

**Seat  
No.**

## Set

P

**M.C.A (Semester - I) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**INTRODUCTION TO COMPUTERS**

Day & Date: Thursday, 16-11-2017  
Time: 10.30 AM to 01.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket.**

10

<b>B)</b>	<b>State True/False.</b>	<b>04</b>		
1)	BIOS means Basic Input Output system.			
2)	Primary memory is usually referred to as RAM.			
3)	Cache memory is placed in between the CPU and ROM.			
4)	Unix is a single user operating system.			
<b>Q.2</b>	<b>A) Write a short note on following:</b>	<b>08</b>		
1)	Joystick			
2)	Storage Device			
<b>B)</b>	<b>Answer the following:</b>	<b>06</b>		
1)	Explain block diagram of computer.			
2)	Explain concept of spreadsheet.			
<b>Q.3</b>	<b>Answer the following:</b>	<b>08</b>		
<b>A)</b>	Convert the following binary into decimal number.			
i)	1100101			
ii)	100111			
iii)	1010101			
iv)	100101			
<b>B)</b>	Describe the internal structure of CRT monitor.	<b>06</b>		
<b>Q.4</b>	<b>Answer the following:</b>			
<b>A)</b>	Explain various formatting commands on text in MS-Word.	<b>07</b>		
<b>B)</b>	What is compiler? Explain how does it role in programming.	<b>07</b>		
<b>Q.5</b>	<b>Answer the following:</b>	<b>07</b>		
<b>A)</b>	Explain classification of languages in brief.	<b>07</b>		
<b>B)</b>	List the various scanning devices. Explain any two of them in brief.			
<b>Q.6</b>	<b>Answer the following:</b>			
<b>A)</b>	Explain following Linux commands with suitable examples:	<b>08</b>		
i)	ls	ii) wall	iii) chmod	iv) cat
<b>B)</b>	What is internet? Explain uses of internet.	<b>06</b>		
<b>Q.7</b>	<b>Answer the following:</b>			
<b>A)</b>	What is Operating System? Give the functions of operating system.	<b>08</b>		
<b>B)</b>	What is debugger? Explain how does it help in programming?	<b>06</b>		

<b>Seat No.</b>	
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# Set P

**M.C.A. (Semester - I) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**PROGRAMMING USING – C**

Day & Date: Saturday, 18-11-2017  
Time: 10.30 AM to 01.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question No.1 and 2 are compulsory.  
2) Attempt any 3 questions from Q. No. 3 to Q. No. 7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives:**

10

- 7) A variable's storage class tells us:
- Where the variable would be stored.
  - What is the scope of the variable; i.e. in which functions the value of the variable would be available.
  - What is the life of the variable; i. e. how long would the variable exist.
  - All a, b, c
- 8) Which of the following is not feature of a variable defined to have an automatic storage class?
- Storage – CPU registers
  - Default initial value – An unpredictable value.
  - Scope – Local to the block in which the variable is defined.
  - Life – Till the control remains within the block in which the variable is defined.
- 9) What is the output of the following program?
- ```
#include <stdio.h>
void main()
{
    int a = 300, b, c;
    if (a >= 400);
        b = 300;
        c = 200;
    printf ("\n%d %d", c, b);
}
```
- Complier error
  - 400 300
  - 300 200
  - 200 300
- 10) All macro substitutions in a program are done \_\_\_\_\_.
- Before compilation of the program
  - After compilation
  - During execution
  - None of these

**B) State whether true or false.**

**04**

- A variable name in C cannot start with digit.
- The statements within the **while** loop would keep on getting executed till the condition being tested remains true.
- In **switch** statement multiple cases cannot use same expression.
- Every C program contains exactly one function.

**Q.2 A) Write short notes on the following:**

**08**

- Precedence & order of operator evaluation.
- Recursion

**B) Answer the following:**

**06**

- Enlist features of C languages.
- Write the algorithm to find sum of any 5 numbers.

**Q.3 Answer the following:**

**A) Explain 'if – else' statement.**

**06**

**B) If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.**

## **SLR-SM-2**

**Q.4 Answer the following:**

- A)** Describe the use of break and continue statements with suitable example. **06**
- B)** Write a program to print ASCII values of A to Z. **08**

**Q.5 Answer the following:**

- A)** Explain different data types used in C language? **06**
- B)** What are the different input and output functions used in C language? **08**

**Q.6 Answer the following:**

- A)** What is array? How to declare array? Explain with suitable example. **06**
- B)** Explain different storage class specifies in C. **08**

**Q.7 Answer the following:**

- A)** What is a pointer? Explain pointer to structure in detail. **06**
- B)** Explain any four string handling functions with example. **08**

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**M.C.A. (Semester - I) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DISCRETE MATHEMATICAL STRUCTURES**

Day & Date: Tuesday, 21-11-2017  
 Time: 10.30 AM to 01.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7
- 3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) There is no more than one edge between a pair of vertices is called.
  - a) Multi graph
  - b) Regular graph
  - c) Simple graph
  - d) None of these
- 2) A relation R on a set A is called Poset if.
  - a) Reflexive
  - b) Anti symmetric
  - c) Transitive
  - d) All of the above
- 3) In how many ways committee of 6 be chosen from 10 people.
  - a) P (10,5)
  - b) C (10,5)
  - c) P (10,6)
  - d) C (10,6)
- 4) In a group G which of law is called commutative.
  - a)  $a * b = b * a$
  - b)  $a * e = e * a = a$
  - c)  $a * a^{-1} = a^{-1} * a = e$
  - d) None of these
- 5) The main function of logic is to provide which of the following.
  - a) Valid argument
  - b) Valid conclusion
  - c) Rules of inference
  - d) None of these
- 6) Which is the technique of defining of itself a set or an algorithm in term of itself
  - a) Recursion
  - b) Regression
  - c) Inference
  - d) None of these
- 7) Any arrangement of a set of 'n' objects in given order is called.
  - a) Combination
  - b) Permutation
  - c) Partition
  - d) None of these
- 8) A single vertex with single loop is cycle of length is.
  - a) Zero
  - b) One
  - c) Two
  - d) Three
- 9) The Inverse of any matrix A is.
  - a) One
  - b) Unique
  - c) Different
  - d) Equal
- 10) In the set theory  $\bar{\phi} =$ 
  - a)  $\phi$
  - b) U
  - c)  $\bar{U}$
  - d) { }

|                                                                                                                                                                                                                                                          |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>B) Fill in the blanks</b>                                                                                                                                                                                                                             | <b>04</b> |
| 1) If A & B are two matrices of same order then $(A+B)^T = \underline{\hspace{2cm}}$ .                                                                                                                                                                   |           |
| 2) The proposition that are assume to be true are called _____.                                                                                                                                                                                          |           |
| 3) _____ It is defined as smallest transitive relation containing R.                                                                                                                                                                                     |           |
| 4) A lattice $(L, \leq)$ is called bounded lattice if _____.                                                                                                                                                                                             |           |
| <b>Q.2 a) Compute P (8,5) &amp; P (7,4)</b>                                                                                                                                                                                                              | <b>04</b> |
| <b>b) Show that <math>{}^n p_{n-1} = n_0^1</math></b>                                                                                                                                                                                                    | <b>04</b> |
| <b>c) Define function with example</b>                                                                                                                                                                                                                   | <b>03</b> |
| <b>d) Check the validity of the following arguments.</b><br>All men are mortal. Socrates is a man therefore Socrates is mortal.                                                                                                                          | <b>03</b> |
| <b>Q3 a) Explain Hasse – diagram. Draw Hass – diagram <math>D_{20}</math></b>                                                                                                                                                                            | <b>07</b> |
| <b>b) A family of 3 sisters &amp; 5 brothers to be arrange for a photograph. In how many ways they can be sited if.</b><br>1) No condition<br>2) All the sister sit together                                                                             | <b>07</b> |
| <b>Q4 a) Let G be the set of all non – zero real number <math>a*b = \frac{ab}{2}</math> show that <math>(G, *)</math> is group.</b>                                                                                                                      | <b>07</b> |
| <b>b) Let <math>X = Y = Z = R</math> Let <math>f: X \rightarrow Y</math> &amp;<br/><math>g: Y \rightarrow Z</math> are such that <math>f(x) = 2x + 1</math><br/>&amp; <math>g(y) = \frac{y}{3}</math> verify <math>(gof)^{-1} = f^{-1}og^{-1}</math></b> | <b>07</b> |
| <b>Q.5 a) Explain Regular graph &amp; planner graph with example.</b>                                                                                                                                                                                    | <b>07</b> |
| <b>b) Prove that the following equivalence <math>\sim(P \wedge Q) \rightarrow (\sim P \vee (\sim P \vee Q)) \equiv \sim P \vee Q</math></b>                                                                                                              | <b>07</b> |
| <b>Q.6 a) Solve the following equation by inversion method.</b>                                                                                                                                                                                          | <b>07</b> |
| $x - y + z = 4$<br>$2x + y - 3z = 0$<br>$x + y + z = 2$                                                                                                                                                                                                  |           |
| <b>b) Define an equivalence relation. If R is a relation define the “squer”<br/>Let <math>S = IR</math>, <math>R = \{(x, y) = x^2 = y^2\}</math><br/>Prove that squre relation is an equivalence relation.</b>                                           | <b>07</b> |
| <b>Q.7 a) For the parity check matrix.</b>                                                                                                                                                                                                               | <b>07</b> |
| $H = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$                                                                                                                                                        |           |
| Determine (2,5) encoding $e_H^n : B^2 \rightarrow B^5$                                                                                                                                                                                                   |           |
| <b>b) Show that SVR is tautologically implied by <math>(PVQ) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)</math></b>                                                                                                                                | <b>07</b> |

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**Set P**

**M.C.A. (Semester - I) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DIGITAL CIRCUITS AND MICROPROCESSORS**

Day &amp; Date: Thursday, 23-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions:** 1) Q.1 and Q.2 are compulsory  
2) Attempt any Three Questions from Q.3 to Q.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives** **10**

- 1) Multiplexer is circuit which has \_\_\_\_\_.  
a) Many I/P, one O/P      b) Many I/P, Many O/P  
c) One I/P, Many O/P      d) None of these
- 2) To remove race around condition if F/F, \_\_\_\_\_ F/F is used.  
a) RS      b) JK  
c) T      d) MS JK
- 3) In IC 7402 \_\_\_\_\_ NOR gates are designed.  
a) 3      b) 4  
c) 6      d) 8
- 4) In Full Adder \_\_\_\_\_ Gate gives SUM.  
a) AND      b) OR  
c) NOT      d) X - OR
- 5) The 8086 microprocessor has \_\_\_\_\_ byte pipeline are used.  
a) 3      b) 4  
c) 6      d) 8
- 6) The memory capacity for 8086 microprocessor is \_\_\_\_\_.  
a) 32 K      b) 64 K  
c) 128 K      d) 1 MB
- 7) In arithmetic operation in 8085 microprocessor, result always stored in \_\_\_\_\_ register.  
a) Acc      b) B  
c) Source      d) None of these
- 8) The Half adder has \_\_\_\_\_ O/P.  
a) 2      b) 3  
c) 1      d) 4
- 9) In 8086 microprocessor \_\_\_\_\_ Segment registers are used.  
a) 2      b) 3  
c) 1      d) 4
- 10)  $A + 0 = \text{_____}$ .  
a) 0      b) 1  
c) A      d) None of these

|            |                                                                                                                                                           |                  |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>B)</b>  | <b>State true or false:</b>                                                                                                                               | <b>04</b>        |
| 1)         | In Combinational circuit memory are used to store the last condition result.                                                                              |                  |
| 2)         | NOT gate is a complimentary gate.                                                                                                                         |                  |
| 3)         | The data bus for 8085 is a 16 bit.                                                                                                                        |                  |
| 4)         | RET is data transfer instruction.                                                                                                                         |                  |
| <b>Q.2</b> | <b>a)</b> Draw the architecture of 8085. Explain it in brief.<br><b>b)</b> Design basic gates by using both universal gates.                              | <b>08<br/>06</b> |
| <b>Q.3</b> | <b>a)</b> Draw internal architecture of 8086. Explain EU section.<br><b>b)</b> Explain Decoder.                                                           | <b>08<br/>06</b> |
| <b>Q.4</b> | <b>a)</b> Define multiplexer? Explain 4 to 1 and Nibble Multiplexer.<br><b>b)</b> Explain SISO?                                                           | <b>08<br/>06</b> |
| <b>Q.5</b> | <b>a)</b> Define F/F? Explain JK and MS Jk F/F.<br><b>b)</b> Explain minimum mode of 8086.                                                                | <b>08<br/>06</b> |
| <b>Q.6</b> | <b>a)</b> Give classification of instruction set of 8086. Explain with suitable example.<br><b>b)</b> Write ASM program for arithmetic operation in 8085. | <b>08<br/>06</b> |
| <b>Q.7</b> | <b>a)</b> Explain half and full adder with its logic diagram.<br><b>b)</b> Write a note on Ring counter.                                                  | <b>08<br/>06</b> |

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| <b>Seat<br/>No.</b> |  |
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**Set P**

**M.C.A. (Semester - I) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**Management**

Day &amp; Date: Saturday, 25-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question No.1 and 2 are compulsory.

