorithm.
- 2) Derive the transformation matrix for the rotation of graphics object about an arbitrary point.
- 3) What is homogeneous co-ordinate system? Write need of homogeneous co-ordinate System and give the homogeneous co-ordinate matrices for 2D translation, rotation and scaling.

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**B.Sc. (E.C.S) (Semester - IV) (CBCS) Examination Oct/Nov-2019**  
**EMBEDDED SYSTEM - II**

Day & Date: Thursday, 24-10-2019  
 Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Software development process is performed on \_\_\_\_\_ type of system.
  - a) Host system
  - b) Target system
  - c) Both a & b
  - d) None of these
- 2) \_\_\_\_\_ are the Network elements.
  - a) Router
  - b) Switch
  - c) Both a & b
  - d) None of these
- 3) The file format of Motorola is \_\_\_\_\_.
  - a) S-Record
  - b) Hex file
  - c) .exe file
  - d) None of these
- 4) In IDE Includes \_\_\_\_\_.
  - a) Editor
  - b) Compiler
  - c) Simulator
  - d) All of these
- 5) \_\_\_\_\_ is the communication link between processor & peripherals.
  - a) Serial port
  - b) Interface
  - c) USB
  - d) None of these
- 6) In \_\_\_\_\_ type of embedded system the classification is based on the performance & functional requirement of embedded system.
  - a) Stand-alone
  - b) Medium scale
  - c) Small scale
  - d) None of these
- 7) The \_\_\_\_\_ method is used to design and analysis the software before implementation.
  - a) Software design
  - b) Hardware design
  - c) Program modeling
  - d) All of these
- 8) In \_\_\_\_\_ type of programming model the data determines the flow as well as execution steps of program.
  - a) FSM Model
  - b) DFG Model
  - c) CDFG Model
  - d) all of these
- 9) Mp3 players, digital camera are the examples of \_\_\_\_\_ type of embedded system.
  - a) Small scale
  - b) Stand alone
  - c) Real time
  - d) Networked
- 10) \_\_\_\_\_ type of device used for modulation & demodulation process of signals.
  - a) Modulator
  - b) Modem
  - c) Demodulator
  - d) All of these

- 11) IEEE stands for \_\_\_\_\_.  
 a) Institute of Electrical and Electronics Engineering  
 b) International Electrical and Electronic Engineering  
 c) Both a & b  
 d) None of these
- 12) \_\_\_\_\_ type of software tool are used to create the object files from the complete set of Opcodes.  
 a) Assembler  
 b) Compiler  
 c) Interpreter  
 d) None of these
- 13) In sequential programming model the multiple functions are executed in the Sequence of \_\_\_\_\_.  
 a) LIFO  
 b) FILO  
 c) FIFO  
 d) None of these
- 14) \_\_\_\_\_ is a software used to link the compile codes, object codes and the kernel of O.S.  
 a) Locating software  
 b) Linking software  
 c) Both a & b  
 d) None of these

- Q.2 A) Answer the following questions. (Any Four) 08**  
 1) What do you mean by Compiler?  
 2) Give the examples of stand-alone and mobile embedded system.  
 3) Give the names of Laboratory tools.  
 4) Draw the pin diagram of RS232 Connector.  
 5) Write the names of programming models in embedded system.
- B) Answer the following questions. (Any two) 06**  
 1) Write any three features of USB.  
 2) Give any three features of IDE.  
 3) Define the role of Linker, Locater & Interpreter in embedded software development process.
- Q.3 A) Answer the following questions. (Any two) 08**  
 1) Explain target system in embedded system.  
 2) Explain the concept of Programming model.  
 3) Explain the steps in software development process.
- B) Answer the following questions. (Any One) 06**  
 1) Write a note on Linking and Locating software.  
 2) Explain the any three network elements.
- Q.4 A) Answer the following questions. (Any Two) 10**  
 1) Give the communication parameters of RS232.  
 2) Explain the concept of Host and Target system.  
 3) Explain the skill required for embedded system designer.
- B) Answer the following questions. (Any One) 04**  
 1) What is the need of interface?  
 2) Write a note on IEEE 802.11 protocol.
- Q.5 Answer the following questions.(Any two) 14**  
 1) Explain the issues in Hardware & Software design & co-design.  
 2) Explain in detail with applications the different software development tools in embedded system.  
 3) Explain in detail with e.g. the classification of embedded system.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination Oct/Nov-2019**  
**PERIPHERALS AND INTERFACING**

Day & Date: Friday, 25-10-2019  
 Time: 08:00 AM to 10:30 AM

Max. Marks: 70

- Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.  
 3) Neat Diagram must be Drawn Wherever Necessary.

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) The 8086 has \_\_\_\_\_ Bit Data Bus.
  - a) 16
  - b) 20
  - c) 8
  - d) 70
- 2) For Clock Generator \_\_\_\_\_ IC is used.
  - a) 8286
  - b) 8282
  - c) 8284
  - d) 8288
- 3) In 8086 \_\_\_\_\_ byte Instruction Queue.
  - a) 6
  - b) 4
  - c) 5
  - d) 8
- 4) 8086 \_\_\_\_\_ Active Flags is used.
  - a) 9
  - b) 3
  - c) 4
  - d) 8
- 5) The 8255 can Operates in \_\_\_\_\_ Mode and I/O Mode.
  - a) BSR
  - b) BRS
  - c) BMW
  - d) RBS
- 6) The Intel 8257 is \_\_\_\_\_ Controller.
  - a) PPI
  - b) PIC
  - c) DMA
  - d) DAC
- 7) XCHG is \_\_\_\_\_ type of Instruction.
  - a) Arithmetic
  - b) Data Transfer
  - c) String
  - d) Bit Manipulation
- 8) In Maximum Mode of 8086 Pin 33 is connected to \_\_\_\_\_.
  - a) VCC
  - b) Ground
  - c) Open
  - d) Clock
- 9) Instruction get of 8086 include \_\_\_\_\_ Instruction.
  - a) 77
  - b) 131
  - c) 133
  - d) 130
- 10) The 8253 Works in \_\_\_\_\_ Mode.
  - a) 4
  - b) 5
  - c) 6
  - d) 2
- 11) The 80386 Processor have a Real Memory \_\_\_\_\_.
  - a) 2 GB
  - b) 4 GB
  - c) 8 GB
  - d) 16 GB
- 12) The Intel 8086 can Supports for \_\_\_\_\_ Processor Mode.
  - a) Single
  - b) Multiprocessor
  - c) Double
  - d) None of these



- 13) In 8051 Microcontroller \_\_\_\_\_ number of Ports is used.
- a) One
  - b) Two
  - c) Three
  - d) Four
- 14) In 8051 Microcontroller flash memory is \_\_\_\_\_.
- a) 8 KB
  - b) 4 KB
  - c) 16 KB
  - d) 32 KB

**Q.2 A) Attempt any four of the following. 08**

- 1) Give Difference between 8086 & 8088 Microprocessor.
- 2) Explain Channels of 8257.
- 3) Write the Features of 8051 Microcontroller.
- 4) Explain any two Data Transfer Instruction.
- 5) Explain Control Word of 8255.

**B) Write a note on any two of the following. 06**

- 1) Explain Program Execution Transfer Instruction.
- 2) Explain Instruction Queue of 8086 Microprocessor.
- 3) Explain Absolute Decoding.

**Q.3 A) Attempt any two of the following. 08**

- 1) Write ASM Program of 8086 for Addition and Subtraction
- 2) Explain Timer Interrupts of 8051 Microcontroller
- 3) Explain Bit Manipulation Instruction

**B) Write any one of the following. 06**

- 1) Explain Bus Contention.
- 2) Explain RISC.

**Q.4 A) Attempt any two of the following. 10**

- 1) With Suitable Diagram; Explain Minimum Mode of 8086 Microprocessor.
- 2) Explain Any Five Modes of 8253.
- 3) Explain General Purpose Registers in 8086 Microprocessor.

**B) Attempt any one of the following. 04**

- 1) Explain Features of Pentium Processor.
- 2) Explain any two Modes in Active Cycle of 8237.

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

- a) Draw Internal Architecture of 8086 Microprocessor & Explain BIU Section.
- b) Draw & Explain Architecture of 8051 Microcontroller.
- c) Explain with Suitable Diagram Interfacing of Keyboard and Display Unit.

<b>Seat No.</b>	
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**B.Sc. (E.C.S) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
COMPUTER SYSTEM ARCHITECTURE - I**

Day & Date: Monday, 11-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 08**

- 1) Output of AND gate will be High if \_\_\_\_\_.
  - a) Both I/P's High
  - b) One I/P is High
  - c) Both I/P's Low
  - d) None of these
- 2) Decimal equivalent of 1011 is \_\_\_\_\_.
  - a) 12
  - b) 11
  - c) 4
  - d) 14
- 3) Address bus is \_\_\_\_\_.
  - a) Unidirectional
  - b) Bidirectional
  - c) Multidirectional
  - d) None of these
- 4) 2's complement of 10111 is \_\_\_\_\_.
  - a) 00111
  - b) 01001
  - c) 11100
  - d) 11110
- 5) Flip-Flop is a \_\_\_\_\_ Storage device.
  - a) Four bits
  - b) One bit
  - c) Two bit
  - d) None of these
- 6) \_\_\_\_\_ is called Universal gate.
  - a) NAND
  - b) XOR
  - c) NOR
  - d) Both a and c
- 7) In memory reference instructions operand refers to \_\_\_\_\_.
  - a) Register
  - b) IO device
  - c) Memory address
  - d) None of these
- 8) If size of address bus is 8-bits, \_\_\_\_\_ memory locations can be accessed.
  - a) 1024
  - b) 512
  - c) 128
  - d) 256

**Q.2 Answer any four of the following questions. 08**

- 1) Draw the symbol and truth table of any two logic gates.
- 2) Draw the logic diagram for following expression  $(A + B)(A + C)$ .
- 3) Write Two's complement of 1100101.
- 4) Convert  $(11001)_2$  into  $( )_{10}$ .
- 5) Draw the flowchart of Instruction Cycle.
- 6) List any four Computer Registers.

**Q.3 Write short notes. (Any Two) 08**

- a) Demorgan's Theorem
- b) Interrupt
- c) Classification of Memories

**Q.4 Answer any two of the following questions. 08**

- a) Explain 4:1 Multiplexer with logic diagram and truth table.
- b) Explain Bus System in computer organization.
- c) Explain Floating point representation in binary number system with example.

**Q.5 Answer any one of the following questions. 08**

- a) Explain with neat diagram 3-bit SIPO register.
- b) Define Universal Gates? Convert NAND gate into NOT, AND, OR, and NOR gates.