- 2) Attempt any 3 questions from Q. No. 3 to Q. No. 7
- 3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative.****10**

- 1) Concept which provides a line between present & future is known as \_\_\_\_.  
a) Cost concept                          b) Accrual concept  
c) Going concern concept              d) Entity concept
- 2) Money value or the reputation of business is known as \_\_\_\_.  
a) Copy right                            b) Good will  
c) Patents                                d) Trade masks
- 3) Goods returned to the supplier should be accompanied by \_\_\_\_.  
a) Bill                                    b) Debit note  
c) Credit note                            d) Cash memo
- 4) Cash purchases of goods should be credited to \_\_\_\_.  
a) Goods A/c                            b) Sales A/c  
c) Purchase A/c                        d) Cash A/c
- 5) An entry recorded on both sides of the cash book is known as \_\_\_\_ entry.  
a) Opening                              b) Rectifying  
c) Transfer                              d) Contra
- 6) Direct material + Direct Labour + Direct Expenses = \_\_\_\_.  
a) Overheads                            b) Prime cost  
c) Works cost                            d) Cost of sales
- 7) In HRD the first step in the selection process is \_\_\_\_.  
a) Training                              b) Interview  
c) Obtain applications                 d) Transfer
- 8) L.F. stands for \_\_\_\_.  
a) Leak file                            b) Lost file  
c) Large file                            d) Ledger folio
- 9) Key success variable for banking industry is \_\_\_\_.  
a) Deposits & Advances            b) Premises  
c) Furniture                            d) Location
- 10) Net working capital (NWC) = \_\_\_\_.  
a) CL-CA                                b) CA-CL  
c) CA+CL                                d) CL × CA

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>B)</b>  | <b>State True or False:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>04</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
|            | 1) Strategy helps the organization to achieve its goals.<br>2) Passbook is issued by the customer.<br>3) MIS stands for More Information System.<br>4) Assembly department of an organization is a service cost centre.                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Q.2</b> | <b>A)</b> <b>Write short Notes on:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>08</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
|            | 1) Strategic planning & task control<br>2) SWOT analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|            | <b>B)</b> <b>Explain the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>06</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
|            | 1) Quality Circle<br>2) Budget committee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Q.3</b> | Following transactions took place in the books of Mr. Trimuthy & sons. For the month of Aug 2017.                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>07</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
|            | August                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1. Cash balance Rs.25000, & bank balance Rs.18,000.<br>3. Paid for printing & stationary Rs.7400.<br>5. Cash sales Rs.23,000.<br>8. Cash purchases Rs. 27,000<br>10. Deposited cash in to Bank A/c Rs.5000.<br>11. Withdraw from Bank for personal use by cheque Rs.1,500 & by cash & 3,500<br>13. Received a bearer cheque from Surykant in full & final settlement allowing discount Rs.100, Rs.9,900/- deposited same into bank on same day.<br>16. Withdraw from bank for office use Rs.8000. |           |
|            | a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Record the above transactions in the cash book with discount, Bank & cash columns.                                                                                                                                                                                                                                                                                                                                                                                                                | <b>07</b> |
|            | b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | From the above transactions prepare ledger Accounts in the books of Mr. Trimurthy & sons.                                                                                                                                                                                                                                                                                                                                                                                                         | <b>07</b> |
| <b>Q.4</b> | The following transactions are from the books of Mr. Bharat for the month of March 2017.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|            | 2017 March:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|            | 1. Purchased goods from Mukund Traders Rs.3500 @ 10% trade discount.<br>3. Sold goods to Yuvi Traders Rs.12000 @ 5% trade discount.<br>6. Pravin Enterprise invoiced goods to Mr. Bharat Rs 5,250.<br>7. Manish Associates sold goods to Mr. Bharat. Rs.3000 @ 2.5% trade discount.<br>10. Returned goods to Mukund traders enterprises Rs.550 (Net)<br>14. Yuvi traders returned goods of Rs.1,500 (Gross) as they were damaged in transit.<br>17. Returned goods to Prashant enterprises Rs.325<br>22. Placed an order with Mamta stores of Rs.20,000. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|            | a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Record the above transactions in the proper subsidiary Books.                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>07</b> |
|            | b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Prepare the ledger Accounts from the above transactions.                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>07</b> |

**Q.5** Following balance are extracted from the books of Arjun traders for the year ending on 31<sup>st</sup> Mar 2017.

|                       |        |                   |        |
|-----------------------|--------|-------------------|--------|
| Salaries A/c          | 4,500  | Interest Received | 1,000  |
| Carriage outward A/c  | 4,600  | Closing Stock     | 40,000 |
| Gross Profit          | 53,700 | Machinery A/c     | 27,000 |
| Commission received   | 4000   | Furniture A/c     | 6,300  |
| Printing & stationary | 3,400  | Bills Receivable  | 4,000  |
| Insurance A/c         | 750    | Bills payable     | 5,000  |
| Postage & telephones  | 700    | Sundry creditors  | 12,000 |
| Advertisement Exp A/C | 4,700  | Cash A/c          | 6,200  |
| Outstanding-salaries  | 1,000  | Debtors A/c       | 23,750 |

From appropriate balances-

- a) Prepare Profit & loss A/c for the year ended the amount of net profit or Loss. **07**
- b) Prepare the Balance sheet as on 31.3.2017 & ascertain the amount of capital. **07**

**Q.6 Answer the following:**

- a) Discuss the advertising media available in the country. **07**
- b) Explain the characteristics of a good MIS & steps in designing MIS. **07**

**Q.7 Answer the following:**

- a) State the different training methods in the organization and explain the merits of it. **07**
- b) Explain the concepts of Business entity and consistency. **07**

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# **Set P**

# **M.C.A. (Semester-II) (New) (CBCS) Examination Oct/Nov2017**

## **Science**

# OBJECT ORIENTED PROGRAMMING USING C++

Day & Date: Friday, 17-11-2017

**Max. Marks: 70**

Time: 10:30 AM to 01.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory Questions.

- 2) Attempt any Three Questions from Q .No 3 to No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives:**

10

- 9) Which of the following problem causes an exception?

  - a) Missing semicolon in statement in main ( )
  - b) A problem in calling function
  - c) A syntax error
  - d) A run-time error

10) #include

```
main( ) {  
    int i=5;  
    ++i++;  
    Printf("%d", i);  
}
```

  - a) 5
  - b) 6
  - c) 7
  - d) Compilation error

**B) Fill in the blanks:**

04

- 1) `%=` is not a operator in C++.
  - 2) A class is call as abstract base class if it has a pure virtual function.
  - 3) Two or more function may have the same name, as long as their parameter lists are same.
  - 4) The two types of polymorphism are: Public & Protected.

**Q.2. A) Write short notes on the following.**

08

- 1) Pure Virtual Function
  - 2) Manipulators in C++

**B) Answer the following:**

06

- 1) Explain inline function with suitable example.
  - 2) Explain with example the array of objects.

### **Q.3 Answer the following:**

14

- a)** Write a C++ program to check whether an integer is a prime or composite number.

**b)** What are the copy constructors and explain their need?

#### **Q.4 Answer the following:**

14

- a)** What is the difference between a class and a structure?  
**b)** Write a note on static member and member function. Write a program to create the object of Student class and display total no. of students created.

**Q.5 Answer the following:**

14

- a) Explain put( ) and get( ) function with suitable example.
  - b) Write a C++ program to compute the square root of a number. The input value must be tested for validity. If it is negative, the user defined function mysqrt( ) should raise an exception.

**Q.6 Answer the following:**

14

- a)** What is template? Explain function template with suitable example.  
**b)** Write a program in C++ to generate Fibonacci series by overloading prefix operator.

**Q.7 Answer the following:**

14

- a)** Explain dynamic memory allocation in C++.
  - b)** Explain Exception handling mechanism with one example.

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# Set P

**M.C.A. (Semester – II) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DATA STRUCTURES**

**Day & Date:** Monday, 20-11-2017  
**Time:** 10.30 AM to 01.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question 1 and 2 are compulsory.  
2) Attempt any Three from Q.3 to Q.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives:**

10

|                                                                                                                                                                                                          |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10) Which of the following statement is not true regarding graph?                                                                                                                                        |           |
| a) A graph consists of a set of nodes and a set of arcs                                                                                                                                                  |           |
| b) A graph is a tree                                                                                                                                                                                     |           |
| c) A tree is a graph                                                                                                                                                                                     |           |
| d) Graphs can be directed                                                                                                                                                                                |           |
| <b>B) State whether True or False:</b>                                                                                                                                                                   | <b>04</b> |
| 1) DS refers to a set of elements which may be finite or infinite.                                                                                                                                       |           |
| 2) Traversal is the method to reach every vertex of a graph.                                                                                                                                             |           |
| 3) Stack is FIFO structure.                                                                                                                                                                              |           |
| 4) The descendants of a node are all the nodes along the path from the root to that node.                                                                                                                |           |
| <b>Q.2 A) Write short note on:</b>                                                                                                                                                                       | <b>08</b> |
| 1) Data structure.                                                                                                                                                                                       |           |
| 2) Linear Search.                                                                                                                                                                                        |           |
| <b>B) Answer the following:</b>                                                                                                                                                                          | <b>06</b> |
| 1) What is binary tree?                                                                                                                                                                                  |           |
| 2) What is complexity of an algorithm?                                                                                                                                                                   |           |
| <b>Q.3 Answer the following:</b>                                                                                                                                                                         |           |
| a) Explain representations of single and multidimensional array with suitable example.                                                                                                                   | <b>07</b> |
| b) Define Linked List data structure. What are the basic operations that can be performed on a singly Linked List?                                                                                       | <b>07</b> |
| <b>Q.4 Answer the following:</b>                                                                                                                                                                         |           |
| a) Write a program in C to implement stack using linked list.                                                                                                                                            | <b>07</b> |
| b) Sort following data using bubble sort: 23, 12, 20, 42, 88, 92, 8, 56. Give analysis.                                                                                                                  | <b>07</b> |
| <b>Q.5 Answer the following:</b>                                                                                                                                                                         |           |
| a) Evaluate the following postfix expression using stack.<br>5, 7, 9, *, +, 4, 9, 3, /, +, -                                                                                                             | <b>07</b> |
| b) Construct a Binary tree from given series and show the results of In-order and Post-order traversing at constructed Binary tree.<br>Series: 39, 5, 43, 83, 66, 10, 8, 91, 26, 55, 3, 72, 100, 12, 60. | <b>07</b> |
| <b>Q.6 Answer the following:</b>                                                                                                                                                                         |           |
| a) Differentiate between Array and Stack.                                                                                                                                                                | <b>07</b> |
| b) Differentiate between Queue and Linked List.                                                                                                                                                          | <b>07</b> |
| <b>Q.7 Answer the following:</b>                                                                                                                                                                         |           |
| a) Explain B – Tree indexing and hash indexing.                                                                                                                                                          | <b>07</b> |
| b) Define the term Queue. Explain in detail insertion and deletion at in queue.                                                                                                                          | <b>07</b> |

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## **Set P**

**M.C.A. (Semester - II) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**OPERATING SYSTEM**

Day & Date: Wednesday, 22-11-2017

**Max. Marks: 70**

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory questions.  
2) Attempt any Three Questions from Q.3 to Q.7  
3) Figures to right indicate full marks.

## **Q.1 A Choose the correct alternative**

10

- 8) \_\_\_\_\_ requires that the operating system be given in advance additional information concerning which resources a process will request and use during its lifetime.

  - a) Deadlock tolerance
  - b) Deadlock detection
  - c) Deadlock prevention
  - d) Deadlock avoidance

9) Paging involves breaking physical memory into fixed sized called \_\_\_\_\_.

  - a) Segments
  - b) Fragments
  - c) Pages
  - d) Frames

10) A \_\_\_\_\_ is associated with each process, and the CPU is allocated to the process with the highest \_\_\_\_\_.

  - a) Shortest CPU burst cycle
  - b) Round Robin
  - c) Priority
  - d) Waiting time

**B) State True or False**

04

- 1) In the absence of expensive battery and generator backup systems, data must be written to volatile storage for safekeeping.
  - 2) The sequence of directories searched when a file is named, this operation is called search path.
  - 3) An implementation of virtual memory arrangement frees programmers from concern over memory storage limitations.
  - 4) A program is active entity, such as the contents of a file stored on the disk

**Q2 A) Write a short note**

08

- 1) Semaphore
  - 2) Swapping

**B) Answer the following**

06

- 1) What do you mean by File?
  - 2) Briefly state the meaning of Thread.

### **Q3 Answer the following**

- a)** Discuss in detail various types of fragmentation with suitable example.  
**b)** What do you mean by unsafe state? Explain in detail how to detect deadlock?

#### **Q4 Answer the following**

- a)** Explain working mechanism of Round Robin scheduling for processes given below -

| PID | Name | Burst Time | Time Quantum |
|-----|------|------------|--------------|
| 101 | ABC  | 16 minute  | 04 Minute    |
| 102 | XYZ  | 08 minute  |              |
| 103 | PQR  | 14 minute  |              |
| 104 | MNO  | 12 minute  |              |

- b) What do you mean by allocation methods? Explain in detail different kinds of allocation methods in file system implementation?

### **Q5 Answer the following**

- a)** Define the term Demand Paging. Explain in detail steps to handle a page fault? **0**

**b)** Explain in detail working of SCAN algorithm when a Disk head is positioned at 55. **0**

**Q6 Answer the following**

- a) Discuss working of First in First Out page replacement algorithm for given below reference string having 03 frames for allocation. 07

Reference string – 5, 3, 6, 4, 3, 8, 3, 9, 4, 8, 3, 8, 4, 6, 4, 3, 6, 5, 3, 6

- b) Explain principle of process synchronization by explaining Dining Philosopher problem in detail? 07

**Q7 Answer the following**

- a) What do you mean by Threat? Explain in detail different kinds of program threats? 07
- b) State and Differentiate between Distributed OS and Multiprocessor time sharing system? 07

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| <b>Seat<br/>No.</b> |  |
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**Set P**

**M.C.A. (Semester-II) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**SOFTWARE ENGINEERING**

Day &amp; Date: Friday, 24-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions:** 1) Q.1 and Q.2 are compulsory questions.  
2) Attempt any Three Questions from Q.3 to Q.7  
3) Figures to right indicate full marks.

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

- 1) Which of the following is back box testing
  - a) Basic path testing
  - b) Boundary value analysis
  - c) Code path analysis
  - d) None of the mentioned
- 2) The testing in which code is checked
  - a) Black box testing
  - b) White box testing
  - c) Red box testing
  - d) Green box testing
- 3) What are the various Testing Levels?
  - a) Unit testing
  - b) System Testing
  - c) Integration Testing
  - d) All of the mentioned
- 4) Which of the following mechanisms is/are provided by Object Oriented Language to implement Object Oriented Model?
  - a) Encapsulation
  - b) Inheritance
  - c) Polymorphism
  - d) All of the mentioned
- 5) Which of the following is the functionality of 'Data Abstraction'?
  - a) Reduce Complexity
  - b) Binds together code and data
  - c) Parallelism
  - d) None of the mentioned
- 6) In size oriented metrics, metrics are developed base on the
  - a) Number of Function
  - b) Number of user inputs
  - c) Number of lines of code
  - d) Amount of memory usage
- 7) Which of the following is the task of project indicators
  - a) Help in assessment of status of ongoing project
  - b) Track potential risk
  - c) Both a and b
  - d) None of the mentioned
- 8) In the Analysis phase, the development of the \_\_\_\_\_ occurs, which is a clear statement of the goals and objectives of the project.
  - a) Documentation
  - b) Flowchart
  - c) Program specification
  - d) Design

|           |                                                                                                   |                     |
|-----------|---------------------------------------------------------------------------------------------------|---------------------|
| 9)        | Validation is responsibility of                                                                   |                     |
| a)        | Developer                                                                                         | b) Designer         |
| c)        | Tester                                                                                            | d) QA Team          |
| 10)       | How is generalization implemented in Object Oriented programming languages?                       |                     |
| a)        | Inheritance                                                                                       | b) Polymorphism     |
| c)        | Encapsulation                                                                                     | d) Abstract Classes |
| <b>B)</b> | <b>State True or False</b>                                                                        | <b>04</b>           |
| 1)        | Software quality assurance consists of the auditing and reporting functions of management.        |                     |
| a)        | True                                                                                              | b) False            |
| 2)        | Regression testing is a very expensive activity.                                                  |                     |
| a)        | True                                                                                              | b) False            |
| 3)        | Architectural design is a creative process satisfying only functional – requirements of a system. |                     |
| a)        | True                                                                                              | b) False            |
| 4)        | Alpha testing is done at users and end                                                            |                     |
| a)        | True                                                                                              | b) False            |
| <b>Q2</b> | <b>A) Write a short note</b>                                                                      | <b>08</b>           |
| 1)        | Software Applications                                                                             |                     |
| 2)        | Size – Oriented Metrics                                                                           |                     |
| <b>B)</b> | <b>Answer the following</b>                                                                       | <b>06</b>           |
| 1)        | Measures, metric and indicators                                                                   |                     |
| 2)        | What do you mean by Unit Testing                                                                  |                     |
| <b>Q3</b> | <b>Answer the following</b>                                                                       | <b>06</b>           |
| a)        | Explain Design principles in detail.                                                              |                     |
| b)        | Explain communication techniques used in requirement analysis.                                    | <b>08</b>           |
| <b>Q4</b> | <b>Answer the following</b>                                                                       |                     |
| a)        | Explain RAD model with its advantages and disadvantages.                                          | <b>06</b>           |
| b)        | What is testing? Explain Black box testing with its types.                                        | <b>08</b>           |
| <b>Q5</b> | <b>Answer the following</b>                                                                       |                     |
| a)        | Explain software quality assurance in detail.                                                     | <b>06</b>           |
| b)        | Explain the elements of an object model.                                                          | <b>08</b>           |
| <b>Q6</b> | <b>Answer the following</b>                                                                       |                     |
| a)        | Explain object – oriented analysis and design in detail.                                          | <b>08</b>           |
| b)        | Explain data dictionary with an example.                                                          | <b>06</b>           |
| <b>Q7</b> | <b>Answer the following</b>                                                                       |                     |
| a)        | Explain software prototyping & Specification.                                                     | <b>07</b>           |
| b)        | Explain functional modeling in detail.                                                            | <b>07</b>           |

**Seat  
No.**

# Set P

# **M.C.A. (Semester-II) (Old) (CBCS) Examination Oct/Nov2017**

## **Science**

# OBJECT ORIENTED PROGRAMMING USING C++

Day & Date: Friday, 17-11-2017

**Max. Marks: 70**

Time: 10:30 AM to 01.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory Questions.

- 2) Attempt any Three Questions from Q .No 3 to No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives:**

10

- 9) Which of the following problem causes an exception?

  - a) Missing semicolon in statement in main ( )
  - b) A problem in calling function
  - c) A syntax error
  - d) A run-time error

10) #include

```
main( ) {  
    int i=5;  
    ++i++;  
    Printf("%d", i);  
}
```

  - a) 5
  - b) 6
  - c) 7
  - d) Compilation error

**B) Fill in the blanks:**

04

- 1) `%=` is not a operator in C++.
  - 2) A class is call as abstract base class if it has a pure virtual function.
  - 3) Two or more function may have the same name, as long as their parameter lists are same.
  - 4) The two types of polymorphism are: Public & Protected.

**Q.2. A) Write short notes on the following.**

08

- 1) Pure Virtual Function**
  - 2) Manipulators in C++**

**B) Answer the following:**

06

- 1)** Explain inline function with suitable example.  
**2)** Explain with example the array of objects.

### **Q.3 Answer the following:**

14

- a)** Write a C++ program to check whether an integer is a prime or composite number.

**b)** What are the copy constructors and explain their need?

**Q.4 Answer the following:**

14

- a)** What is the difference between a class and a structure?  
**b)** Write a note on static member and member function. Write a program to create the object of Student class and display total no. of students created.

**Q.5 Answer the following:**

14

- a) Explain put( ) and get( ) function with suitable example.
  - b) Write a C++ program to compute the square root of a number. The input value must be tested for validity. If it is negative, the user defined function mysqrt( ) should raise an exception.

**Q.6 Answer the following:**

14

- a) What is template? Explain function template with suitable example.
  - b) Write a program in C++ to generate Fibonacci series by overloading prefix operator.

**Q.7 Answer the following:**

14

- a)** Explain dynamic memory allocation in C++.
  - b)** Explain Exception handling mechanism with one example.

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| <b>Seat<br/>No.</b> |  |
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# Set P

**M.C.A. (Semester – II) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DATA STRUCTURES**

**Day & Date:** Monday, 20-11-2017  
**Time:** 10.30 AM to 01.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question 1 and 2 are compulsory.  
2) Attempt any Three from Q.3 to Q.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives:**

10

- CHOOSE the correct alternative.

  - 1) Which of the following is not used as a data structure?
    - a) Array
    - b) Linked List
    - c) Graph
    - d) Directory
  - 2) Which of the following term is related to the stack?
    - a) TOP
    - b) PUSH
    - c) POP
    - d) All of these
  - 3) In a linked list, \_\_\_\_\_.
    - a) Each link contains a pointer to the next link
    - b) An array of pointers point to the link
    - c) Each link contains data or pointer to links
    - d) The links are stored in an array
  - 4) A heap allows a very efficient implementation of a \_\_\_\_\_.
    - a) Double Ended Queue
    - b) Priority Queue
    - c) Stack
    - d) Trees
  - 5) Moving through all the nodes of a tree is called as \_\_\_\_\_.
    - a) Tree Traversal
    - b) Tree Rotation
    - c) Binary Tree
    - d) None of these
  - 6) The smallest element of an array's index is called its \_\_\_\_\_.
    - a) Smallest Bound
    - b) Lower Bound
    - c) First Bound
    - d) Higher Bound
  - 7) In Queues, the items deleted at one end are called \_\_\_\_\_.
    - a) Rear
    - b) Front
    - c) Top
    - d) Base
  - 8) Each item in a linked list is called \_\_\_\_\_.
    - a) Element
    - b) Information
    - c) Data
    - d) Node
  - 9) Method of graph traversal \_\_\_\_\_.
    - a) DFS
    - b) BFS
    - c) Both (a) and (b)
    - d) None of these