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**B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019**  
**English**  
**LITERARY QUEST**

Day & Date: Saturday, 05-10-2019  
 Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 08**

- 1) World's Parliament of Religious was held in the \_\_\_\_\_ year.
  - a) 1893
  - b) 1891
  - c) 1890
  - d) 1896
- 2) A 'Sister' according to Mother Teresa must give up all her \_\_\_\_\_.
  - a) education
  - b) life
  - c) possessions
  - d) job
- 3) \_\_\_\_\_ when our mind is tranquil says Grenville Kleiser.
  - a) You feel insults keenly
  - b) I'll thoughts cease
  - c) Become Selfish
  - d) Become unhappy
- 4) A man feels a real \_\_\_\_\_ if he hands out a ten pound note.
  - a) tremor
  - b) sad
  - c) bad
  - d) happy
- 5) Science is addressed as \_\_\_\_\_.
  - a) daughter of Old Times
  - b) enemy of Old Times
  - c) wife of Old Times
  - d) herald of New Times
- 6) T. Ramalingam \_\_\_\_\_ (speak: simple present) Marathi fluently.
  - a) Speaks
  - b) Spoke
  - c) Speaking
  - d) Speak
- 7) Vishal is \_\_\_\_\_ (strong: use comparative) than Dinesh.
  - a) Strongest
  - b) Strong
  - c) Strongest
  - d) Stronger
- 8) \_\_\_\_\_ said, "Father! you come again."
  - a) Sick man's wife
  - b) Sick man's son
  - c) Sick man
  - d) Sick man's daughter
- 9) \_\_\_\_\_ is the best message conveyed by the Parliament of Religions.
  - a) Holiness and purity are not exclusive to any one religion
  - b) Assimilation, and not destruction
  - c) All religions have produced men and women of exalted character
  - d) None of the above.
- 10) \_\_\_\_\_ has made man cruel.
  - a) Gold
  - b) Money
  - c) Silver
  - d) Position

- 11) Father Gilligan is humbled by the experience because \_\_\_\_\_.  
 a) he realizes God takes care of everyone  
 b) he feels that the dying man waited for him  
 c) he feels nature soothed him because he was so tired  
 d) God could show his concern for his community
- 12) The priest has understood that God has sent one of his \_\_\_\_\_ to help him.  
 a) Priest  
 b) Father  
 c) Angel  
 d) Adam
- 13) The comparative form of strange is \_\_\_\_\_.  
 a) Strangerly  
 b) Stranger  
 c) More Strange  
 d) Most strange
- 14) The Superlative form of ill is \_\_\_\_\_.  
 a) more ill  
 b) worse  
 c) worst  
 d) most ill

**Q.2 Attempt any four of the following questions.**

**16**

- 1) What does one gain from being clam according to the poet Grenville Kleiser?
- 2) How has money made the individual nervous, afraid and insecure? What are its long term effects?
- 3) What has science taken away from humans?
- 4) Why is Father Gilligan so weary? Why is he so struck by Grief and Guilt?
- 5) Why does the poet not support the cause of science? Describe in your own words the reasons he gives for this.
- 6) Why does Lawrence say that the present attitude towards money is all wrong? What are the changes he wants to see in society?

**Q.3 Attempt any two of the following questions.**

**12**

- 1) What are the evils that prevent the advancement of society according to Swami Vivekananda?
- 2) What do we learn from Mother's Teresa's life?
- 3) Write the dialogues for the situations:  
 Rajesh goes to his friend Ramesh's Birthday Party where in he introduces himself to Ramesh's elder brother.
- 4) Write the dialogue for the situation:  
 Smita and Sita are good childhood friends, After a long gap, they meet in a Reception.

**Q.4 Attempt any one of the following question.**

**14**

Write an argumentation speech on 'Ban of Polythene'.

**OR**

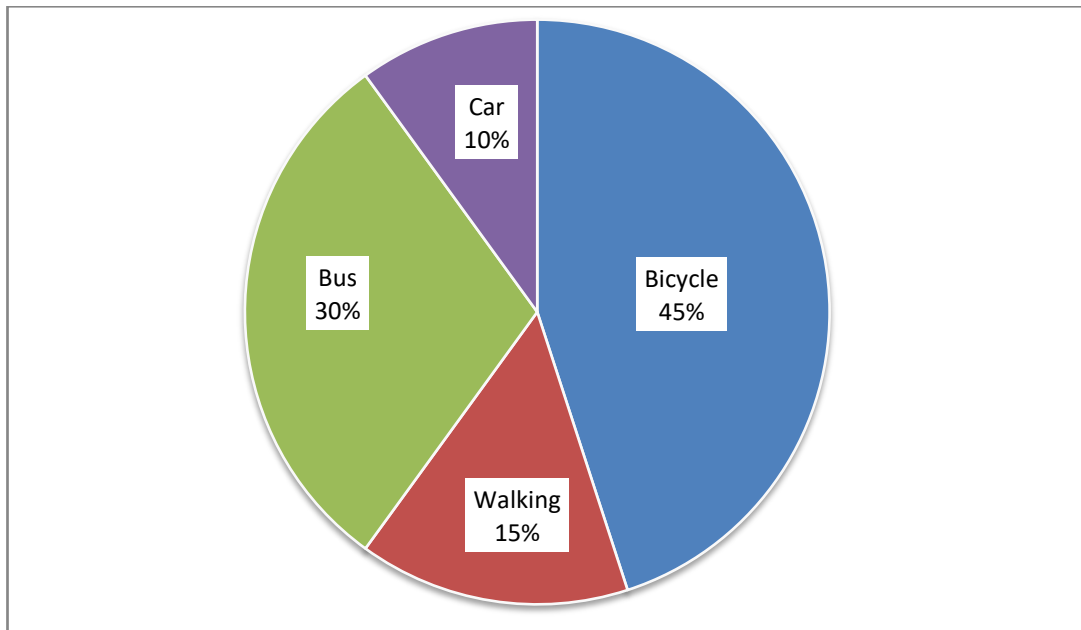
Write a debate on 'Should Students Study ethics in colleges'?

**Q.5 Read the following passage and summarize it.**

**14**

The pie chart below shows the percentages of types of transportation used by 800 students to come to college.

Study the pie chart and answer the questions :



- 1) How many students come to the college by bicycles?
- 2) How many students do not walk to college?
- 3) How many students come to college by bus or car?
- 4) Write in brief, your observation and analyze the pie chart.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019  
DATA COMMUNICATION AND NETWORKING – I**

Day & Date: Monday, 07-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) Network layer is responsible for \_\_\_\_\_.  
 a) Logical addressing                      b) Physical addressing  
 c) Port addressing                         d) MAC addressing
- 2) A set of communication line or router is called as \_\_\_\_\_.  
 a) Subnet                                      b) LAN  
 c) MAN                                         d) None of these
- 3) \_\_\_\_\_ technique is used for error correction.  
 a) CRC                                         b) Parity Check  
 c) Checksum check                         d) Hamming code
- 4) PCM is an example of \_\_\_\_\_ conversion.  
 a) Digital To Analog                        b) Digital To Digital  
 c) Analog To Digital                        d) None of Above
- 5) A telephone network uses a \_\_\_\_\_.  
 a) Message Switching                      b) Packet Switching  
 c) Circuit Switching                         d) None of Above
- 6) \_\_\_\_\_ topology uses multipoint technology.  
 a) Star                                         b) Bus  
 c) Ring                                         d) Mesh
- 7) \_\_\_\_\_ layer is responsible for process to process delivery.  
 a) Network layer                              b) Transport Layer  
 c) Session layer                              d) Datalink layer
- 8) \_\_\_\_\_ layer defines the actual medium which is for carrying data from one computer to another.  
 a) Physical                                     b) Datalink  
 c) Network                                     d) Transport
- 9) \_\_\_\_\_ layer takes care of syntax and semantics of the information exchanged between two communication system.  
 a) Physical                                     b) Datalink  
 c) Session                                     d) Presentation
- 10) OSI stands for \_\_\_\_\_.  
 a) Open System Interconnection        b) Open Syntax Interconnection  
 c) Open System Internet                    d) Object System Interconnection
- 11) In \_\_\_\_\_ communication data can be travel in both direction, but only one direction at a time.  
 a) Simple                                       b) Half Duplex  
 c) Full Duplex                                d) None of above

- 12) Which of the following is not an example of bounded media?  
 a) Coaxial Cable                                      b) Fiber optic cable  
 c) Infrared waves                                      d) Twisted pair cable
- 13) CSMA/CD stands for \_\_\_\_\_.  
 a) Carrier Sense Multiple Access with Collision Detection  
 b) Carrier Sense Manipulate Access with Collision Detection  
 c) Currier Sense Multiple Access with Collision Detection  
 d) Carrier Sense Multiple Access with Collision Determination
- 14) The connection running between the telephone and end office is known as \_\_\_\_\_.  
 a) Intertoll Trunk                                      b) Toll connecting trunk  
 c) Link    d) Local loop

**Q.2 A) Answer the following questions. (Any Four)                                      08**

- 1) List five design issues of layers.
- 2) What is frequency?
- 3) Define Hamming distance.
- 4) What is framing?
- 5) Define protocol and list elements of protocol.

**B) Write Notes on (Any Two)                                      06**

- 1) Protocol Hierarchy
- 2) Telephone system
- 3) Shortest path routing

**Q.3 A) Answer the following questions. (Any Two)                                      08**

- 1) What is network? Explain uses of computer network.
- 2) Explain twisted pair cable in detail.
- 3) Explain congestion prevention policies in detail.

**B) Answer the following question. (Any One)                                      06**

- 1) What is switching? Explain different types of switching in detail.
- 2) Explain CSMA/CD protocol in detail.

**Q.4 A) Answer the following questions. (Any Two)                                      10**

- 1) Explain 'Stop and Wait' protocol.
- 2) What is modulation? Explain types of modulation in detail.
- 3) Write a note on distance vector routing algorithm.

**B) Answer the following question. (Any One)                                      04**

- 1) Explain Manchester and Differential Manchester coding.
- 2) What are the different applications of internet?

**Q.5 Answer the following questions. (Any Two)                                      14**

- a) Explain OSI model in detail with diagram.
- b) How to control congestion in datagram subnet?
- c) Explain link state routing algorithm in detail.



Seat No.	
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**B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019**  
**THEORY OF COMPUTER SCIENCE**

Day & Date: Wednesday, 09-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) Proper suffix of the string abc are \_\_\_\_\_.
  - a)  $\{\epsilon, c, bc, abc\}$
  - b)  $\{\epsilon, c, bc\}$
  - c)  $\{\epsilon, a, ab, abc\}$
  - d)  $\{\epsilon, a, ab\}$
- 2) In CNF grammar is required in the form of \_\_\_\_\_.
  - a)  $A \rightarrow BC \mid a$
  - b)  $A \rightarrow a\alpha$
  - c) both a and b
  - d) none of these
- 3) If  $L(r) = \{a, b, aa, bb, \dots\}$  then  $r =$  \_\_\_\_\_.
  - a)  $(a + b)$
  - b)  $(a + b)^*$
  - c)  $(a + b)^+$
  - d) none of these
- 4) Pumping lemma is used to proving given language is \_\_\_\_\_.
  - a) Irregular
  - b) context sensitive
  - c) restricted
  - d) none of Above
- 5) All possible subset of set is known as \_\_\_\_\_.
  - a) sub set
  - b) super set
  - c) power set
  - d) none of these
- 6) A finite automaton with stack is known as \_\_\_\_\_.
  - a) FA
  - b) TM
  - c) DFA
  - d) PDA
- 7) The language of DFA is \_\_\_\_\_.
  - a) Context free language
  - b) Regular language
  - c) Both a and b
  - d) none of these
- 8) The \_\_\_\_\_ machine has infinite tape two both side.
  - a) TM
  - b) PDA
  - c) DFA
  - d) None of these
- 9) The empty string is denoted by \_\_\_\_\_.
  - a)  $\epsilon$
  - b)  $\Phi$
  - c) both and a and b
  - d) none of these
- 10) In PDA one situation has only one transition then it is known as \_\_\_\_\_.
  - a) TM
  - b) DPDA
  - c) NPDA
  - d) Stack
- 11) The regular expression for Arden's algorithm is \_\_\_\_\_.
  - a)  $R = R + QP$
  - b)  $R = Q + RP$
  - c)  $R = Q + RP$
  - d) None of above

- 12) 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 |
- 13) A finite automata with output has final states, \_\_\_\_\_.
- |         |          |
|---------|----------|
| a) True | b) False |
|---------|----------|
- 14) The context free language is not closed under \_\_\_\_\_.
- |           |                  |
|-----------|------------------|
| a) union  | b) intersection  |
| c) series | d) none of these |

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Why there is need of NFA with epsilon moves?
- 2) Give applications of FA.
- 3) Let  $R = \{1,2\}, \{2,3\}, \{2,4\}$  be a relation in  $\{1,2,3,4\}$  Find  $R^+$ .
- 4) Construct DFA to for binary number divisible by 2.
- 5) Define:
  - i) Symbol
  - ii) Language

**B) Write the Notes on (Any Two) 06**

- 1) Define PDA, Give pictorial representation of PDA
- 2) Show that  $(a.b)^* \neq a^*.b^*$
- 3) State difference between Moore machine and Mealy machine.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Design TM for  $L = \{a^n b^n | n > 1\}$
- 2) Convert the following right linear grammar to equivalent left linear grammar.
 
$$S \rightarrow 0A \mid 1B$$

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

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

$$C \rightarrow a$$

- 3) Design a PDA to check whether a given string over  $\{a,b\}$  ends in  $abb$ .