|                                                                                                                                                                                                          |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10) Which of the following statement is not true regarding graph?                                                                                                                                        |           |
| a) A graph consists of a set of nodes and a set of arcs                                                                                                                                                  |           |
| b) A graph is a tree                                                                                                                                                                                     |           |
| c) A tree is a graph                                                                                                                                                                                     |           |
| d) Graphs can be directed                                                                                                                                                                                |           |
| <b>B) State whether True or False:</b>                                                                                                                                                                   | <b>04</b> |
| 1) DS refers to a set of elements which may be finite or infinite.                                                                                                                                       |           |
| 2) Traversal is the method to reach every vertex of a graph.                                                                                                                                             |           |
| 3) Stack is FIFO structure.                                                                                                                                                                              |           |
| 4) The descendants of a node are all the nodes along the path from the root to that node.                                                                                                                |           |
| <b>Q.2 A) Write short note on:</b>                                                                                                                                                                       | <b>08</b> |
| 1) Data structure.                                                                                                                                                                                       |           |
| 2) Linear Search.                                                                                                                                                                                        |           |
| <b>B) Answer the following:</b>                                                                                                                                                                          | <b>06</b> |
| 1) What is binary tree?                                                                                                                                                                                  |           |
| 2) What is complexity of an algorithm?                                                                                                                                                                   |           |
| <b>Q.3 Answer the following:</b>                                                                                                                                                                         |           |
| a) Explain representations of single and multidimensional array with suitable example.                                                                                                                   | <b>07</b> |
| b) Define Linked List data structure. What are the basic operations that can be performed on a singly Linked List?                                                                                       | <b>07</b> |
| <b>Q.4 Answer the following:</b>                                                                                                                                                                         |           |
| a) Write a program in C to implement stack using linked list.                                                                                                                                            | <b>07</b> |
| b) Sort following data using bubble sort: 23, 12, 20, 42, 88, 92, 8, 56. Give analysis.                                                                                                                  | <b>07</b> |
| <b>Q.5 Answer the following:</b>                                                                                                                                                                         |           |
| a) Evaluate the following postfix expression using stack.<br>5, 7, 9, *, +, 4, 9, 3, /, +, -                                                                                                             | <b>07</b> |
| b) Construct a Binary tree from given series and show the results of In-order and Post-order traversing at constructed Binary tree.<br>Series: 39, 5, 43, 83, 66, 10, 8, 91, 26, 55, 3, 72, 100, 12, 60. | <b>07</b> |
| <b>Q.6 Answer the following:</b>                                                                                                                                                                         |           |
| a) Differentiate between Array and Stack.                                                                                                                                                                | <b>07</b> |
| b) Differentiate between Queue and Linked List.                                                                                                                                                          | <b>07</b> |
| <b>Q.7 Answer the following:</b>                                                                                                                                                                         |           |
| a) Explain B – Tree indexing and hash indexing.                                                                                                                                                          | <b>07</b> |
| b) Define the term Queue. Explain in detail insertion and deletion at in queue.                                                                                                                          | <b>07</b> |

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**Set P**

**M.C.A. (Semester-II) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**SOFTWARE ENGINEERING**

Day &amp; Date: Friday, 24-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions:** 1) Q.1 and Q.2 are compulsory questions.  
2) Attempt any Three Questions from Q.3 to Q.7  
3) Figures to right indicate full marks.

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

- 1) Which of the following is back box testing
  - a) Basic path testing
  - b) Boundary value analysis
  - c) Code path analysis
  - d) None of the mentioned
- 2) The testing in which code is checked
  - a) Black box testing
  - b) White box testing
  - c) Red box testing
  - d) Green box testing
- 3) What are the various Testing Levels?
  - a) Unit testing
  - b) System Testing
  - c) Integration Testing
  - d) All of the mentioned
- 4) Which of the following mechanisms is/are provided by Object Oriented Language to implement Object Oriented Model?
  - a) Encapsulation
  - b) Inheritance
  - c) Polymorphism
  - d) All of the mentioned
- 5) Which of the following is the functionality of 'Data Abstraction'?
  - a) Reduce Complexity
  - b) Binds together code and data
  - c) Parallelism
  - d) None of the mentioned
- 6) In size oriented metrics, metrics are developed base on the
  - a) Number of Function
  - b) Number of user inputs
  - c) Number of lines of code
  - d) Amount of memory usage
- 7) Which of the following is the task of project indicators
  - a) Help in assessment of status of ongoing project
  - b) Track potential risk
  - c) Both a and b
  - d) None of the mentioned
- 8) In the Analysis phase, the development of the \_\_\_\_\_ occurs, which is a clear statement of the goals and objectives of the project.
  - a) Documentation
  - b) Flowchart
  - c) Program specification
  - d) Design

- 9) Validation is responsibility of

  - a) Developer
  - b) Designer
  - c) Tester
  - d) QA Team

10) How is generalization implemented in Object Oriented programming languages?

  - a) Inheritance
  - b) Polymorphism
  - c) Encapsulation
  - d) Abstract Classes

**B) State True or False**

04



**Q2 A) Write a short note**

08

- 1) Software Applications
  - 2) Size – Oriented Metrics

**B) Answer the following**

06

- 1) Measures, metric and indicators
  - 2) What do you mean by Unit Testing

### **Q3 Answer the following**

06

- a)** Explain Design principles in detail.  
**b)** Explain communication techniques used in requirement analysis.

#### **Q4 Answer the following**

- Answer the following**

  - a) Explain RAD model with its advantages and disadvantages.
  - b) What is testing? Explain Black box testing with its types.

#### **Q5 Answer the following**

- a)** Explain software quality assurance in detail.  
**b)** Explain the elements of an object model.

### **Q6 Answer the following**

- Answer the following**

  - a) Explain object – oriented analysis and design in detail.
  - b) Explain data dictionary with an example.

### **Q7 Answer the following**

- ### **Answer the following**

**Seat  
No.**

## Set P

**M.C.A. (Semester - II) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**NUMERICAL ANALYSIS**

Day & Date: Monday, 27-11-2017

**Max. Marks: 70**

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question No. 1 and 2 are compulsory.

- 2) Attempt any 3 questions from Q.No.3 to Q.No.7.
- 3) Figures to the right indicate full marks.
- 4) Use of scientific calculator is allowed.

**Q.1 A) Choose correct alternatives:**

10

**B) Truth / False:**

04

- 1)  $\nabla Y_1 = Y_1 - Y_0$ .
  - 2) Power method is used to determine largest Eigen value.
  - 3) The convergence of Newton-Raphson method is linear.
  - 4) Taylor's series method is used to solve ordinary differential equation.

- Q.2 a)** Derive Newton-Raphson method formula to find root of the equation  $f(x) = 0$  04

- b) Define the operators  $\Delta, \nabla, \delta$  and  $E$ . 04  
c) Prepare divided difference table for the following data. 03

|            |   |   |    |      |
|------------|---|---|----|------|
| $x$        | 0 | 1 | 2  | 15   |
| $y = f(x)$ | 2 | 3 | 12 | 3587 |

- d) Define absolute error, relative error and percentage error. 03

- Q.3 a)** Find the root of the equation  $x^3 + x^2 - 1 = 0$  by using the method of false position. Perform only three iterations. **07**

- b)** Derive Lagrange's Interpolation formula. 07

- Q.4 a)** Describe Gauss-Seidel iterative method to solve system of three linear equations in three variables. 07

- b) Evaluate  $\int_{4.1}^{5.1} \log_e x. dx$  by using simpson's (113)<sup>rd</sup> rule. Take  $h = 0.1$  07

- Q.5** a) Derive Trapezoidal rule. **07**  
b) By using Newton's forward difference Interpolation formula estimate the value of  $f(2)$ , from the data given below: **07**

|        |        |        |        |        |
|--------|--------|--------|--------|--------|
| $x$    | 1      | 3      | 5      | 7      |
| $f(x)$ | 0.1003 | 0.1511 | 0.2027 | 0.2553 |

- Q.6 a)** By using Euler's method estimate  $y(2.4)$ . Given that  $\frac{dy}{dx} = x^2 + y^2$  with  $x_0 = 2, y_0 = 2, h = 0.1$  07

- b) Solve the following system of linear equations by using Gauss Elimination method. **07**

$$x_1 + 2x_2 + x_3 = 8 ; 2x_1 + 3x_2 + 4x_3 = 20 ; 4x_1 + 3x_2 + 2x_3 = 16$$

- Q.7 a)** Explain Taylor's series method to solve ordinary differential equation. **07**

- b)** Obtain approximate value of the root of the equation  $e^x - 4x = 0$ , correct upto four decimal places by using Newton-Raphson method. Take initial approximation as  $x_0 = 0.5$  07

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| <b>Seat<br/>No.</b> |  |
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**Set P**

**M.C.A. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**SYSTEM SOFTWARE**

Day & Date: Thursday, 16-11-2017  
Time: 2.30 PM to 05.00 PM

Max. Marks: 70

- Instructions:** 1) Question No. 1 and 2 are compulsory.  
2) Attempt any 3 questions from Q.No.3 to Q.No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives**

**10**

- 1) The software which perform macro expansion is called \_\_\_\_\_.  
a) Macro processor                          b) Macro pre processor  
c) Micro pre processor                        d) Mnemonic operation
- 2) An assembler has \_\_\_\_\_ features.  
a) Programming language dependent  
b) Syntax dependent  
c) Machine dependent  
d) Data dependent
- 3) Loading Operating system is the task of \_\_\_\_\_.  
a) Bootstrap loader                            b) Linking loader  
c) Absolute loader                            d) None of these
- 4) Assembler uses \_\_\_\_\_ integral data structures.  
a) OPTAB                                      b) SYMTAB  
c) Both (a) and (b)                         d) None of these
- 5) A linkage editor produces a \_\_\_\_\_ version of the program.  
a) Linked                                      b) Modified  
c) Interpreted                                d) Complied
- 6) \_\_\_\_\_ involves scanning the program to be complied and recognizing the tokens that make up the source statements.  
a) Lexical analysis                            b) Syntax analysis  
c) Parsing                                      d) Grammar
- 7) The dynamic linking postpones function until \_\_\_\_\_ time.  
a) Load                                        b) Execution  
c) Compile                                      d) None of these
- 8) MS-DOS LINK is a \_\_\_\_\_.  
a) Linking loader                            b) Bootstrap loader  
c) Both a and b                                d) Linkage editor
- 9) The expansion of nested macro cal follows \_\_\_\_\_.  
a) FIFO rule                                b) LIFO rule  
c) LILO rule                                d) Priority rule
- 10) The SIC machine uses \_\_\_\_\_ addressing modes.  
a) Direct                                    b) Indexed  
c) Both a and b                              d) None of these

|            |                                                                                 |           |
|------------|---------------------------------------------------------------------------------|-----------|
| <b>B)</b>  | <b>State whether following statements are true or false.</b>                    | <b>04</b> |
| 1)         | VAX are CISC machines.                                                          |           |
| 2)         | Macro processors are machine dependant.                                         |           |
| 3)         | When the computer is first turned on or restarted bootstrap loader is executed. |           |
| 4)         | SIC machines do not support floating point data format.                         |           |
| <b>Q.2</b> | <b>A) Write short notes on the following.</b>                                   | <b>08</b> |
| i)         | One pass assembler.                                                             |           |
| ii)        | MASM macro processor.                                                           |           |
| <b>B)</b>  | <b>Answer the following.</b>                                                    | <b>06</b> |
| i)         | Explain SIC/XE addressing modes with example.                                   |           |
| ii)        | Bootstrap loader.                                                               |           |
| <b>Q.3</b> | <b>A) Explain data structures and algorithms for linking loader.</b>            | <b>08</b> |
| <b>B)</b>  | What is program linking? Explain in detail.                                     | <b>06</b> |
| <b>Q.4</b> | <b>A) Explain machine dependent assembler features.</b>                         | <b>08</b> |
| <b>B)</b>  | Explain basic macro processor function.                                         | <b>06</b> |
| <b>Q.5</b> | <b>A) With the help of VAX architecture explains CISC machines.</b>             | <b>08</b> |
| <b>B)</b>  | Explain macro processor data structure and algorithms.                          | <b>06</b> |
| <b>Q.6</b> | <b>A) Explain syntactic analysis in detail.</b>                                 | <b>08</b> |
| <b>B)</b>  | Explain simple SIC architecture in detail.                                      | <b>06</b> |
| <b>Q.7</b> | <b>A) What are macro processor design options?</b>                              | <b>08</b> |
| <b>B)</b>  | Explain machine independent compiler functions.                                 | <b>06</b> |

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# Set P

**M.C.A. (Semester - III) (New) (CBSC) Examination Oct/Nov-2017**  
**Science**  
**DBMS**

Day & Date: Saturday, 18-11-2017  
Time: 02.30 PM to 05.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question No.1 and 2 are compulsory.  
2) Attempt any 3 questions from Q.NO. 3 to Q. No. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Select most correct alternative:**

- 1) \_\_\_\_\_ clause is an additional filter that is applied to the result.

  - a) Select
  - b) Group-by
  - c) Having
  - d) Order by

2) A top-to-bottom relationship among the items in a database is established by a

  - a) Hierarchical schema
  - b) Network schema
  - c) Relationship Schema
  - d) All of the above

3) In an ER model, \_\_\_\_\_ is described in the database by storing its data.

  - a) Entity
  - b) Attribute
  - c) Relationship
  - d) Notation

4) The candidate key is that choose to identify each row uniquely is called \_\_\_\_\_.

  - a) Alternate Key
  - b) Primary Key
  - c) Foreign Key
  - d) None of the above

5) \_\_\_\_\_ data type can store unstructured data.

  - a) RAW
  - b) CHAR
  - c) NUMERIC
  - d) VARCHAR

6) The database schema is written in

  - a) HLL
  - b) DML
  - c) DDL
  - d) DCL

7) \_\_\_\_\_ is the process of organizing data into related tables.

  - a) Normalization
  - b) Generalization
  - c) Specialization
  - d) None of the above

8) \_\_\_\_\_ is preferred method for enforcing data integrity.

  - a) Constraints
  - b) Stored Procedure
  - c) Triggers
  - d) Cursors

9) To change column value in a table the \_\_\_\_\_ command can be used

  - a) Create
  - b) Insert
  - c) Alter
  - d) Update

10) Which of the following is/are the DDL statements?

  - a) Create
  - b) Drop
  - c) Alter
  - d) All of the above

|            |                                                                                                                                                                                                                                                                   |           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>B)</b>  | <b>State whether following statements are True or False:</b>                                                                                                                                                                                                      | <b>04</b> |
| 1)         | A primary key if combined with a foreign key creates Parent-Child relationship between the tables that connect them.                                                                                                                                              |           |
| 2)         | The relational model is based on the concept that data is organized and stored in two-dimensional tables called relations.                                                                                                                                        |           |
| 3)         | A Strong entity does not have a distinguishing attribute if its own and mostly are dependent entities, which are part of some another entity.                                                                                                                     |           |
| 4)         | Data elements in the database can be modified by changing the data dictionary.                                                                                                                                                                                    |           |
| <b>Q.2</b> | <b>A) Write a short note on following:</b>                                                                                                                                                                                                                        | <b>06</b> |
| 1)         | Index                                                                                                                                                                                                                                                             |           |
| 2)         | DROP command                                                                                                                                                                                                                                                      |           |
| <b>B)</b>  | <b>Answer the following:</b>                                                                                                                                                                                                                                      | <b>08</b> |
| 1)         | Explain BETWEEN predicate with example.                                                                                                                                                                                                                           |           |
| 2)         | Explain different users of DBMS.                                                                                                                                                                                                                                  |           |
| <b>Q.3</b> | <b>Answer the following :</b>                                                                                                                                                                                                                                     |           |
| <b>A)</b>  | Explain primary key and foreign key with example.                                                                                                                                                                                                                 | <b>07</b> |
| <b>B)</b>  | Explain nested queries with example.                                                                                                                                                                                                                              | <b>07</b> |
| <b>Q.4</b> | <b>Answer the following:</b>                                                                                                                                                                                                                                      |           |
| <b>A)</b>  | Describe commit, rollback and save point with example.                                                                                                                                                                                                            | <b>07</b> |
| <b>B)</b>  | Explain different states of transaction.                                                                                                                                                                                                                          | <b>07</b> |
| <b>Q.5</b> | <b>Answer the following:</b>                                                                                                                                                                                                                                      |           |
| <b>A)</b>  | Write a note on log based recovery.                                                                                                                                                                                                                               | <b>07</b> |
| <b>B)</b>  | Solve the following queries based on the schema:<br>Emp (eid*, ename, age, salary)<br>Works (eid, did, pcttime)<br>Dept (did*, dname, budget, managerid)<br>1) Write an SQL statement to add “John Doe” as an employee<br>With eid=101, age=32 and salary=15,000. | 03        |
|            | 2) Write an SQL statement to give every employee a 10% raise.                                                                                                                                                                                                     | 02        |
|            | 3) Write an SQL statement to delete the “Toy” department.                                                                                                                                                                                                         | 02        |
| <b>Q.6</b> | <b>Answer the following:</b>                                                                                                                                                                                                                                      |           |
| <b>A)</b>  | Discuss how the recovery from catastrophic failures is handled?                                                                                                                                                                                                   | <b>07</b> |
| <b>B)</b>  | Differentiate between Network Data Model and Hierarchical Data Model.                                                                                                                                                                                             | <b>07</b> |
| <b>Q.7</b> | <b>Answer the following:</b>                                                                                                                                                                                                                                      |           |
| <b>A)</b>  | Explain the properties of transaction.                                                                                                                                                                                                                            | <b>07</b> |
| <b>B)</b>  | Explain joins with example.                                                                                                                                                                                                                                       | <b>07</b> |

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## Set

P

**MCA (Semester - III) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**JAVA PROGRAMMING**

Day & Date: Tuesday, 21-11-2017  
Time: 02.30 PM to 05.00 PM

Max. Marks: 70

- Instructions:** 1) Q.NO.1 and 2 are compulsory.  
2) Attempt any 3 questions from Q.No.3 to Q.No.7.  
3) Figure to the right indicates full marks.

#### **Q.1 Choose the Correct Alternatives:**

14

**SLR-SM-19**



|            |                                                                                                                                                                                                  |           |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.2</b> | <b>A)</b> <b>Write short notes on the following:</b><br>1) Differentiate constructor and method.<br>2) Differentiate Byte stream and Character stream classes.                                   | <b>08</b> |
|            | <b>B)</b> <b>Answer the following:</b><br>1) What are the differences between String and String Buffer?<br>2) Give the features of Applets.                                                      | <b>06</b> |
| <b>Q.3</b> | <b>Answer the following:</b><br><b>A)</b> Explain event-delegation model with its advantages.<br><b>B)</b> What is interface? How to create it? Explain with example.                            | <b>14</b> |
| <b>Q.4</b> | <b>Answer the following:</b><br><b>A)</b> Explain the term:<br>1) Event      2) Event source    3) Event listener<br><b>B)</b> Write a program to copy one text file into another text file.     | <b>14</b> |
| <b>Q.5</b> | <b>Answer the following.</b><br><b>A)</b> How can you add an image to an applet? Explain with an example.<br><b>B)</b> What is synchronization? When do we use it? Explain with example.         | <b>14</b> |
| <b>Q.6</b> | <b>Answer the following.</b><br><b>A)</b> Write a program to demonstrate the implementation of Prepared Statement interface.<br><b>B)</b> Explain thread life cycle and thread creation in Java. | <b>14</b> |
| <b>Q.7</b> | <b>Answer the following.</b><br><b>A)</b> Differentiate method overloading with method overriding with examples.<br><b>B)</b> Write a java program using listeners for handling keyboard events. | <b>14</b> |

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## **Set P**

**M.C.A. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**COMPUTER COMMUNICATION NETWORK**

Day & Date: Thursday, 23-11-2017  
Time: 02.30 PM to 05.00 PM

**Max. Marks: 70**

**Instructions:** 1) Questions No.1 and 2 are Compulsory.  
2) Attempt any three questions from Q.No.3 to Q.No.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket.**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10) In Go-Back-N window, when the timer of the packet times out, several packets have to be resent even some may have arrived safe, where as in Selective Repeat window, tries to send _____.                                                                                                                                                                                                                                                                                   |           |
| a) Packet that have not lost<br>b) Packet that have lost or corrupted<br>c) Packet from starting<br>d) All the packets                                                                                                                                                                                                                                                                                                                                                          |           |
| <b>B) State True/False</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>04</b> |
| 1) You have a network that needs 29 subnets while maximizing the number of host addresses available on each subnet. 254 bits must you borrow from the host field to provide the correct subnet mask.<br>2) User datagram protocol is called connectionless because all UDP packets are treated independently by transport layer.<br>3) The IMEI standards documents are called Request For Comments.<br>4) The 64 byte IP address consists of network address and host address. |           |
| <b>Q.2 A) Write a short note on following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>08</b> |
| 1) Go Back N Protocol<br>2) Congestion Control                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |
| <b>B) Explain the following terms?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>06</b> |
| 1) How to control error in data link between layer justify with example?<br>2) What are the difference between IPV4 and IPV6?                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Q3 Answer the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
| a) When use simple protocol in computer network explain with suitable example?                                                                                                                                                                                                                                                                                                                                                                                                  | <b>07</b> |
| b) What are the benefits of computer network in home and business explain with suitable example?                                                                                                                                                                                                                                                                                                                                                                                | <b>07</b> |
| <b>Q4 Answer the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
| a) What are the issues in designing of network layer? Explain any two with example.                                                                                                                                                                                                                                                                                                                                                                                             | <b>07</b> |
| b) What are the policies to prevent network transmission load? Explain in details load shedding.                                                                                                                                                                                                                                                                                                                                                                                | <b>07</b> |
| <b>Q.5 Answer the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| a) What is Berkeley socket? Explain in details transport primitive.                                                                                                                                                                                                                                                                                                                                                                                                             | <b>07</b> |
| b) Explain E-mail architecture and services in details.                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>07</b> |
| <b>Q.6 Answer the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| a) Describe in details TCP connection establishment and connection release.                                                                                                                                                                                                                                                                                                                                                                                                     | <b>07</b> |
| b) What are the differences between static and dynamic web documentation? Explain with suitable examples.                                                                                                                                                                                                                                                                                                                                                                       | <b>07</b> |
| <b>Q.7 Answer the following:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| a) How to find optimal path for establishment of network path? Explain one of the method with example.                                                                                                                                                                                                                                                                                                                                                                          | <b>07</b> |
| b) Explain Connection-oriented and connectionless services primitive in details.                                                                                                                                                                                                                                                                                                                                                                                                | <b>07</b> |

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# Set P

**M.C.A. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**PROGRAMMING WITH PHP**

Day & Date: Thursday, 23-11-2017  
Time: 2.30 PM to 05.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question No. 1 and 2 are compulsory.

2) Attempt any 3 questions from Q.No.3 to Q.No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives:**

10

**B) Truth / False:**

04

- 1) PHP is a client-side scripting language.
  - 2) In PHP you can use both single quotes (' ') and double quotes (" ") for strings.
  - 3) PHP can be run on Microsoft Windows IIS (Internet Information Server).
  - 4) In PHP, the only way to output text is with echo.

**Q.2 A) Write short notes on the following**

08

- 1) Scope of variable in PHP
  - 2) Var\_dump() and print\_r() function

**B) Answer the following**

06

- 1) Explain echo () and print () function with example.
  - 2) Explain various attributes and elements of<form>tag with example.

### **Q.3 Answer the following**

14

- a) Explain different types of arrays with example.
  - b) Explain exception handling in PHP. Explain exception class functions with example.

#### **Q.4 Answer the following**

- a) Explain following string functions with example.

- 1) Strrev()
  - 2) Explode()
  - 3) Substr()
  - 4) Substr count()

- b)** Write a PHP script to accept a number from user and check whether its palindrome or not.

### **Q.5 Answer the following**

14

- a)** Explain session in PHP. Discuss how to create, modify and delete session in PHP.

**b)** State difference between GET and POST method.

- Q.6 Answer the following** 14
- a) Discuss different iterative statements available in PHP.
  - b) Assume a suitable structure of login table and Write a PHP script to accept username and password. If username and password matched with database value show welcome message box else show error message box.
- Q.7 Answer the following** 14
- a) What is a data validation? Explain server-side data validations.
  - b) Write a script in PHP to read numbers from a file. And store all prime numbers into prime.text file.