**B) Answer the following questions. (Any One) 06**

- 1) What is regular expression? How to convert RE into FA?
- 2) Check whether the following grammar is ambiguous or not; if ambiguity found remove the ambiguity and rewrite an equivalent grammar.

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

**Q.4 A) Answer the following questions. (Any Two) 10**

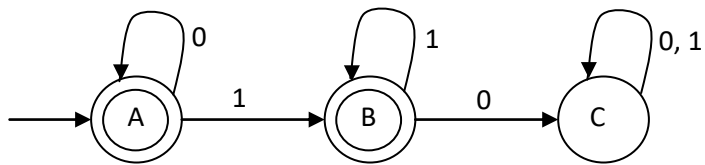
- 1) Construct F.A. equivalent to R.E.  
 $(a/b)^* (aa + bb)^* (a/b)^*$
- 2) Construct Mealy machine for increment binary number by 1.
- 3) What is pumping lemma? Using pumping lemma check  $\{a^n b^n + 1 | n \geq 1\}$  regular or not.

**B) Answer the following questions. (Any One) 04**

- 1) Draw a DFA which accept string is either ending with  $ab$  or  $bc$  over  $\Sigma = \{a, b, c\}$ .
- 2) Give the instantaneous description of Turing Machine.

**Q.5 Answer the following questions. (Any Two)**

**a)** Construct RE for following DFA.



**b)** Construct PDA that accepts the language generated by CFG.

$$S \rightarrow S + S | S^* S | 4$$

Give the acceptance of string "2+2\*4" by PDA.

**c)** Construct Turing Machine for checking well formedness of parenthesis.

Seat  
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**B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019  
VISUAL PROGRAMMING – I**

Day & Date: Thursday, 10-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) CTS stands for \_\_\_\_\_.  
 a) Common Type System                      b) Common Time System  
 c) Common Type Software                    d) Combine Type System
- 2) \_\_\_\_\_ is not components of CLR.  
 a) Garbage Collector                          b) Class Loader  
 c) JIT Compiler                                 d) CSC Compiler
- 3) Size of 'int' data type is \_\_\_\_\_ bits.  
 a) 64    b) 32  
 c) 48    d) 8
- 4) Namespace contains \_\_\_\_\_.  
 a) Classes                                        b) Interfaces  
 c) Both (a) and (b)                            d) None of Above
- 5) \_\_\_\_\_ operator creates object of the specified class and returns a reference to that object.  
 a) Allocate                                      b) New  
 c) Use    d) None of these
- 6) Property can have \_\_\_\_\_ accessor.  
 a) get    b) set  
 c) Both (a) and (b)                            d) None of above
- 7) The properties of one class may be inherited by more than one class. This process is known as \_\_\_\_\_ inheritance.  
 a) Hierarchical                                 b) Multilevel  
 c) Single    d) Multiple
- 8) Which of these access specifier should be used for Mian() method?  
 a) Private                                        b) Protected  
 c) Pubic    d) None of Above
- 9) Any code that absolutely must be executed before a method returns is put in a \_\_\_\_\_ block.  
 a) try    b) finally  
 c) catch    d) None of Above
- 10) Which of the following is not .net exception class?  
 a) DivideByZeroException                    b) StackMemoryException  
 c) OutofMemoryException                    d) Exception
- 11) \_\_\_\_\_ is not Thread class method.  
 a) Sleep()                                        b) Start()  
 c) Join()                                         d) ISAlive

- 12) Monitor class is defined in \_\_\_\_\_ namespace.  
a) System.Threading                      b) System  
c) System.Exception                     d) System.Text
- 13) \_\_\_\_\_ method insert an element into the Arraylist at specified index position.  
a) Insert()                                      b) Add()  
c) Push()                                        d) Enqueue()
- 14) \_\_\_\_\_ specification defines a set of rules that enables interoperability in .net framework.  
a) CTS     b) CLR  
c) MSIL     d) CLS

- Q.2 A) Answer the following questions. (Any Four)                      08**  
1) List components of Dot Net framework.  
2) What is read-only fields?  
3) Syntax of property declaration  
4) What is namespace?  
5) What is MSIL?
- B) Write Notes on (Any Two)    06**  
1) CLS  
2) Garbage Collection  
3) Sealed classes
- Q.3 A) Answer the following questions. (Any Two)                      08**  
1) Explain abstract class with example.  
2) Explain life cycle of thread.  
3) What is parameter array? Explain with example.
- B) Answer the following question. (Any One)                      06**  
1) Write a program to handle custom exception.  
2) What is thread? Give an example of priority thread.
- Q.4 A) Answer the following questions. (Any Two)                      10**  
1) What is a static constructor? Explain with example.  
2) What is indexer? Explain with example.  
3) Write a note on method overloading
- B) Answer the following question. (Any One)                      04**  
1) Explain CLR with its functions and components.  
2) What is interface? Write a program to implement interface.
- Q.5 Answer the following questions. (Any Two)                      14**  
a) What is stream? Explain any two character based stream classes.  
b) What is inheritance? Explain types of inheritance in details.  
c) What is collection? Explain any three generic classes in detail with example.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019  
WEB TECHNOLOGY AND E-COMMERCE - I**

Day & Date: Friday, 11-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) \_\_\_\_\_ technique is used to manage states in ASP.Net application.
  - a) Session Object
  - b) View State
  - c) Application Objects
  - d) All of these
- 2) Which property of validation summary control is used to display error message in bulleted style?
  - a) DisplayMode
  - b) DisplayStyle
  - c) ShowList
  - d) None of these
- 3) \_\_\_\_\_ is the by default mode of session object.
  - a) InProc
  - b) StateServer
  - c) SQLServer
  - d) Off
- 4) What is true about master page?
  - a) Master page contain a @Master directives on page
  - b) <asp:ContentPlaceHolder> control can be added only master page
  - c) Master page attach content pages
  - d) All of these
- 5) Which of the following classification include example of eBay.com and Amazon.com?
  - a) B2B
  - b) B2C
  - c) C2B
  - d) C2C
- 6) \_\_\_\_\_ object is used to fill DataSet or DataTable with query results in ADO.Net.
  - a) DataReader
  - b) DataSet
  - c) DataTables
  - d) DataAdapter
- 7) \_\_\_\_\_ is the first event of ASP.Net page.
  - a) PreLoad
  - b) Load
  - c) Init
  - d) PreInit
- 8) \_\_\_\_\_ validation control is used to validate phone numbers, pin code and email address.
  - a) CompareValidator
  - b) RequiredFieldValidator
  - c) RegularExpressionValidator
  - d) RangeValidator
- 9) In ASP.Net application DLL files are stored in \_\_\_\_\_ folder.
  - a) App\_Code
  - b) App\_Data
  - c) Bin
  - d) none of these
- 10) ASP.Net web application configuration setting are defined in \_\_\_\_\_.
  - a) machine.config
  - b) system.config
  - c) web.config
  - d) Both a & b

- 11) \_\_\_\_\_ namespace is used for SQL server connectivity to web page.  
a) System.Data.Client                      b) System.Data.Sql  
c) System.Data.SqlClient                d) System.Data.Connect
- 12) FileUpload server control use \_\_\_\_\_ method to save file on the server.  
a) SaveAs()                                    b) Upload()  
c) ServerSave()                              d) Save()
- 13) Internet can be used for \_\_\_\_\_ parts of trade cycle.  
a) Search                                      b) order  
c) Invoice                                        d) All of these
- 14) \_\_\_\_\_ option describe the e-commerce.  
a) Doing business electronically        b) Sales of goods  
c) Doing business                            d) All of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Define EDI.
- 2) Need of master page.
- 3) List the event order of master page.
- 4) Write the properties of TextBox control.
- 5) What is IIS Server?

**B) Write short notes (Any Two) 06**

- 1) ASP.Net page structure
- 2) Calendar control
- 3) Scope of electronic market

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) What is command object? Explain properties and methods of command object.
- 2) What is a directive? Explain @Master directive.
- 3) Explain AdRotator control with example.

**B) Answer the following questions. (Any One) 06**

- 1) What is validation? Explain server side validation control with example.
- 2) What is state management technique? Explain client side state management.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain ASP.Net page life cycle.
- 2) Explain cross page posting with example.
- 3) What is E-Commerce? Explain trade cycle.

**B) Answer the following questions. (Any One) 04**

- 1) Explain ASP.Net page compilation in details.
- 2) What is master page? Explain nesting master page with example.

**Q.5 Answer the following questions. (Any Two) 14**

- a) What is stored procedure? Design a form for student information and apply stored procedure for inserting record.
- b) What is application folder? Explain /App\_Code and /App\_Theme folder with example.
- c) What is server control? Explain all lists controls with example.

Seat  
No.

**B.Sc.(E.C.S) (Semester - V) (New) (CBCS) Examination Oct/Nov-2019  
PYTHON – I**

Day & Date: Friday, 11-10-2019  
Time: 11:30 AM To 02:00 PM

Max. Marks: 70

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

**Q.1 A) Fill in the blanks by choosing correct alternatives given below. 07**

- 1) Python is \_\_\_\_\_ Language.
  - a) High level
  - b) Middle Level
  - c) Low level
  - d) All above
- 2) To handle Multidimensional Arrays, Python use \_\_\_\_\_ package.
  - a) timepy
  - b) randompy
  - c) numpy
  - d) Neither
- 3) The standard python compiler is written in \_\_\_\_\_ language.
  - a) python
  - b) 'C++'
  - c) Java
  - d) 'C'
- 4) In python function should be all \_\_\_\_\_.
  - a) Lowercase
  - b) Uppercase
  - c) Toggle case
  - d) Title case
- 5) DocString is String written inside \_\_\_\_\_.
  - a) \*\*\* or +++
  - b) ### or ///
  - c> """ or "
  - d) "" or "
- 6) The Elements of List are inside \_\_\_\_\_.
  - a) < >
  - b) ( )
  - c) { }
  - d) [ ]
- 7) Function written a Class is called \_\_\_\_\_.
  - a) method
  - b) function
  - c) variable
  - d) constant

**Q.1 B) State True or False 07**

- 1) Extension of Python file is .pyc
- 2) Python is called Interpreted Language.
- 3) When we create Class in Python, each word of a class name should start with a Capital letter.
- 4) Python does not have a datatype to represent single letter.
- 5) The elements of frozenset can not be modified but elements of set can be modify.
- 6) An operator acts on variables which are called as operands.
- 7) tuples( ) are Mutable whereas Lists[ ] are Immutable.

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) What is use of super () method?
- 2) What is Lambda? Explain with example.
- 3) What is File? List Different modes of file.
- 4) What is variable? Differentiate Local & Global variable.
- 5) What is Regular Expression? Give any example.



- B) Write notes on. (Any Two) 06**
- 1) What are the conditional statements used in python explain with syntax?
  - 2) Define Mutable & Immutable. Explain all of them.
  - 3) What is Module? Explain any 4 built-in modules.
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Explain working of PVM during execution of program in python. (draw diagram).
  - 2) What is String? Explain any 5 methods of String with example.
  - 3) What is function? Write a program to confirm entered no. is odd/even using function.
- B) Answer the following questions. (Any One) 06**
- 1) Explain User defined datatypes in python.
  - 2) Compare python programming with C programming.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) What is else-suite control statement used in python? Explain with syntax & example.
  - 2) What you mean by Literals? Explain different types of Literals in python.
  - 3) Explain Looping statement with example.
- B) Answer the following questions. (Any One) 04**
- 1) Write a program to find factorial of entered no.
  - 2) What is constructor & destructor? Give example.
- Q.5 Answer the following questions. (Any Two) 14**
- a) Explain Abstract classes & Interfaces with Example.
  - b) What is Exception? Write a program to handle ZeroDivisionError Exception.
  - c) Explain Function overloading and overriding with suitable example.

Seat  
No.

**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019**  
**English**  
**LITERARY QUEST**

Day & Date: Saturday, 05-10-2019  
 Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) In the beginning of his speech, Kipling calls himself a \_\_\_\_\_ scholar.
  - a) brilliant
  - b) intelligent
  - c) wondering
  - d) moral
- 2) Kipling advises \_\_\_\_\_ is the only thing we must not take seriously.
  - a) money
  - b) yourselves
  - c) myself
  - d) health
- 3) \_\_\_\_\_ are the simplest and commonest words are in any language, according to Shaw.
  - a) "Yes" and "no"
  - b) "Am" and "are"
  - c) "Is" and "was"
  - d) "Shall" and "should"
- 4) According to Shaw we all have \_\_\_\_\_ manners and \_\_\_\_\_ manners.
  - a) speaking, listening
  - b) reading, writing
  - c) company, home
  - d) good, bad
- 5) The speaker in 'My Grandmother's House' has lost his/her way and now begs love at \_\_\_\_\_ doors.
  - a) friends'
  - b) grandmother's
  - c) strangers'
  - d) relatives'
- 6) My captain does not answer; his \_\_\_\_\_ are pale and still.
  - a) hands
  - b) legs
  - c) eyes
  - d) lips
- 7) 'All that is best of \_\_\_\_\_ and \_\_\_\_\_ meet in the woman's aspects and her eyes,' according to Byron.
  - a) day and night
  - b) day and bright
  - c) dark and bright
  - d) dark and night
- 8) The woman, in the poem 'Upagupta', is suffering from the contagious disease called \_\_\_\_\_.
  - a) flu
  - b) cholera
  - c) measles
  - d) small-pox
- 9) \_\_\_\_\_ is the synonym for 'faith'.
  - a) fortunate
  - b) lucky
  - c) unfortunate
  - d) belief
- 10) 'Poetry' is the antonym for \_\_\_\_\_.
  - a) prose
  - b) poem
  - c) lyric
  - d) song

- 11) \_\_\_\_\_ is the antonym for 'untidy'.
- |         |          |
|---------|----------|
| a) neat | b) chaos |
| c) tiny | d) large |
- 12) \_\_\_\_\_ is the synonym for 'filthy'.
- |           |            |
|-----------|------------|
| a) Good   | b) Cunning |
| c) clever | d) dirty   |
- 13) \_\_\_\_\_ is the synonym for 'rude'.
- |           |                |
|-----------|----------------|
| a) polite | b) impolite    |
| c) good   | d) intelligent |
- 14) \_\_\_\_\_ is the antonym for 'despair'.
- |           |             |
|-----------|-------------|
| a) hope   | b) hopeless |
| c) repair | d) pair     |

**Q.2 Attempt any four of the following questions. 16**

- a) Comment on the theme of love in 'My Grandmother's House'.
- b) What does the speaker often think about the grandmother's house in the poem 'My Grandmother's House'?
- c) Why does the speaker ask captain to rise up in the poem 'O Captain! My Captain!'?
- d) Analyze any two metaphors used in the poem 'O Captain! My Captain!'.
- e) How does Byron describe the beauty of the woman?
- f) What is the subject matter of the poem 'Upagupta'?

**Q.3 Attempt any two of the following questions. 12**

- a) What will the students, whom Kipling is addressing, do when they go out into "the battle of life"?
- b) Who were the members of the committee formed by the British Broadcasting Corporation and for what purpose it was formed, according to Shaw?
- c) What are Prefixes? Explain any four prefixes with examples.
- d) What are Suffixes? Explain any four suffixes with examples.

**Q.4 Attempt any one of the following question. 14**

- a) What are the characteristics of a good leader?
- OR**
- b) What are the essential qualities required to become an effective team member?

**Q.5 What causes the stress? Write in detail about the ways of coping with the stress. 14**

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019  
DATA COMMUNICATION AND NETWORKING – II**

Day & Date: Monday, 07-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Pretty Good Privacy (PGP) is used in \_\_\_\_\_.  
a) Browser security                      b) E-mail security  
c) FTP security                            d) None of the above
- 2) \_\_\_\_\_ partition holds the kernel in UNIX.  
a) Root                                        b) Boot  
c) Home                                        d) Swap
- 3) FTP uses \_\_\_\_\_ parallel TCP connections to transfer a file.  
a) 1    b) 4  
c) 3    d) 2
- 4) Global Positioning Service (GPS) is based on a principle called \_\_\_\_\_.  
a) Arbitration                                b) Trilateration  
c) Orbiteration                                d) Globalization
- 5) Digital signature provides \_\_\_\_\_.  
a) Authentication                            b) Non Repudiation  
c) Both a and b                                d) None
- 6) \_\_\_\_\_ is a static-content Web server designed within the Linux kernel.  
a) Squid                                        b) Samba  
c) Tux     d) INN
- 7) Class \_\_\_\_\_ addresses were designed for multicasting.  
a) A    b) B  
c) C    d) D
- 8) Which of the following devices works at the Network layer of the OSI reference model?  
a) Routers                                      b) Bridges  
c) Repeaters                                    d) Gateways
- 9) \_\_\_\_\_ provides either authentication or encryption, or both, for packets at the IP level.  
a) AH    b) PGP  
c) ESP     d) SSL
- 10) Bluetooth network consists of one primary device and up to \_\_\_\_\_ devices.  
a) 5    b) 7  
c) 9    d) 11
- 11) \_\_\_\_\_ algorithms are more efficient for short messages.  
a) DES    b) Symmetric  
c) Asymmetric                                d) None

- 12) \_\_\_\_\_ provides a set of fundamental operations for monitoring and maintaining an internet.
- a) ARP
  - b) RTP
  - c) SNMP
  - d) TCP
- 13) In asymmetric key cryptography, the private key is kept by \_\_\_\_\_.
- a) Sender
  - b) Receiver
  - c) Sender and receiver
  - d) None
- 14) What is the header size of UDP packet?
- a) 8 bytes
  - b) 8 bits
  - c) 16 bytes
  - d) 124 bytes

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) What is the use of samba server in Linux?
- 2) What is an anonymous FTP?
- 3) Which are the various classes of Network?
- 4) What is the use of Courier and Qmail?
- 5) Convert following word by using ceaser cipher by shift down key 7  
"MEET ME IN THE GARDEN TOMORROW"

**B) Write Notes on (Any Two) 06**

- 1) Explain TELNET in short.
- 2) Explain S / MIME in short.
- 3) Explain bridges in short.

**Q.3 A) Answer the following questions. (Any Two) 08**

- 1) Explain ARP protocol.
- 2) Explain VPN in detail.
- 3) Explain CUPS in short.

**B) Answer the following question. (Any One) 06**

- 1) Explain SNMP protocol in detail.
- 2) Explain various security services.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Which device is used to connect two networks using different protocols?  
Explain in detail.
- 2) Explain SET in detail.
- 3) Explain SQUID server in detail.

**B) Answer the following question. (Any One) 04**

- 1) Three way handshaking mechanism
- 2) Proxy firewall

**Q.5 Answer the following questions. (Any Two) 14**

- a) Explain IPsec in detail.
- b) Explain Remote Sensing in detail.
- c) Explain Digital Signature in detail.

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019  
ADVANCED JAVA**

Day & Date: Wednesday, 09-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which JDBC driver Types are use to over communications networks?
  - a) network protocol driver
  - b) Thin drive
  - c) both a) & b)
  - d) None of the above
- 2) Which of the following code is used to get an attribute in a HTTP Session object in servlets?
  - a) session.getAttribute(String name)
  - b) session.alterAttribute(String name)
  - c) session.updateAttribute(String name)
  - d) session.setAttribute(String name)
- 3) Which of the following is not an implicit object?
  - a) date
  - b) out
  - c) pagecontext
  - d) application
- 4) A JSP is transformed into a \_\_\_\_\_.
  - a) Java applet
  - b) Java Servlet
  - c) either one or two
  - d) none of these
- 5) JApplet class extends the Applet class \_\_\_\_\_.
  - a) True
  - b) False
- 6) Java swing components are platform-independent.
  - a) True
  - b) False
- 7) \_\_\_\_\_ classes are used for connection-oriented socket programming.
  - a) DatagramSocket
  - b) DatagramPocket
  - c) ServerSocket
  - d) none of these
- 8) \_\_\_\_\_ bridge driver uses ODBC driver to connect to the database.
  - a) thin driver
  - b) jdbc-odbc bridge driver
  - c) native api driver
  - d) none of these
- 9) \_\_\_\_\_ is used to return the text of the button.
  - a) void setText(String str)
  - b) String getText()
  - c) void buttonName()
  - d) none of these
- 10) \_\_\_\_\_ is an file, from which Web Container gets the information about the servlet to be invoked.
  - a) servlet.xml
  - b) web.html
  - c) web.servlet
  - d) web.xml
- 11) \_\_\_\_\_ is a prefix for function tag in JSTL tag library.
  - a) funprefix
  - b) fun
  - c) fn
  - d) functions

- 12) exception is an implicit object of type \_\_\_\_\_.  
a) Exception  
b) Throw able  
c) PrintWriter  
d) None of these
- 13) JFC stands for \_\_\_\_\_.  
a) Java Foundation Classes  
b) Jsp Foundation classes  
c) Java Functional Classes  
d) none of these
- 14) JDBC stands for \_\_\_\_\_.  
a) Java Database Control  
b) Java Database Connectivity  
c) Java Database Components  
d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) Explain parameters of service method.
- 2) What is DatagramSocket?
- 3) How to give comments in jsp?
- 4) What is generic servlet?
- 5) List of implicit objects.

**B) Write Notes on (Any Two) 06**

- 1) Explain Scripting elements with an example
- 2) What is deployment descriptor? Explain its tags in detail.
- 3) Difference between Generic servlet and HttpServlet.

**Q.3 A) Answer the following questions. (Any two) 08**

- 1) Explain Servlet Life Cycle with suitable diagram.
- 2) What is filter? Give an example of Filter.
- 3) Explain Action elements in details.

**B) Answer the following question. (Any One) 06**

- 1) Design a JSP page to display two user name and password accepted from user.
- 2) Explain different types of Statement interfaces in detail.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) What is ResultSet? Explain ResultSet types in details.
- 2) What is JSTL tag library? Give an example of cove tag library.
- 3) What is session tracking? Give an example of Cookies.