**Seat  
No.**

## Set P

**M.C.A. (Semester - III) (Old) (CBSC) Examination Oct/Nov-2017**  
**Science**  
**COMPUTER COMMUNICATION NETWORK**

Day & Date: Thursday, 16-11-2017

Max. Marks: 70

Day & Date: Thursday, 15/11  
Time: 02:30 PM to 05:00 PM

**Instructions:** 1) Question No.1 and 2 are compulsory.  
2) Attempt any 3 questions from Q. No. 3 to Q. No. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Select most correct alternative:**

10

- 1) Which one of the following is a data link protocol?
    - a) Ethernet
    - b) Point to point protocol
    - c) HDLC
    - d) All of the mentioned
  - 2) The \_\_\_\_\_ translates internet domain and host names to IP address.
    - a) Domain name system
    - b) Routing information protocol
    - c) Network time protocol
    - d) Internet relay chat
  - 3) Two devices are in network if
    - a) A process in one device is able to exchange information with a process in another device
    - b) A process is running on both devices
    - c) PID of the processes running of different devices are same
    - d) None of the mentioned
  - 4) In computer network nodes are
    - a) The computer that originates the data
    - b) The computer that routes the data
    - c) The computer that terminates the data
    - d) All of the mentioned
  - 5) Which one of the following is a data link protocol?
    - a) Ethernet
    - b) Point to point protocol
    - c) HDLC
    - d) All of the mentioned
  - 6) Transport layer aggregates data from different application into a single stream before passing it to
    - a) Network layer
    - b) Data link layer
    - c) Application layer
    - d) Physical layer
  - 7) Which one of the following algorithm is not used for congestion control?
    - a) Traffic aware routing
    - b) Admission control
    - c) Load shedding
    - d) None of the mentioned
  - 8) When 2 or more bits in a data unit has been changed during the transmission, the error is called.
    - a) Random error
    - b) Burst error
    - c) Inverted error
    - d) none of the mentioned

- 9) Which of the following is/are the drawbacks of Ring Topology?
- Failure of one computer, can affect the whole network
  - Adding or removing the computers disturbs the network activity
  - If the central hub fails, the whole network fails to operate
  - Both of A and B
- 10) Automatic repeat request error management mechanism is provided by
- Logical link control sublayer
  - Media access control sublayer
  - Network interface control sublayer
  - None of the mentioned

**B) Fill in the Blanks**

**04**

- TCP/IP model does not have Data-link and presentation layer but OSI model have this layer.
- The IETF standards documents are called Request For Comments.
- Resource reservation protocol is not an application layer protocol.
- Transmission data rate is decided by application layer.

**Q.2 A) Solve following:**

**08**

- What the hamming differ code of frame  
 A: 10110110 and  
 B: 10000110?
- The Count of infinity problem in Distance vector routing A,B,C,D and E in linear, consider cost as number of hops, if the router A down then, What is the D's router table after 4 packet exchange?

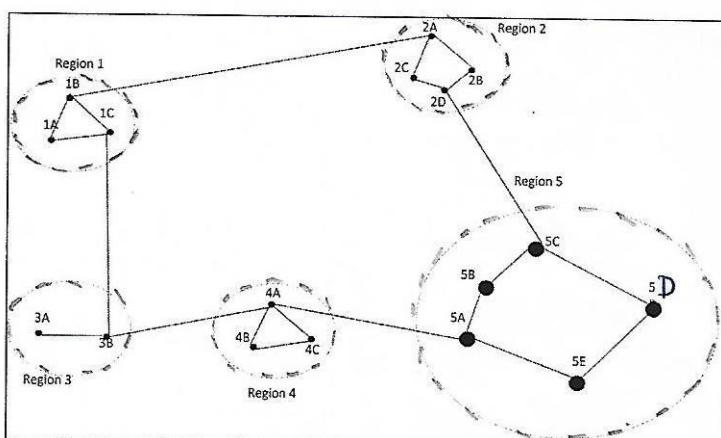
**B) Write a short note on**

**06**

- Jitter control
- Choke packet

**Q.3 A) Calculate the routing full table and hierarchical table 1A router of following subnet.**

**07**



**B) What is the principle difference between connectionless communication and connection-oriented communication?**

**07**

**Q.4 A) An 8 bit byte with binary value 10101111 is be encoded using even-parity Hamming code. What is the binary value after encoding?**

**07**

**B) What is the static wed document? Explain how to use HTML in web development.**

**07**

**Q.5 A) Explain the TCP Connection Management Modeling in details.**

**07**

**B) Explain the Term Transport protocols, Addressing, Connection rerelease.**

|            |                                                                      |           |
|------------|----------------------------------------------------------------------|-----------|
| <b>Q.6</b> | <b>A)</b> What are the IP address and subnets? Explain with example. | <b>07</b> |
|            | <b>B)</b> What a note on RARP, BOOTP and DHCP.                       | <b>07</b> |
| <b>Q.7</b> | <b>A)</b> Describe a simplex protocol for a Noisy Channel.           | <b>07</b> |
|            | <b>B)</b> What is network? Explain the uses of computer network.     | <b>07</b> |

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**MCA. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**JAVA PROGRAMMING**

Day & Date: Saturday, 18-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instruction:** 1) Q.NO.1 and 2 are compulsory.

2) Attempt any 3 questions from Q.No3 to Q.No.7.

3) Figure to the right indicates full marks.

**Q.1 A) Choose the Correct Alternatives**

**10**

- 1) Which of the following is correct array declaration?  
a) Int arr[ ] = new int[5]                          b) Int[ ] arr = new int[5]  
c) Both a and b                                        d) None of these
- 2) \_\_\_\_\_ is reserved keyword in Java.  
a) Abstract                                              b) Extends  
c) Package                                                d) All of these
- 3) Variables declared in a class are called \_\_\_\_\_.  
a) Shared variable                                      b) Local variable  
c) Instance variable                                     d) Global variable
- 4) The method \_\_\_\_\_ is automatically invoked during garbage collection.  
a) Destructor ()                                        b) Terminate ()  
c) Finalize ()                                            d) Destroy ()
- 5) Which of the following is correct way of inheriting class A by class B?  
a) Class B : class A {}  
b) Class B inherits A {}  
c) Class B extends A {}  
d) Class B extends class A {}
- 6) Which of the following is correct about interfaces?  
a) Methods declared in interfaces are implicitly private  
b) Variables declared in interfaces are implicitly public, static, and final  
c) An interface contains any number of methods definitions  
d) The keyword implements indicate that an interface inherits from another.
- 7) \_\_\_\_\_ method of class String is used to obtain length of String object.  
a) Count ()                                              b) Size ()  
c) Capacity ()                                            d) Length ()
- 8) Which of the keyword is used to manually throw an exception?  
a) Thrown                                                b) Finally  
c) Throw                                                    d) None of these

**SLR-SM-24**

- 9) \_\_\_\_\_ method in Thread class is used to check whether a thread is still running.

a) isAlive () b) Join ()  
c) isRunning () d) Alive ()

10) Which of these methods are used to register a keyboard event listener?

a) KeyListener () b) Add KeyEventListener ()  
c) AddKeyListener () d) EventKeyboardListener ()

**B) Write whether true or false.**

  - 1) By tecode is platform independent.
  - 2) Super keyword used to call subclass constructor.
  - 3) Abstract class contains only abstract methods.
  - 4) Final keyword is used to synchronize between different threads.

**Q.2 A) Write short notes in the following:**

  - 1) Synchronization and its importance
  - 2) Use of static and final keyword.

**B) Answer the following.**

  - 1) Differentiate between a constructor and a method
  - 2) Give differences between applets and applications.

**Q.3 Answer the following.**

  - a) Explain the different methods supported in Object class with example.
  - b) Write a Java program to display the message on the applet wherever mouse click occurs.

**Q.4 Answer the following.**

  - a) Write a program to copy characters from one into another file.
  - b) Explain the concept of overriding with example.

**Q.5 Answer the following.**

  - a) What is Thread? Explain different Thread methods.
  - b) Explain about AWT event hierarchy.

**Q.6 Answer the following.**

  - a) What are wrapper classes? Why do we need wrapper classes?
  - b) What are the steps in the JDBC connection? Explain in detail.

**Q.7 Answer the following.**

  - a) Describe the various forms of implementing interface. Explain in detail.
  - b) What is Layout Manager? Explain the different Layout Managers.

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**M.C.A. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**SYSTEM SOFTWARE**

Day & Date: Tuesday, 21-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory.

2) Attempt any Three Questions from Q.3 to Q.7.

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives**

**10**

- 1) Assembler is a machine dependent, because of?
  - a) Macro definition table (MDT)
  - b) Pseudo operation table (POT)
  - c) Argument list array (ALA)
  - d) Mnemonics operation table (MOT)
- 2) A program?
  - a) Is a device that performs a sequence of operations specified by instructions in memory
  - b) Is the device where information is stored
  - c) Is a sequence of instructions
  - d) Is the device where logic is stored
- 3) The \_\_\_\_\_ of a system includes the programs or instructions.
  - a) Information
  - b) Hardware
  - c) Software
  - d) Icon
- 4) Which of the following is not a type of assembler?
  - a) One pass
  - b) Two pass
  - c) Three pass
  - d) Load and go
- 5) A Compiler has \_\_\_\_\_ phases?
  - a) 7
  - b) 8
  - c) 6
  - d) None of above
- 6) Forward reference table (FRT) is arranged like?
  - a) Stack
  - b) Queue
  - c) Linked list
  - d) Double linked list
- 7) An interpreter is?
  - a) A program that places programs into memory and prepares them for execution
  - b) A program that automates the translation of assembly language into machine language
  - c) Is a program that appears to execute a source program as if it were machine language
  - d) Program that accepts a program written in high level language and produces an object program

|                                                                                                                   |                   |           |
|-------------------------------------------------------------------------------------------------------------------|-------------------|-----------|
| 8) Bottom up parsing involves?                                                                                    |                   |           |
| a) Shift reduce                                                                                                   | b) Handle pruning |           |
| c) Operator check                                                                                                 | d) A and B        |           |
| 9) YACC resolves conflicts by of type?                                                                            |                   |           |
| a) Reduce – Reduce                                                                                                | b) Shift reduce   |           |
| c) Shift – Shift                                                                                                  | d) A and B        |           |
| 10) The linker?                                                                                                   |                   |           |
| a) Is same as the loader                                                                                          |                   |           |
| b) Is required to create a load module                                                                            |                   |           |
| c) Is always used before programs are executed                                                                    |                   |           |
| d) None of above                                                                                                  |                   |           |
| <b>B) State whether following statements are true or false:</b>                                                   |                   | <b>04</b> |
| 1) Resolution of externally defined symbols is performed by compiler                                              |                   |           |
| 2) A grammar for a programming language is a formal description of structure                                      |                   |           |
| 3) Recognition of basic syntactic constructs through reductions, this task is performed by lexical analysis       |                   |           |
| 4) Computer programs are sequences of user instructions.                                                          |                   |           |
| <b>Q.2 Answer the following</b>                                                                                   |                   | <b>08</b> |
| <b>A) Write short notes</b>                                                                                       |                   |           |
| 1) Shift / reduce parsing                                                                                         |                   |           |
| 2) Pass 2 assembler                                                                                               |                   |           |
| <b>B) Answer the following:</b>                                                                                   |                   | <b>06</b> |
| 1) Explain MS-DOS linker                                                                                          |                   |           |
| 2) Explain SUN OS Linker                                                                                          |                   |           |
| <b>Q.3 Answer the following</b>                                                                                   |                   |           |
| <b>a) What is system software? Differentiate it from application software.</b>                                    |                   | <b>07</b> |
| <b>b) Explain the instruction formats and addressing modes of SIC/XE machine architecture</b>                     |                   | <b>07</b> |
| <b>Q.4 Answer the following</b>                                                                                   |                   |           |
| <b>a) Explain the features of MASM macro processor</b>                                                            |                   | <b>07</b> |
| <b>b) Explain the data structure used in assemble algorithms.</b>                                                 |                   | <b>07</b> |
| <b>Q.5 Answer the following</b>                                                                                   |                   |           |
| <b>a) What is dynamic binding? Explain the process of loading and calling of Subroutine using dynamic binding</b> |                   | <b>07</b> |
| <b>b) List the different tables used for a macro processor. Explain their functions</b>                           |                   | <b>07</b> |
| <b>Q.6 Answer the following</b>                                                                                   |                   |           |
| <b>a) Explain linkage editors, relocation and bootstrap in detail.</b>                                            |                   | <b>07</b> |
| <b>b) Explain basic compiler functions in details.</b>                                                            |                   | <b>07</b> |
| <b>Q.7 Answer the following</b>                                                                                   |                   |           |
| <b>a) Explain ANSI C macro language.</b>                                                                          |                   | <b>07</b> |
| <b>b) Define assembler directive. Explain the different types of directives used in SIC machine.</b>              |                   | <b>07</b> |

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**Set**  **P**

**M.C.A. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DBMS**

Day & Date: Thursday, 23-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- Instructions:** 1) Question No.1 and 2 are compulsory.  
 2) Attempt any 3 questions from Q.NO. 3 to Q. No. 7  
 3) Figures to the right indicate full marks.