**B) Answer the following (Any One) 04**

- 1) Write a program to insert record into a table by using prepared statement.
- 2) What is the difference between AWT and Swing?

**Q.5 Answer the following (Any two) 14**

- a) Design a JFrame to check given number is strong or not. (use JButton, JLabel, events)
- b) Explain different Types JDBC drivers with suitable diagram.
- c) Explain JSP life cycle with suitable diagram in detail.

Seat  
No.

**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019  
VISUAL PROGRAMMING – II**

Day & Date: Thursday, 10-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) \_\_\_\_\_ delegate can hold and invoke multiple methods.
  - a) Unicast Delegate
  - b) Multicast Delegate
  - c) SingleCast Delegate
  - d) All of Above
- 2) \_\_\_\_\_ is a delegate type class member that is used by the class or object to provide notification to other objects.
  - a) Event
  - b) Delegate
  - c) Action
  - d) None of Above
- 3) \_\_\_\_\_ property of Form class enables or disables the control box of title bar.
  - a) MaximizeBox
  - b) MinimizeBox
  - c) ControlBox
  - d) Hide
- 4) \_\_\_\_\_ control is used to select or deselect multiple options from a list of options.
  - a) Option Button
  - b) Check Box
  - c) Radio Button
  - d) Text Box
- 5) The default event of Text Box is \_\_\_\_\_.
  - a) Enter
  - b) Move
  - c) KeyPress
  - d) TextChanged
- 6) \_\_\_\_\_ is the extension of crystal report.
  - a) .rpt
  - b) .report
  - c) .cs
  - d) .rtp
- 7) \_\_\_\_\_ letter is used for underline in the button control.
  - a) -
  - b) &
  - c) #
  - d) \*
- 8) LINQ query can work with \_\_\_\_\_.
  - a) Dataset
  - b) List<T>
  - c) Array
  - d) All of the above
- 9) \_\_\_\_\_ is 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 above
- 10) Progress Bar can be incremented using \_\_\_\_\_ property.
  - a) Values
  - b) Value
  - c) Text
  - d) Increment
- 11) Interval property in Timer control takes values in form of \_\_\_\_\_.
  - a) Second
  - b) Minutes
  - c) Milliseconds
  - d) Microseconds



- 12) Which of the following assemblies can be stored in Global Assembly Cache?
  - a) Private Assemblies
  - b) Friend Assemblies
  - c) Shared Assemblies
  - d) Protected Assemblies
- 13) The extension of class library file is \_\_\_\_\_.
  - a) .dll
  - b) .exe
  - c) both a and b
  - d) None of above
- 14) \_\_\_\_\_ windows displays a list of all forms and modules making up your application.
  - a) Solution Explorer
  - b) Properties window
  - c) Form layout window
  - d) All of the above

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) What is delegate? Write the syntax of delegate.
  - 2) Give the list of TextBox properties.
  - 3) Why use DateTime Picker control?
  - 4) List the CheckBox events
  - 5) What is GAC?
- B) Write Notes on (Any Two) 06**
- 1) Types of assembly
  - 2) Advantages of crystal report
  - 3) ComboBox control
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) What is control? Explain how to programmatically add control to windows form at run time.
  - 2) Explain Form class with properties and events.
  - 3) What is assembly? Explain components of assembly.
- B) Answer the following questions. (Any One) 06**
- 1) What is LINQ? Explain the concept of LINQ to SQL.
  - 2) What is event? Write a program to demonstrate event and delegate.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Write a difference between MDI and SDI.
  - 2) What is deployment? Explain different techniques used for deployment.
  - 3) Explain delegate with its types.
- B) Answer the following questions. (Any One) 04**
- 1) Create windows form application to display given number is prime or not.
  - 2) Explain Panel and GroupBox control in detail.
- Q.5 Answer the following questions. (Any Two) 14**
- a) Explain with example sorting and grouping technique used in LINQ.
  - b) Write steps to create simple crystal report.
  - c) Explain all keyboard and mouse events in detail.

<b>Seat No.</b>	
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**B.Sc. (ECS) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
COMPUTER SYSTEM ARCHITECTURE – II**

Day & Date: Wednesday, 13-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.** **08**

- 1) When required data found in cache is called as \_\_\_\_\_.
 

a) cache miss	b) Mapping
c) cache hit	d) hit ratio
- 2) \_\_\_\_\_ method CPU is totally engaged.
 

a) Polling	b) Interrupt I/O
c) DMA	d) All of these
- 3) \_\_\_\_\_ indicates the status of ALU.
 

a) Accumulator	b) Data register
c) Instruction register	d) Flag register
- 4) Instruction is divided into \_\_\_\_\_ fields.
 

a) 2	b) 3
c) 4	d) None of these
- 5) Microprocessor uses \_\_\_\_\_ number system.
 

a) binary	b) decimal
c) octal	d) hexadecimal
- 6) MVI A,12H is \_\_\_\_\_ addressing mode.
 

a) implied	b) immediate
c) register	d) direct
- 7) Memory stack is divided into \_\_\_\_\_ segments.
 

a) 2	b) 3
c) 4	d) 5
- 8) \_\_\_\_\_ bus is unidirectional.
 

a) Address	b) Data
c) Control	d) None of these

**Q.2 Attempt any four of the following questions.** **08**

- 1) Give the instruction format.
- 2) Define cache hit and cache miss.
- 3) What is mean by peripherals? Give examples.
- 4) What is mean by I/O channel?
- 5) What is addressing mode? Give their types.
- 6) What is mean by RISC and CISC?

- Q.3 Write notes. (Any Two)** **08**
- 1) Write a note on programmed I/O technique
  - 2) What is mapping? Explain associative mapping.
  - 3) Write a note on register stack.
- Q.4 Attempt any two of the following question.** **08**
- 1) What is difference between machine and assembly language?
  - 2) Explain arithmetic and logical micro-operations.
  - 3) Write a note on cache memory.
- Q.5 Attempt any one of the following.** **08**
- What are the types of CPU organization? Explain register organization with neat and labeled diagram.

**OR**

What are the data transfer techniques? Explain DMA in detail.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019  
WEB TECHNOLOGY AND E-COMMERCE – II**

Day & Date: Friday, 11-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) \_\_\_\_\_ attributes can be used for data validation in MVC.
  - a) DataAnnotations
  - b) Fluent API
  - c) DataModel
  - d) HtmlHelper
- 2) How many 'ScriptManager' control can be added on a ASP.NET web page?
  - a) Only One
  - b) More than One
  - c) Only Two
  - d) None of the above
- 3) What are the different types of Session Mode in ASP.NET?
  - a) InProc
  - b) StateServer
  - c) SQLServer
  - d) All of the above
- 4) What are the disadvantages of AJAX?
  - a) Dependent on JavaScript
  - b) Security issues
  - c) Debugging is difficult
  - d) All of the above
- 5) ASP.NET validation controls works (handle validation) at \_\_\_\_\_.
  - a) Client side only
  - b) Server side only
  - c) Both client side and server side
  - d) None of the above
- 6) How many types of authentication ASP.NET supports?
  - a) Windows Authentication
  - b) .NET Passport Authentication
  - c) Forms Authentication
  - d) All of the above
- 7) You need to programmatically configure page output caching. Which object would you use?
  - a) Request
  - b) Response
  - c) Application
  - d) Server
- 8) Which namespace is used for ASPX View Engine?
  - a) System.Web.Razor
  - b) System.Web.Mvc.WebFormViewEngine
  - c) Both A & B
  - d) None
- 9) Which of the below is not a session tracking method?
  - a) URL rewriting
  - b) History
  - c) Cookies
  - d) SSL sessions
- 10) Validation events of server controls occur before the page is post back to the server.
  - a) True
  - b) False

- 11) Which of the following is not a party of SCM?
  - a) Suppliers
  - b) Manufacturers
  - c) Distributors
  - d) Customers
- 12) What type of data can Cookies store?
  - a) String
  - b) DateTime
  - c) System.Int32
  - d) None of the above
- 13) Which object is used to fill a DataSet/DataTable with query results in ADO.net.
  - a) DataReader
  - b) Dataset
  - c) DataAdapter
  - d) DataTables
- 14) How many types of caching ASP.NET supports?
  - a) Page Output Caching
  - b) Partial Page Caching
  - c) Both a & b
  - d) None of these

**Q.2 A) Answer the following questions. (Any Four) 08**

- 1) What is Role?
- 2) What is hidden variable?
- 3) Define E-Market.
- 4) What is .Net MVC?
- 5) What is Cookies?

**B) Write notes (Any Two) 06**

- 1) What are component of ASP.Net AJAX Client library?
- 2) What is site map path?
- 3) Write the E-Commerce Security.

**Q.3 A) Answer the following questions. (Any two) 08**

- 1) Write the advantages & disadvantages of EDI.
- 2) Explain the Update panel & Update Progress in AJAX.
- 3) Write .Net MVC framework in brief.

**B) Answer the following questions. (Any One) 06**

- 1) Explain the client server architecture of AJAX.
- 2) Write a Credit Transaction Trade cycle of E-Market.

**Q.4 A) Answer the following questions. (Any Two) 10**

- 1) Explain different modes of online payment.
- 2) What is authentication & its mode?
- 3) What is cookies & its types?

**B) Answer the following questions. (Any One) 04**

- 1) Write a folder structure of web application.
- 2) Explain about session Tracking.

**Q.5 Answer the following questions. (Any two) 14**

- a) Define EDI & Explain its benefits with explanation.
- b) Explain tree view & menu view control.
- c) Write Short note on-
  - i) E-Shop
  - ii) Internet Banking

Seat No.	
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**B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination Oct/Nov-2019  
PYTHON – II**

Day & Date: Friday, 11-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which method Returns a list of all thread objects that are currently active?
  - a) threading.activeCount()
  - b) threading.currentThread()
  - c) threading.enumerate()
  - d) none of these
- 2) How to detect the status of a python thread?
  - a) isAlive()
  - b) isActive()
  - c) isDaemon()
  - d) None
- 3) Which method is used to identify a thread?
  - a) getName()
  - b) get\_ident()
  - c) getThread()
  - d) None
- 4) How to terminate a blocking thread?
  - a) thread.stop()
  - b) thread.wait()
  - c) thread.terminate()
  - d) both a) and b)
- 5) URL stands for Universal Resource Locator.
  - a) True
  - b) False
- 6) Which of the following method binds address (hostname, port number pair) to socket?
  - a) bindsocket()
  - b) socketbind()
  - c) addr()
  - d) bind()
- 7) What is the correct syntax of the declaration which defines the XML version?:
  - a) <xml version= "A.0" />
  - b) <?xml version= "A.0" ?>
  - c) <?xml version= "A.0" />
  - d) None of the above
- 8) In XML, which attribute used to define a new namespace?
  - a) XMLNS
  - b) XmlNameSpace
  - c) Xmlns
  - d) XmlINs
- 9) CGI stands for Common Gateway Interface.
  - a) True
  - b) False
- 10) What is extension of Common Gateway Interface Script?
  - a) .cg
  - b) .cgi
  - c) .cgt
  - d) .cgl
- 11) To create an image, use \_\_\_\_\_.
  - a) image = Photolmage (imagefilename)
  - b) image = Image (file = imagefilename)
  - c) image = Photolmage (file = imagefilename)
  - d) image = Photolmage (imagefilename)

- 12) \_\_\_\_\_ is an object that defines a screen element used to display information or Allow the user to interact with a program in a certain way.
- a) GUI
  - b) Component
  - c) Listener
  - d) AWT
- 13) The \_\_\_\_\_ widget is used to draw shapes, such as lines, ovals, polygons and rectangles, in your application.
- a) Canvas
  - b) Frame
  - c) Entry
  - d) Window
- 14) Which type of database management system is MySQL?
- a) Object-oriented
  - b) Hierarchical
  - c) Relational
  - d) Network

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) What is XML?
  - 2) What is the difference between threading.Lock and threading.RLock?
  - 3) What is CGI?
  - 4) List out advantages of Thread.
  - 5) What is process?
- B) Write the notes (Any Two) 06**
- 1) Cookies
  - 2) URL
  - 3) Message Widget
- Q.3 A) Answer the following questions. (Any two) 08**
- 1) Differentiate between Get and Post method.
  - 2) Explain steps for Database connectivity.
  - 3) Write a GUI program to check given number is Armstrong or not. (use Widgets)
- B) Answer the following questions. (Any One) 06**
- 1) Explain CGI architecture.
  - 2) Explain Layout management with example.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Write a program to display protocol, host, port, file name of a given URL.
  - 2) Explain XML parser architecture.
  - 3) Explain Validation and Authentication in CGI
- B) Answer the following questions. (Any One) 04**
- 1) Write a program to retrieving employee information such as eid,ename,salary, etc from Employee table.
  - 2) Explain server socket methods.
- Q.5 Answer the following questions. (Any two) 14**
- a) Explain deadlock of threads with example.
  - b) Explain Entry and Menu widgets with example?
  - c) Write a program to implement "Thread synchronization".

Seat No.	
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**B.Sc. (E.C.S.) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019  
DATABASE MANAGEMENT SYSTEM – II**

Day & Date: Saturday, 05-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which of the following has "all-or-none" property?
  - a) Atomicity
  - b) Durability
  - c) Isolation
  - d) All of the mentioned
- 2) Which of the following is used to input the entry and give the result in a variable in a procedure?
  - a) Put and get
  - b) Get and put
  - c) Out and In
  - d) In and out
- 3) The \_\_\_\_\_ is default name of Implicit cursor.
  - a) User given
  - b) sql
  - c) Implicit
  - d) none of these
- 4) The \_\_\_\_\_ data type is used to match the data type of column value and data type of that variable.
  - a) char
  - b) varchar2
  - c) %type
  - d) %rowtype
- 5) All loop statements must end with a \_\_\_\_\_ statement.
  - a) End loop
  - b) End if
  - c) Else
  - d) None of these
- 6) What are the ways of dealing with deadlock?
  - a) Deadlock prevention
  - b) Deadlock recovery
  - c) Deadlock detection
  - d) All of above
- 7) A system is in a \_\_\_\_\_ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.
  - a) Idle
  - b) Waiting
  - c) Deadlock
  - d) Ready
- 8) The \_\_\_\_\_ scheme uses a page table containing pointers to all pages; the page table itself and all updated pages are copied to a new location.
  - a) Shadow copy
  - b) Shadow Paging
  - c) Update log records
  - d) All of above
- 9) Which of the following is not a recovery technique?
  - a) Deferred update
  - b) Immediate update
  - c) Two-phase commit
  - d) Recovery management
- 10) Which of the following returns the current error message text?
  - a) SQLERRM
  - b) SQLCODE
  - c) Both A & B
  - d) None of the above
- 11) A package will have which of these mandatory parts?
  - a) Package specification
  - b) Package body or definition
  - c) Both A & B
  - d) None of the above



- 12) In which subprogram a RETURN statement does not return a value and so cannot contain an expression?
- |                  |                      |
|------------------|----------------------|
| a) In Procedures | b) In Functions      |
| c) Both A & B    | d) None of the above |
- 13) Which of the following is used to define code that is executed / fired when certain actions or event occur?
- |            |            |
|------------|------------|
| a) Replace | b) Keyword |
| c) Trigger | d) Cursor  |
- 14) If a transaction acquires exclusive lock, then it can perform \_\_\_\_\_ operation.
- |                   |           |
|-------------------|-----------|
| a) read           | b) write  |
| c) read and write | d) update |

- Q.2 A) Attempt any four of the following questions. 08**
- 1) List data types in PL/SQL.
  - 2) What is Exception?
  - 3) What is %type and %rowtype in PL/SQL?
  - 4) What is deadlock?
  - 5) Define Locking?
- B) Write Notes on (Any Two) 06**
- 1) Structure of PL/SQL Block
  - 2) Checkpoints
  - 3) Differentiate between procedure and function
- Q.3 A) Attempt any two of the following questions. 08**
- 1) Write a PL/SQL block to check given number is Armstrong or not.
  - 2) Explain state of transactions with diagram.
  - 3) Create a trigger which will not allow negative salary of employee.
- B) Attempt any one of the following questions. 06**
- 1) What is transaction? Explain its ACID property.
  - 2) Explain deadlock prevention in detail.
- Q.4 A) Attempt any two of the following questions. 10**
- 1) Explain PL/SQL procedure with example.
  - 2) Explain two phase locking protocol with an example.
  - 3) Explain PL/SQL package with example.
- B) Attempt any one of the following questions. 04**
- 1) Explain looping statement in PL/SQL.
  - 2) Explain shadow paging.
- Q.5 Attempt any two of the following questions. 14**
- a) What is trigger? Explain types of trigger with example.
  - b) What is serializability? Explain view serializable schedule.
  - c) What is a cursor? Explain explicit cursor and its attributes with example.

Seat No.	
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Set **P**

**B.Sc. (E.C.S.) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019  
DATABASE COMMUNICATION AND NETWORKING – II**

Day & Date: Monday, 07-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Transport layer protocols deals with \_\_\_\_\_.  
a) application to application communication  
b) process to process communication  
c) node to node communication  
d) none of the mentioned
- 2) A piece of icon or image on a web page associated with another webpage is called \_\_\_\_\_.  
a) url  
b) hyperlink  
c) plugin  
d) none of the mentioned
- 3) \_\_\_\_\_ allows you to connect and login to a remote computer.  
a) Telnet  
b) FTP  
c) HTTP  
d) None of the mentioned
- 4) If an Address Resolution Protocol (ARP) request is broadcast, an ARP reply is \_\_\_\_\_.  
a) Universal  
b) Unicast  
c) Multicast  
d) Generated locally
- 5) Which of the following is / are the types of firewall?  
a) Packet Filtering Firewall  
b) Dual Homed Gateway Firewall  
c) Screen Host Firewall  
d) All of the mentioned
- 6) An interconnected collection of piconet is called \_\_\_\_\_.  
a) scatternet  
b) micronet  
c) mininet  
d) none of the mentioned
- 7) SSL provides \_\_\_\_\_.  
a) message integrity  
b) confidentiality  
c) compression  
d) all of the above
- 8) Pretty good privacy (PGP) is used in \_\_\_\_\_.  
a) Browser security  
b) Email security  
c) FTP security  
d) None of the mentioned
- 9) In asymmetric key cryptography, the private key is kept by \_\_\_\_\_.  
a) sender  
b) receiver  
c) sender and receiver  
d) all the connected devices to the network
- 10) DNS database contains \_\_\_\_\_.  
a) name server records  
b) hostname-to-address records  
c) hostname aliases  
d) all of the mentioned

- 11) \_\_\_\_\_ is a collection of protocols to provide security for a packet at the network level.
- a) IPSec
  - b) SSL
  - c) PGP
  - d) None of the above
- 12) In Cryptography, original message, before being transformed, is called \_\_\_\_\_.
- a) Simple Text
  - b) Plain Text
  - c) Empty Text
  - d) Filled Text
- 13) A proxy firewall filters at the \_\_\_\_\_.
- a) Physical layer
  - b) Application layer
  - c) Data link layer
  - d) Network layer
- 14) Well-known port used for FTP's control connection is \_\_\_\_\_.
- a) Port 6
  - b) Port 8
  - c) Port 20
  - d) Port 21

**Q.2 A) Answer the following (Any Four) 08**

- 1) What is three way handshaking mechanism?
- 2) What is meant by passive Hub?
- 3) What is a proxy ARP?
- 4) What is message confidentiality?
- 5) What is DNS?

**B) Write Notes on (Any Two) 06**

- 1) Packet filter firewall in detail.
- 2) Explain repeater in detail.
- 3) Recommended partitions in LINUX?

**Q.3 A) Answer the following (Any two) 08**

- 1) What is UDP? Explain the uses of UDP.
- 2) What is Bridge? Explain the various types of bridges?
- 3) Describe IP security in detail.

**B) Answer the following (Any One) 06**

- 1) Explain ARP protocol in detail.
- 2) Explain GSM in detail.

**Q.4 A) Answer the following (Any Two) 10**

- 1) Explain Bluetooth with its applications.
- 2) Explain group management in Linux.
- 3) Which are the various responsibilities of Network Administrator?

**B) Answer the following (Any One) 04**

- 1) Explain gateway in detail.
- 2) Describe Samba Server.

**Q.5 Answer the following (Any two) 14**

- a) Explain TCP segment with diagram.
- b) Explain digital signature in detail.
- c) What is PGP? Explain working of PGP in detail

Seat  
No.

**B.Sc. (E.C.S.) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019  
ADVANCED JAVA**

Day & Date: Wednesday, 09-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Which JDBC driver Types are for use over communications networks?
  - a) Type 3 only
  - b) Type 4 only
  - c) Both type 3 and type 4
  - d) None of these
- 2) \_\_\_\_\_ classes are used for connection-less socket programming.
  - a) DatagramPacket
  - b) DatagramSocket
  - c) ServerSocket
  - d) both a and b
- 3) JSP stands for \_\_\_\_\_.
  - a) Java Server Pages
  - b) Java Server Programming
  - c) Java Service Pages
  - d) Java Service Programming
- 4) Preprocessing filter is not possible in servlet.
  - a) True
  - b) False
- 5) AWT stands for \_\_\_\_\_.
  - a) Abstract Window Toolkit
  - b) Abstract window Tool
  - c) Advanced Window Toolkit
  - d) none of these
- 6) syntax of expression tag in jsp \_\_\_\_\_.
  - a) <%! %>
  - b) <% %>
  - c) <%= %>
  - d) none of these
- 7) How are java web applications packaged?
  - a) .class
  - b) war
  - c) zip
  - d) None of these
- 8) What does MIME stand for\_\_\_\_\_?
  - a) Multipurpose Internet Messaging Extension
  - b) Multipurpose Internet Mail Extension
  - c) Multipurpose Internet Media Extension
  - d) Multipurpose Internet Mass Extension
- 9) Which class represents an Internet Protocol address?
  - a) InetAddress
  - b) Address
  - c) IP Address
  - d) TCP Address
- 10) URL stands for \_\_\_\_\_.
  - a) Url Resource Locator
  - b) Uniform Relocate Language
  - c) Uniform Relocate Locator
  - d) none of these
- 11) Which of the below is not a session tracking model?
  - a) URL rewriting
  - b) History
  - c) Cookies
  - d) SSL sessions
- 12) Application is instance of which class?
  - a) javax.Servlet.Application
  - b) javax.servlet.HttpContext
  - c) javax.servlet.Context
  - d) javax.servlet.ServletContext

- 13) Which one of the following is correct for directive in JSP?  
a) <%=directive%>    b) <!directive%>  
c) <%directive%>     d) <%@directive%>
- 14) JDBC stands for \_\_\_\_\_.  
a) Java Data Connectivity                                        b) Java Database Connectivity  
c) Java Database Connection                                     d) None of these

**Q.2 A) Answer the following questions. (Any Four)    08**

- 1) Define is hidden form field.
- 2) List out the attributes of Page Directives.
- 3) Define JDBC API.
- 4) Difference between AWT and Swing.
- 5) Define HTTP Protocol.