**Q.1 A) Select most correct alternative:** **10**

- 1) Between is \_\_\_\_\_ operator.
  - a) Range
  - b) List
  - c) Comparison
  - d) None of these
- 2) \_\_\_\_\_ is a virtual table formed by subset of columns from one or more tables.
  - a) View
  - b) Trigger
  - c) Join
  - d) Cursor
- 3) In 'immediate database modification technique', data modification technique written by active transactions is called as \_\_\_\_\_.
  - a) Uncommitted modifications
  - b) Committed modifications
  - c) Both A) and B)
  - d) None of these
- 4) In E-R diagram multivalued attributes are denoted by
  - a) Dim and
  - b) Double Ellipse
  - c) Both A) and B)
  - d) None of these
- 5) Do all or do none in transaction is known as \_\_\_\_\_.
  - a) Atomicity
  - b) Consistency
  - c) Isolation
  - d) Durability
- 6) In select command \_\_\_\_\_ clause is used for getting rows from a query in specific order
  - a) SORT BY
  - b) GROUP BY
  - c) ORDER BY
  - d) HAVING
- 7) In the SQL cursor, which attribute is TRUE when a cursor has some rows remained to fetch, and FALSE when a cursor has rows left to fetch.
  - a) % ROWCOUNT
  - b) % FOUND
  - c) % NOTFOUND
  - d) % ISOPEN
- 8) The method COUNT ( )
  - a) Returns the last (largest) number in the collection that uses integer subscript.
  - b) Returns the number of element that a collection currently contains
  - c) Checks the maximum size of the collection
  - d) None of the above

- |            |                                                                                       |                  |
|------------|---------------------------------------------------------------------------------------|------------------|
| 9)         | Execution of transaction guarantees that consistency is preserved.                    |                  |
| a)         | Concurrent                                                                            | b) Serial        |
| c)         | Both A) and B)                                                                        | d) None of these |
| 10)        | ACID stands for _____.                                                                |                  |
| a)         | Atomicity, Consistency, Isolation, Durability                                         |                  |
| b)         | Atomicity, Consistent, Isolated, Durability                                           |                  |
| c)         | Atomicity, Consistent, Integrated, Durability                                         |                  |
| d)         | Atomicity, Consistent, Integration, Durability                                        |                  |
| <b>B)</b>  | <b>State whether following statements are True or False:</b>                          | 04               |
| 1)         | A weak entity set to be meaningful must be associated with a strong entity set.       |                  |
| 2)         | Implicit cursors are refereed by name SQL.                                            |                  |
| 3)         | In PL/SQL functions delete statement is allowed.                                      |                  |
| 4)         | Every relation in 3NF is in BCNF too.                                                 |                  |
| <b>Q.2</b> | <b>A) Write short notes on</b>                                                        | 08               |
| 1)         | Fragmentation and replication technique in distributed database.                      |                  |
| 2)         | Database model                                                                        |                  |
| <b>B)</b>  | <b>Answer the following:</b>                                                          | 06               |
| 1)         | Explain difference between standalone and distributed database.                       |                  |
| 2)         | What is fully functional dependency and partial dependency? Explain with example.     |                  |
| <b>Q.3</b> | <b>Answer the following:</b>                                                          |                  |
| a)         | Explain steps in query processing and advantages of query optimization.               | 08               |
| b)         | Explain transition with ACID properties.                                              | 06               |
| <b>Q.4</b> | <b>Answer the following:</b>                                                          |                  |
| a)         | Explain BCNF and 4NF with example.                                                    | 08               |
| b)         | Explain two phase commit protocol.                                                    | 06               |
| <b>Q.5</b> | <b>Answer the following:</b>                                                          |                  |
| a)         | What is log based recovery? Explain deferred and immediate database update in detail. | 08               |
| b)         | Explain components of DBMS architecture.                                              | 06               |
| <b>Q.6</b> | <b>Answer the following:</b>                                                          |                  |
| a)         | Explain conflict and view serializability in detail.                                  | 08               |
| b)         | What is functional dependency? Explain its types with example.                        | 06               |
| <b>Q.7</b> | <b>Answer the following:</b>                                                          |                  |
| a)         | What are the steps in Database Development Life Cycle (DDLC)?                         | 08               |
| b)         | What are nested tables? Explain with example.                                         | 06               |

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**M.C.A. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**COMPUTER ORIENTED STATISTICS**

Day & Date: Saturday, 25-11-2017  
 Time: 02.30 PM to 05.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7
- 3) Figures to the right indicate full marks.
- 4) Use of simple or scientific calculator is allowed.

**Q.1 A) Select most correct alternative:** 10

- 1) For a symmetric frequency distribution \_\_\_\_\_.  
 a)  $(Q_3 - Q_2) = (Q_2 - Q_1)$       b)  $(Q_3 - Q_2) > (Q_2 - Q_1)$   
 c)  $(Q_3 - Q_2) < (Q_2 - Q_1)$       d) None of these
- 2) The relation between A.M., G.M. and H.M. for positive observations is \_\_\_\_\_.  
 a) A. M. > G. M. > H. M.      b) A. M. < G. M. < H. M.  
 c) G. M. > H. M. > A. M.      d) None of these
- 3) If all observations in data are equal, then dispersion becomes \_\_\_\_\_.  
 a) Any positive number      b) Any real number  
 c) Zero      d) None of these
- 4) If  $P(A \prod B) = 0$ , then events A and B are \_\_\_\_\_.  
 a) Exhaustive      b) Certain  
 c) Mutually exclusive      d) Equally likely
- 5) If  $P(A) = x, P(B) = y, P(A \prod B) = z$  and  $P(A \cup B) = k$ , then  $P\left(\frac{A}{B}\right) =$  \_\_\_\_\_.  
 a)  $x/y$       b)  $z/y$   
 c)  $1/y$       d)  $z/x$
- 6) A discrete r. v. X has Poisson distribution with parameter 4, hen s. d. of X is \_\_\_\_\_.  
 a) 2      b) 4  
 c) 16      d) None of these
- 7) If  $P(X)$  is p. m. f. of a discrete r. v. X, then \_\_\_\_\_ for all  $x$ .  
 a)  $P(X) \geq 0$       b)  $\sum P(X) = 1$   
 c) Both (a) and (b)      d) None of these
- 8) The probability curve of normal distribution is symmetric about \_\_\_\_\_.  
 a) Mean      b) Median  
 c) Mode      d) All of these
- 9) If correlation between variables X and Y is perfect, then \_\_\_\_\_.  
 a) X and Y are changes in opposite direction  
 b) X and Y are changes in same direction  
 c) X and Y are changes in proportion  
 d) None of these

- 10) Number of printing mistakes per page of a book is a \_\_\_\_\_.  
 a) Discrete variable      b) Continuous variable  
 c) Constant      d) Attributes

**B) State True/False**

**04**

- 1) Variance is a measure of kurtosis.  
 2) Union of exhaustive events contains all sample points of sample space.  
 3) If correlation is perfect we get only one line of regression.  
 4) Power-residue generator is one of the method of generating random numbers deterministically.

**Q.2 A) 1)** State addition law of probability, hence obtain  $A \cap B$  if  $P(A) = 0.4$ ,  $P(B) = 0.5$ ,  $P(A \cup B) = 0.7$  **04**

**2)** A. M. and S. D. of daily wages of 50 workers in firm-A are Rs. 155 and 16 and that of 65 workers in firm-B are Rs 175 and 21 respectively. Find which firm shows more variation in paying wages. **04**

**B) 1)** Define Poisson distribution and state its additive property. **03**

**2)** Compute H. M. for the values 20, 10, 15, 25, 30 **03**

**Q3 a)** A box contains 8 good and 2 defective bulbs. The bulbs are drawn one by one without replacement and tested. What is probability that the 2 defective are obtained at third attempt only. **07**

**b)** Following data shows daily expenditure of families. Find median. **07**

| Expenditure (in 100 Rs.) | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
|--------------------------|-------|-------|-------|-------|-------|-------|
| No. of families          | 14    | 21    | 30    | 25    | 18    | 11    |

**Q4 a)** Define exponential distribution. If life time of certain electronic component has exponential distribution with mean life time 1500 hours. Find probability that the component will survive more than 1200 hours but less than 1800 hours. **07**

**b)** Give procedure of generating random observation from uniform distribution over (a, b) **07**

**Q.5 a)** A random variable X has binomial distribution with parameters (8, 0. 4). Find  $P(X \geq 7)$  **07**

**b)** What is kurtosis? Explain regression coefficients and state their two properties. **07**

**Q.6 a)** Define regression, state regression coefficients and state their any two properties. **07**

**b)** The p. m. f. of discrete r. v. X is **07**

$$P(X) = k \frac{x^2 + 4}{10}, x = -1, 0, 1, 2, 3$$

Find : 1) value of k

2)  $P(|x| = 1)$

3)  $P(x^2 \geq 4)$

**Q.7 a)** Define geometric distribution, negative binomial and state their mean and variance. **07**

**b)** Fit exponential curve of the form  $Y = a \cdot b^x$  to the following data. **07**

|   |    |     |     |      |      |
|---|----|-----|-----|------|------|
| X | 2  | 3   | 4   | 5    | 6    |
| Y | 90 | 270 | 810 | 2430 | 7290 |

Estimate Y for X = 3.5

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**Set P**

**M.C.A (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DISTRIBUTED OPERATING SYSTEM**

Day &amp; Date: Friday, 17-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Questions NO.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7 .
- 3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) Which routing technique is used in distributed system?
  - a) Fixed routing
  - b) Virtual routing
  - c) Dynamic routing
  - d) All of the above
- 2) The finite circular buffer is used to implement which of the following basic queuing strategies.
  - a) FILO
  - b) LIFO
  - c) FIFO
  - d) All of the above
- 3) In a uniprocessor system, mutual exclusion can be guaranteed by
  - a) Overlapping processes
  - b) Interleaving processes
  - c) Disabling interrupts
  - d) All of the above
- 4) In case of failure, a new transaction coordinator can be elected by
  - a) Bully algorithm
  - b) Ring algorithm
  - c) Both a) and B)
  - d) All of the above
- 5) According on the ring algorithm, links between processes are \_\_\_\_\_.
  - a) Bidirectional
  - b) Unidirectional
  - c) Both a) and b)
  - d) All of the above
- 6) Process on the remote system are identified by
  - a) Host ID
  - b) Host name and identifier
  - c) Identifier
  - d) None of the above
- 7) A collection of instructions that performs a single logical function is called \_\_\_\_\_.
  - a) Transaction
  - b) Operation
  - c) Function
  - d) All of the above
- 8) Network operating system runs on \_\_\_\_\_.
  - a) Server
  - b) Every system in the server
  - c) Both a) and b)
  - d) None of above
- 9) Internet provides \_\_\_\_\_ for remote login.
  - a) telnet
  - b) http
  - c) ftp
  - d) none of the above
- 10) Which of the following is the deadlock avoidance algorithm?
  - a) Round robin algorithm
  - b) Bankers algorithm
  - c) Elevator algorithm
  - d) Kerns algorithm

|            |                                                                                                   |           |
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| <b>B)</b>  | <b>State True/False.</b>                                                                          | <b>04</b> |
| 1)         | Weak semaphores guarantee freedom from starvation, but strong semaphores do not.                  |           |
| 2)         | Concurrency issues are a concern on multiprocessor system but do not impact uniprocessor system.  |           |
| 3)         | Multithreaded programs are lesser prone to deadlock.                                              |           |
| 4)         | Remote procedure calls are used for communication between two processes on separate machine.      |           |
| <b>Q.2</b> | <b>A) Answer the following:</b>                                                                   |           |
| 1)         | What is deadlock? Explain necessary condition for deadlock.                                       | 07        |
| 2)         | Give the difference between process and thread.                                                   | 07        |
| <b>Q3</b>  | <b>Answer the following:</b>                                                                      |           |
| <b>A)</b>  | Explain client-server model in detail                                                             | 07        |
| <b>B)</b>  | Explain the implementation of RPC in distributed system                                           | 07        |
| <b>Q4</b>  | <b>Answer the following:</b>                                                                      |           |
| <b>A)</b>  | What is distributed operating system? Explain features of distributed operating system.           | 07        |
| <b>B)</b>  | Explain group communication in briefly.                                                           | 07        |
| <b>Q.5</b> | <b>Answer the following:</b>                                                                      |           |
| <b>A)</b>  | Discuss message-forwarding mechanism in process migration.                                        | 07        |
| <b>B)</b>  | Why do use election algorithm. Explain Bully algorithm.                                           | 07        |
| <b>Q.6</b> | <b>Answer the following:</b>                                                                      |           |
| <b>A)</b>  | Discuss in detail about concurrency control in transaction.                                       | 07        |
| <b>B)</b>  | State and Explain the concept of atomic transaction.                                              | 07        |
| <b>Q.7</b> | <b>Answer the following:</b>                                                                      |           |
| <b>A)</b>  | What are the main difference between a network operating system and distributed operating system? | 07        |
| <b>B)</b>  | Explain in detail about distributed file system.                                                  | 07        |