**B) Answer the following questions. (Any Two)    06**

- 1) Explain Network protocol Driver.
- 2) What is CGI? Explain its work.
- 3) Explain use of servlet container.

**Q.3 A) Answer the following questions. (Any Two)    08**

- 1) What is filter? Give an example filter.
- 2) Design a JFrame to perform arithmetic operations.(use JButtons,JLabels,events)
- 3) Explain Server Socket and Socket classes with an example.

**B) Answer the following questions. (Any One)    06**

- 1) Design a Servlet page to display student information in tabular format.
- 2) Explain the use of UseBean, setProperty and Get Property with an example.

**Q.4 A) Answer the following questions. (Any Two)    10**

- 1) What is JSTL? Explain Core Tag Library with example.
- 2) Design a servlet to maintain session using HttpSession class.
- 3) Write a program to insert records to database table using Callable Statement.

**B) Answer the following questions. (Any One)    04**

- 1) Explain Custom Tag with an example.
- 2) Design a servlet to find out the factorial of given number.

**Q.5 Answer the following questios. (Any Two)    14**

- a) Explain any 5 implicit objects in details.
- b) Design a jsp page to check given number is Armstrong or not.
- c) Explain JSP Life Cycle with suitable diagram.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019  
VISUAL PROGRAMMING AND APPLICATION SOFTWARE – II**

Day & Date: Thursday, 10-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Fields placed in \_\_\_\_\_ section of crystal report are printed at the bottom of last page only.
  - a) Report Footer
  - b) Page Footer
  - c) Page Header
  - d) Report Bottom
- 2) SDI stands for \_\_\_\_\_.
  - a) Sami Document Information
  - b) Single Data Information
  - c) Single Document Interface
  - d) Simple Data Interface
- 3) \_\_\_\_\_ control is used to select or deselect multiple options from a list of options.
  - a) Option Button
  - b) Check Box
  - c) Radio Button
  - d) Text Box
- 4) \_\_\_\_\_ letter is used for underline in the button control.
  - a) -
  - b) &
  - c) #
  - d) \*
- 5) \_\_\_\_\_ event occur when the mouse pointer is moved over a control.
  - a) MouseUp
  - b) MouseHover
  - c) MouseDown
  - d) MouseMove
- 6) \_\_\_\_\_ control does not have a Text property.
  - a) GroupBox
  - b) TextBox
  - c) Panel
  - d) Button
- 7) \_\_\_\_\_ syntax is used in LINQ.
  - a) From --- where --- select
  - b) Select --- from --- where
  - c) Where --- select --- from
  - d) None of the above
- 8) \_\_\_\_\_ is a delegate type class member.
  - a) Class
  - b) Delegate
  - c) Event
  - d) None of these
- 9) \_\_\_\_\_ is 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 above
- 10) ComboBox DropDownStyle property provides \_\_\_\_\_ values
  - a) Simple
  - b) DropDown
  - c) DropDownList
  - d) All of the Above
- 11) \_\_\_\_\_ property is used to sets or gets the text of the windows form.
  - a) Caption
  - b) Font
  - c) Name
  - d) Text

- 12) Interval property in Timer control takes values in form of \_\_\_\_\_.
- |                 |                 |
|-----------------|-----------------|
| a) Second       | b) Minutes      |
| c) Milliseconds | d) Microseconds |
- 13) The extension of executable assembly file is \_\_\_\_\_.
- |                 |                  |
|-----------------|------------------|
| a) .dll         | b) .exe          |
| c) both a and b | d) None of above |
- 14) LINQ stands for \_\_\_\_\_.
- |                              |                            |
|------------------------------|----------------------------|
| a) Language Integrated Query | b) Language Internal Query |
| c) Language Integrated Queue | d) Large Integrated Query  |

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) Give the list of TextBox properties.
  - 2) What are the advantages of crystal report?
  - 3) Why use DateTime Picker control?
  - 4) Explain different object used in Crystal Report.
  - 5) What is event? Write syntax of event declaration.
- B) Write Notes (Any Two) 06**
- 1) ComboBox control
  - 2) Components of assembly
  - 3) Deployment of project
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) What is LINQ? Explain the concept of LINQ to SQL.
  - 2) What is control? Explain how to programmatically add control to windows form at run time.
  - 3) Write a difference between MDI and SDI.
- B) Answer the following questions. (Any One) 06**
- 1) How to create user control? Explain with example.
  - 2) What is assembly? Explain how to create and deploy shared assembly.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Create windows application for armstrong number.
  - 2) Write a note on CrystalReportViewer.
  - 3) Explain List class with example.
- B) Answer the following questions. (Any One) 04**
- 1) Explain Panel and GroupBox control in detail.
  - 2) How ComboBox is differ from ListBox? Explain in detail.
- Q.5 Answer the following questions. (Any Two) 14**
- a) What is delegate? Explain different types of delegate with example.
  - b) What is event? Explain all keyboard and mouse events in detail.
  - c) Write steps to create conditional crystal report.

Seat  
No.**B.Sc. (E.C.S.) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019  
WEB TECHNOLOGY AND E-COMMERCE – II**Day & Date: Friday, 11-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) Choose the form in which Postback occur \_\_\_\_\_.
  - a) HTMLForms
  - b) Webforms
  - c) Winforms
  - d) None of these
- 2) Where do we include the user lists for Form authentication?
  - a) < credential>
  - b) < authorization>
  - c) < Identity>
  - d) < authentication>
- 3) Caching type supported by ASP.Net \_\_\_\_\_.
  - a) Output Caching
  - b) DataCaching
  - c) a and b
  - d) None of the above
- 4) Which of the following control is used to validate that two fields are equal?
  - a) RegularExpressionValidator
  - b) CompareValidator
  - c) equals() method
  - d) RequiredFieldValidator
- 5) The .NET Framework provides a runtime environment called?
  - a) RMT
  - b) CLR
  - c) RCT
  - d) RC
- 6) Which control can be used to update only the portion of the page?
  - a) UpdatePanel
  - b) ScriptManager
  - c) AsyncPostBackTrigger
  - d) None of the above
- 7) How many types of parameter supported by OutputCache?
  - a) VaryByParam
  - b) VaryByControl
  - c) VaryByHeader
  - d) All of the above
- 8) Which CommandType value is incorrect?
  - a) StoredProcedure
  - b) TableDirect
  - c) TableSchema
  - d) Text
- 9) When a User's Session times out which event should you respond to?
  - a) Application\_Start
  - b) Session\_Start
  - c) Session\_End
  - d) Application\_End
- 10) The main features of dotConnect for SQL Server includes: \_\_\_\_\_.
  - a) Extra data binding capabilities
  - b) Ability of monitoring query execution
  - c) Supports the latest versions of SQL Server
  - d) All of the mentioned
- 11) What is the last event of web page life cycle?
  - a) Page\_Load
  - b) Page\_LoadComplete
  - c) Page\_Finish
  - d) Page\_Unload



- 12) How many types of authentication ASP.NET supports?
  - a) Windows Authentication
  - b) .NET Passport Authentication
  - c) Forms Authentication
  - d) All of the above
- 13) What are the element of code access security?
  - a) Evidence, Permission
  - b) SQLSecurity
  - c) UserInterface
  - d) SQL Injection
- 14) Which one of the following is not one of the major types of e-commerce?
  - a) C2B
  - b) B2C
  - c) B2B
  - d) C2C

- Q.2 A) Answer the following questions. (Any Four) 08**
- 1) What is exception handling?
  - 2) Write a purpose of online payment.
  - 3) What is ADO.Net?
  - 4) Use of AJAX.
  - 5) Define View State.
- B) Write notes. (Any Two) 06**
- 1) Write the User.Identity & User.IsInRole.
  - 2) Explain site map path.
  - 3) What is cookies & Write its types.
- Q.3 A) Answer the following questions. (Any Two) 08**
- 1) Explain the many view & Tree view.
  - 2) Write the benefits of AJAX in ASP.Net.
  - 3) Debugging & error handling in ASP.Net.
- B) Answer the following questions. (Any One) 06**
- 1) Write the website evaluation mode.
  - 2) Define Authentication. Explain in detail.
- Q.4 A) Answer the following questions. (Any Two) 10**
- 1) Write the server side state with its types.
  - 2) Write the authentication control in ASP.Net.
  - 3) Write the elements of E-Commerce.
- B) Answer the following questions. (Any One) 04**
- 1) What are the payment modes for E-Commerce?
  - 2) Write the basic steps on how to ADO.Net connect to database.
- Q.5 Answer the following questions. (Any Two) 14**
- a) Write Short note Note on-
    - i) E-Diversity
    - ii) E-Visibility
  - b) Write Script manager & Time control in AJAX.
  - c) Explain State management in ASP.Net.

<b>Seat No.</b>	
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**B.Sc. (E.C.S) (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019**  
**COMPILER CONSTRUCTION**

Day & Date: Saturday, 12-10-2019  
Time: 08:00 AM To 10:30 AM

Max. Marks: 70

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

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

- 1) The compiler process can be considered as a series of sub process is called \_\_\_\_\_.  
a) series    b) sub process  
c) phases    d) none of these
- 2) A \_\_\_\_\_ compiler is also called as residential compiler.  
a) self    b) cross  
c) both a and b                                      d) none of these
- 3) 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
- 4) The \_\_\_\_\_ should be able to catch syntactic errors.  
a) lexical analyzer                                      b) syntax analyzer  
c) both a and b    d) none of these
- 5) The output of a lexical analyzer is \_\_\_\_\_.  
a) Machine code                                      b) Intermediate code  
c) A stream of tokens                                      d) A parse tree
- 6) Grammar of the programming is checked at \_\_\_\_\_ phase of compiler.  
a) Semantic analysis                                      b) Code generation  
c) Syntax analysis    d) Code optimization
- 7) The errors comes due to undefined variable, incompatible operands to operator is called \_\_\_\_\_ errors.  
a) lexical    b) semantic  
c) syntactic    d) logical
- 8) A right most derivation in reverse is obtained by \_\_\_\_\_.  
a) handle pruning                                      b) handle  
c) grammar    d) None of these
- 9) Shift reduce parsers are \_\_\_\_\_.  
a) Top down parser                                      b) Bottom up parser  
c) May be top down or bottom up                      d) None of the above
- 10) Type checking is normally done during \_\_\_\_\_ phase.  
a) Lexical analysis                                      b) Syntax analysis  
c) Syntax directed translation                          d) Code optimization
- 11) An important component of semantic analysis is \_\_\_\_\_.  
a) Code checking    b) Type checking  
c) Flush checking    d) All of the above

- 12) Which of the following parser is most powerful?  
a) LALR    b) Canonical LR  
c) Operator precedence                                      d) SLR
- 13) If optimization is over small program segments then it is called as \_\_\_\_\_ optimization.  
a) simple    b) global  
c) local    d) none of these
- 14) Which of the following is not an intermediate code form?  
a) Postfix notation    b) Syntax trees  
c) Three address code    d) Quadruples

**Q.2 A) Attempt any four of the following questions.    08**

- 1) What are the action available in shift reduce parser?
- 2) Define handle.
- 3) Define 1) Token   2) Pattern
- 4) What is the role of lexical analyzer?
- 5) Why there is need of code optimization?

**Q.2 B) Write short notes (Any Two)    06**

- 1) Back patching
- 2) Flow graphs
- 3) Top - Down parser

**Q.3 A) Attempt any two of the following questions.    08**

- 1) What is compiler? Explain phases of compiler in details.
- 2) Consider the grammar.  
 $E \rightarrow E+E, E \rightarrow E * E, E \rightarrow id$   
Perform Shift Reduce Parsing of the input string "id-id\*id".
- 3) What are the types of compiler? Explain in detail.

**Q.3 B) Attempt any one of the following question.    06**

- 1) What is difference between CLR and LALR?
- 2) Explain compiler construction tools in detail.

**Q.4 A) Attempt any two of the following question.    10**

- 1) Explain input buffering in detail.
- 2) Why three address code is used? Explain implementation type of three address statements.
- 3) What is bottom-up parser? Explain in detail shift reduce parsing using stack implementation.

**Q.4 B) Attempt any one of the following question.    04**

- 1) Explain storage allocation strategies in details.
- 2) What is activation record? Explain it.

**Q.5 Attempt any two of the following question.    14**

- 1) Why symbol table is used? Explain symbol table with its operation
- 2) Find out the first and follows of following grammar :  
 $S \rightarrow aABb, A \rightarrow c| \epsilon, B \rightarrow d| \epsilon$
- 3) What is backtracking? Explain backtracking with example.



**Q.4 Answer any two of the following questions. 08**

- 1) What are the advantages and disadvantages of Computer? Explain.
- 2) Explain Architecture of computer with suitable block diagram.
- 3) Write a Note on CLR, IDE and JVM.

**Q.5 Answer any one of the following questions. 08**

- 1) Explain various types of Computers.
- 2) Define Computer Language? Explain Types of Computer language.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
FUNDAMENTAL OF COMPUTER SYSTEM – II**

Day & Date: Friday, 15-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

**Instructions:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Draw neat diagrams and give equations wherever necessary.

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**08**

- 1) \_\_\_\_\_ is the volatile memory that holds data temporarily.
  - a) ROM
  - b) Memory board
  - c) PROM
  - d) RAM
- 2) \_\_\_\_\_ is output device designed to get hard copy output.
  - a) LCD
  - b) Monitor
  - c) Printer
  - d) CRT
- 3) ALU stands for \_\_\_\_\_.
  - a) Application Logic Unit
  - b) Arithmetic Logic Unit
  - c) Array Logic Unit
  - d) None of above
- 4) In MICR commonly used font is \_\_\_\_\_.
  - a) F13D
  - b) E13D
  - c) E13B
  - d) F13B
- 5) \_\_\_\_\_ is most popular storage medium that are accessed and processed data sequentially.
  - a) Optical Disc
  - b) Hard Disk
  - c) Magnetic tape
  - d) None of above
- 6) A light sensitive device that converts drawing, printed text or other images in to digital form are \_\_\_\_\_.
  - a) Plotter
  - b) Scanner
  - c) OMR
  - d) keyboard
- 7) \_\_\_\_\_ is main circuit board of computer.
  - a) Motherboard
  - b) SMPS
  - c) Serial port
  - d) None of above
- 8) The speed of Dot matrix printer is measured in \_\_\_\_\_.
  - a) dpi
  - b) cps
  - c) ppm
  - d) None of above

**Q.2 Answer any four following questions.**

**08**

- a) How data is stored on a CD-ROM?
- b) What is meant by soft copy and hard copy output? Give examples of soft copy and hard copy output devices.
- c) What is application of MICR?
- d) What is sequential access storage device and direct access storage device?
- e) What is Computer?
- f) What is serial port?

- Q.3 Write short notes (Any Two)** **08**
- a) Motherboard
  - b) Bar- code readers
  - c) Printers
- Q.4 Answer any two the following questions.** **08**
- a) What is computer memory? Explain storage structure of hard disk.
  - b) What is pointing device? Explain the types of mouse.
  - c) What is different types of memory? Explain in details.
- Q.5 Answer any one the following questions.** **08**
- Draw block diagram of computer and explain all its units with neat diagram.
- OR**
- Define and list the output device? Explain working of dot matrix printer.

Seat No.	
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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
NUMERICAL METHODS – I**

Day & Date: Saturday, 16-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.****08**

- 1) A matrix having only one row is called \_\_\_\_\_ matrix.
  - a) Column
  - b) Row
  - c) Identify
  - d) Zero
- 2) A square matrix is said to be \_\_\_\_\_ if  $A^t = A$ .
  - a) Symmetric
  - b) Skew-symmetric
  - c) Identify
  - d) Null matrix
- 3) If  $f(x) = 0$  be a non-linear eq<sup>n</sup> then location of root exists if  $f(x_0)$  and  $f(x_1)$  have \_\_\_\_\_ sign.
  - a) Negative
  - b) Opposite
  - c) Zero
  - d) Positive
- 4)  $0.5603E_2 \div 0.2112E_1 = \underline{\hspace{2cm}}$ .
  - a)  $0.3596E_1$
  - b)  $2.6529E_1$
  - c)  $1.6544E_1$
  - d)  $2.0905E_1$
- 5) The system of linear equation of the matrix of the form  $[A/B]$  is said to be \_\_\_\_\_ matrix.
  - a) Augmented
  - b) Homogeneous
  - c) Diagonal
  - d) Symmetric
- 6)  $0.4399E_{10} \times 0.5789E_{-12} = \underline{\hspace{2cm}}$ .
  - a)  $0.4399E_{-2}$
  - b)  $0.5789E_{-12}$
  - c)  $0.2546E_{-2}$
  - d)  $0.1526E_{-12}$
- 7) Location of the root of the equation  $f(x) = x^3 - 2x - 5 = 0$  is \_\_\_\_\_.
  - a) [1,3]
  - b) [2,3]
  - c) [3,4]
  - d) [0,1]
- 8) A scalar matrix in which all the diagonal element's are equal to one is called \_\_\_\_\_ matrix.
  - a) Symmetric
  - b) Identity
  - c) Null
  - d) Empty

**Q.2 Answer any four of the following questions.****08**

- 1) Define square matrix.
- 2) Define upper triangular matrix.
- 3) Find location of root of non-linear eq<sup>n</sup>  $f(x) = x^3 - 4x - 9 = 0$  lies.
- 4) Define Column matrix.
- 5) Define Absolute error.
- 6) Define system of linear equation's.



- Q.3 Write short notes on any two of the following. 08**
- 1) Augmented matrix
  - 2) Row echelon form
  - 3) Location of root's
- Q.4 Answer any two of the following questions. 08**
- 1) Solve the following system of linear equation by using gauss elimination method  
 $x + y + 3z = 0;$   
 $3x - 4y + 4z = -2;$   
 $5x + y + 6z = 5;$
  - 2) Solve the following system of non-linear equation by using Newton-raphson method (correct upto three iteration's)  
 $f(x) = x^3 - 2x - 5 = 0$
  - 3) Write an algorithm to find root of the eq<sup>n</sup>  $f(x) = 0$  by bisection method
- Q.5 Answer any one of the following questions. 08**
- 1) Solve the following system of linear equation by using Jacobi- iterative method  
 $20x + y - 2z = 17;$   
 $3x + 20y - z = -18;$   
 $2x - 3y + 20z = 25;$
  - 2) Solve the following system of linear equation by Gauss-Jordan method  
 $x + y + 2z = 9;$   
 $2x + 4y - 3z = 1;$   
 $3x + 6y - 5z = 0;$

Seat No.	
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**B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination Oct/Nov-2019  
NUMERICAL METHODS – II**

Day & Date: Monday, 18-11-2019  
Time: 03:00 PM To 05:00 PM

Max. Marks: 40

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

**Q.1 Fill in the blanks by choosing correct alternatives given below.****08**

- 1) The first order divided difference of \_\_\_\_\_.  
 a)  $\frac{f(x_1) - f(x_0)}{x_1 - x_0}$                       b)  $f(x_1) - f(x_0)$   
 c)  $\frac{f(x_1) + f(x_0)}{x_1 - x_0}$                       d)  $f(x_0) - f(x_1)$
- 2) \_\_\_\_\_ rule can be obtained by putting  $n = 2$  in the general quadrature formula for equidistant ordinates.  
 a) Trapezoidal                                      b) Newton's – Cotes  
 c) Simpson's (3/8)<sup>th</sup>                              d) None of these
- 3) In Runge – Kutta fourth order method,  $K_2 =$  \_\_\_\_\_.  
 a)  $hf(x_0 + h, y_0 + k_1)$                       b)  $hf(x_0 + h/2, y_0 + k_{1/2})$   
 c)  $f(x_0 + h/2, y_0 + k_{1/2})$                       d)  $h \cdot f(x_0, y_0)$
- 4) Which of the following relation is true?  
 a)  $E = 1 - \Delta$                                       b)  $\Delta = E + 1$   
 c)  $E = 1 + \Delta$                                       d)  $E = \Delta$
- 5) Simpson's (3/8)<sup>th</sup> rule is obtained by putting  $n =$  \_\_\_\_\_ in general quadrature formula for equidistant ordinates.  
 a) 0    b) 1  
 c) 2    d) 3
- 6) In \_\_\_\_\_ method of solving O.D.E., we get first general solution and then by putting particular value we get a particular numerical solution.  
 a) Euler's    b) Modified Euler's  
 c) Runge – Kutta                                      d) Taylor's
- 7) \_\_\_\_\_ is the process of finding the required numerical value of  $f(x)$ , where 'x' lies within the given range of the data.  
 a) Integration                                      b) Extrapolation  
 c) Interpolation                                      d) Differentiation

- 8) The Trapezoidal rule to find value of  $I = \int_a^b f(x). dx$  for the entries  $y_0, y_1, y_2, y_3$  and  $y_4$  is \_\_\_\_\_.
- a)  $h[(y_0 + y_4) + 2(y_1 + y_2 + y_3)]$
  - b)  $\frac{h}{2}[(y_0 + y_4) + 4(y_1 + y_2 + y_3)]$
  - c)  $\frac{h}{2}[(y_0 + y_4) + 2(y_1 + y_2 + y_3)]$
  - d)  $\frac{h}{2}(y_0 + y_4) + 2(y_1 + y_2 + y_3)$

**Q.2 Answer any four of the following questions.**

**08**

- a) State formulae for  $K_1$  and  $K_2$  in Runge-Kutta second order method.
- b) State Simpson's  $(3/8)^{th}$  rule for integration.
- c) Prepare forward difference table for the following data.

$x$	5	10	15	20
$y = f(x)$	4.1820	6.7345	12.8686	10.2240

- d) Define  $\Delta f(x)$  and  $\nabla f(x)$ .
- e) State General Quadrature formula for equidistant ordinates.
- f) Define degree and order of a differential equation.

**Q.3 Answer any two of the following questions.**

**08**

- a) Prove that  $(\Delta - \nabla) = \Delta \nabla$ .
- b) Evaluate  $\int_2^7 (x^3 - 1) dx$  by using Trapezoidal rule. Take  $h = 1$ .
- c) State the formulae for  $k, k_1, k_3$  and  $k_4$  in Runge - Kutta fourth order method to solve ordinary Differential Equation.

**Q.4 Answer any two of the following questions.**

**08**

- a) Use Euler's method to estimate the value of  $y$  at  $x = 2.8$ , for the differential equation  $\frac{dy}{dx} = 1 + xy$ ; with initial conditions  $x_0 = 2, y_0 = 3$ . Take  $h = 0.2$
- b) By using Lagrange's interpolation formula, find  $f(5.8)$  from the data given below.

$x$	0	4	5	6
$y = f(x)$	-10	10	45	104

- c) Evaluate:  $\int_5^{14} \log_{10} x. dx$  by using Simpson's  $(1/3)^{rd}$  rule, by dividing the interval of integration into 5 equal parts.

**Q.5 Answer any one of the following questions.**

**08**

- a) Derive Newton's Forward Difference Interpolation Formula.
- b) By stating General Quadrature formula for equidistant ordinates, derive Simpson's  $(1/3)^{rd}$  rule