**Seat  
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# Set P

**M.C.A. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DATA MINING AND WAREHOUSE**

Day & Date: Monday, 20-11-2017  
Time: 02.30 PM to 05.00 PM

**Max. Marks: 70**

**Instructions:** 1) Questions NO.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.NO.3 to Q.NO.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket.**

10

- 1) An \_\_\_\_\_ system is customer – oriented.
    - a) OLAP
    - b) OLEP
    - c) OLTP
    - d) None of these
  - 2) A \_\_\_\_\_ contains a subset of corporate-wide data that is of value to a specific group of users.
    - a) Virtual warehouse
    - b) Data mart
    - c) Enterprise warehouse
    - d) None of these
  - 3) \_\_\_\_\_, which typically gathers data from multiple, heterogeneous, and external sources.
    - a) Data extraction
    - b) Data cleaning
    - c) Load
    - d) None of these
  - 4) In \_\_\_\_\_ schema, the data warehouse contains a large central table (fact table), and a set of smaller attendant tables (dimension table).
    - a) Fact constellation
    - b) Snowflake
    - c) Star
    - d) None of these
  - 5) This operation performs aggregation on a data cube, either by climbing up the concept hierarchy for a dimension or by dimension reduction.
    - a) Slice
    - b) Dice
    - c) Rotate
    - d) Roll-up
  - 6) Which of the following is not a data mining functionality?
    - a) Characterization and Discrimination
    - b) Classification and regression
    - c) Selection Data House
    - d) Knowledge Data Definition
  - 7) The full form of KDD is \_\_\_\_\_.
    - a) Knowledge Database
    - b) Knowledge Discovery Database
    - c) Knowledge Data House
    - d) Knowledge Data Definition

- 8) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.

  - a) Top-down view
  - b) Data warehouse view
  - c) Data source view
  - d) Business query view

9) The data is stored, retrieved & updated in \_\_\_\_\_.

  - a) OLAP
  - b) OLTP
  - c) SMTP
  - d) FTP

10) Fact tables are \_\_\_\_\_.

  - a) Completely demoralized
  - b) Partially demoralized
  - c) Completely normalized
  - d) Partially normalized

**B) State True/False**

04

- 1) A data-mining task can be specified in the form of a data-mining query, which is input to the data mining system.
  - 2) For the construction of decision tree classifiers require the domain knowledge.
  - 3) Data Integration is not the process of combining multiple data source.
  - 4) Data cleaning is process of adding noise and inconsistent data.

**Q.2 A) Write a short note on following:**

08

- 1) Drill-up operation
  - 2) Data cleaning

**B) Answer the following:**

06

- 1) Explain agglomerative hierarchical clustering method with example.
  - 2) What are the new trends in data mining? Explain it.

### **Q3 Answer the following:**

14

- a)** What is data cube? Explain different forms of multidimensional data model.

**b)** Explain OLAP operations with suitable example.

**Q4 Answer the following:**

14

- a)** Explain the multilevel associations rules from transactional data model.  
**b)** State and explain data mining primitives with suitable example.

**Q.5 Answer the following:**

14

- a)** Explain the procedure of Bayesian classification method in detail.  
**b)** State and explain the steps in k-means algorithm.

### **Q 6 Answer the following:**

14

- a)** What is classification? Explain the issues regarding with classifications.  
**b)** Explain various data mining applications.

### **Q.7 Answer the following:**

14

- Answer the following:**

  - What is Cluster analysis? Explain Model based clustering with example.
  - Explain additional themes on data mining.

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**M.C.A. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017****Science****UML**

Day &amp; Date: Wednesday, 22-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

2) Attempt any three questions from Q.NO.3 to Q.NO.7

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) What are the notations for the use case diagrams?
  - a) Use case
  - b) Actor
  - c) Prototype
  - d) Both (a) and (b)
- 2) Which of the following determines state diagram?
  - a) The UML notation for specifying finite automata is the state diagram
  - b) In the state diagrams state are represented by rounded rectangle
  - c) All of the above
  - d) None of the above
- 3) Which of the following is not a purpose for using activity diagrams?
  - a) To show the subsystems that make up a system
  - b) To model a task
  - c) To describe the logic of an operation
  - d) All of the above
- 4) Which of the following is the best definition of an actor?
  - a) An actor represents a user of the system
  - b) An actor represents a role played by a user of the system
  - c) An actor represents a role played by a user of the system or by an external system
  - d) All of the above
- 5) What is an interaction diagram?
  - a) Interaction diagrams are the UML notations for dynamic modeling of collaborations
  - b) Interaction diagrams are a central focus of engineering design
  - c) All of the above
  - d) None of the above
- 6) A package diagram consists of the following?
  - a) Package symbols
  - b) Grouping of use cases, classes components
  - c) Interface
  - d) Both (a) and (b)

- 7) Components can be represented by which of the following?  
 a) Component symbols                                          b) Stereotypes  
 c) Rectangular boxes                                          d) Both (a) and (b)
- 8) Which among these are the common notations for deployment diagrams?  
 a) Artifacts and nodes                                          b) Stereotypes  
 c) Components                                                    d) All of the above
- 9) Which of the following is not kind prototype?  
 a) Horizontal                                                      b) Vertical  
 c) Lateral                                                         d) All of the above
- 10) What is collection of model elements called?  
 a) Box                                                              b) Dependency  
 c) UML packages                                                 d) Package members

**B) State True/False****04**

- 1) A property is a characteristics of the entity designated by a model element.
- 2) The main way to extend UML is by constraints, properties etc.
- 3) A note is a dog-eared box connected to any model element by a dashed line.
- 4) Use case diagram is a dynamic model of interaction between product and actors in a use case.

**Q.2 A) Write a short note on following:****08**

- 1) Advanced classes
- 2) Events and signals

**B) Explain the following terms?****06**

- 1) Structural modeling
- 2) Use case diagrams

**Q3 Answer the following:**

- a) What are the objects of interaction diagram? Explain in detail. **07**  
 b) What is active class? Write the different between normal class and active class. **07**

**Q4 Answer the following:**

- a) Explain in detail mechanisms and architecture of UML. **07**  
 b) Explain the various terms and concepts used in sequence diagrams. **07**

**Q.5 Answer the following:**

- a) Draw collaboration diagram for creating an e-mail account and also draw the sequence diagram for sending e-mail. **07**  
 b) What are the benefits of sequence diagrams? Draw the sequence diagram for making a hotel reservation system? **07**

**Q.6 Answer the following:**

- a) What are the advantages of UML? Explain object oriented design process. **07**  
 b) Explain the processes and threads used in modeling techniques. **07**

**Q.7 Answer the following:**

- a) Explain various modeling techniques for component diagrams **07**  
 b) Explain object Oriented design methodology with Grady Booch's approach. **07**

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**M.C.A. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**.NET**

Day & Date: Friday, 24-11-2017  
Time: 02.30 PM to 05.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.NO.3 to Q.NO.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) Which of these methods of class are used to remove the leading and backward whitespaces?  
a) Starts With ()                                  b) trim ()  
c) Trim ()                                            d) do Trim ()
- 2) Which of these classes contains only floating point functions?  
a) Math                                                b) Process  
c) System                                              d) Object
- 3) ASP .NET is  
a) Windows application                            b) Web application  
c) Consol application                                d) All the above
- 4) Which of the following character ends every C# statement?  
a) Period (.)                                        b) Colon (:)  
c) Semicolon (;)                                    d) Comma (,)
- 5) From which of these classes, the character based output stream class Stream Write is derived?  
a) Text Writer                                        b) Text Reader  
c) Character Stream                                 d) All of the mentioned
- 6) Default scripting language in ASP.  
a) EcmaScript                                        b) VBScript  
c) PERL                                                d) JavaScript
- 7) What is the use of try & catch?  
a) It is used to manually handle the exception  
b) It helps to fix the errors  
c) It prevents automatic terminating of the program in cases when an exception occurs  
d) All of the mentioned
- 8) Which of the following are parts of the .NET Framework?
  - i) The Common Language Runtime (CLR)
  - ii) The Framework Class Libraries (FCL)
  - iii) Microsoft Published Web Services
  - iv) Applications deployed on IIS
  - v) Mobile Applications

a) Only 1, 2, 3                                        b) Only 1, 2  
c) Only 1, 2, 4                                        d) Only 4, 5



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**Set P**

**M.C.A (Semester-IV) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**FINITE AUTOMATA**

Day & Date: Monday, 27-11-2017  
Time: 02.30 PM to 05.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) There are \_\_\_\_\_ tuples in Deterministic Finite Automata.  
a) 4                                                  b) 5  
c) 6                                                    d) None of the above
- 2) Language accepted by finite automata is \_\_\_\_\_ language.  
a) Type 0                                              b) Type 1  
c) Type 2                                              d) Type 3
- 3) Regular expression for a language accepting all the strings start with ab and end with bba over alphabet {a, b} is \_\_\_\_\_.  
a) ab (a\* b\*) bba                                 b) ab (ab)\* bba  
c) ab (a+b)\* bba                                    d) All of the above
- 4) Which of the following language is regular?  
a) String of 0's whose length is perfect square  
b) Strings of 0's are whose length is prime number  
c) Palindrome strings of even length  
d) Strings having odd number of 0's
- 5) Complement of  $(a+b)^*$  will be \_\_\_\_\_.  
a) {}                                                    b) a  
c) b                                                      d) None of the above
- 6) If L1 and L2 are regular languages the L1-L2 is \_\_\_\_\_.  
a) Regular                                              b) Non-Regular  
c) Context free                                        d) None of the above
- 7) According to Chomsky hierarchy type 2 languages are \_\_\_\_\_ languages.  
a) Regular                                              b) Context free  
c) Context Sensitive                                 d) Unrestricted
- 8) Which language is accepted by push down automata?  
a) Context free language                              b) Non-regular language  
c) Both a) and b)                                      d) None of the above
- 9) A grammar is ambiguous if there exists more than \_\_\_\_\_ derivation trees.  
a) 0                                                      b) 1  
c) 2                                                      d) 3

- 10) In Push down Automata the transition function  $Q \times (\Sigma \cup \{\epsilon\} \times \Gamma \rightarrow \underline{\hspace{2cm}})$ .
- a)  $Q \times \Gamma^*$   
 b)  $Q^* \times \Gamma^*$   
 c)  $Q \times \Gamma \times \Sigma$   
 d) None of the above
- B) State True/False** 04
- 1) Turing machine has 7 tuples.
  - 2) A push down automata can only be deterministic.
  - 3) All context free languages are regular also.
  - 4) Regular languages are not closed under homomorphism.
- Q.2 A) Answer the following questions.** 08
- 1) What is left most, right most derivation and derivation tree?
  - 2) Explain NFA and DFA with examples.
- B) Write a short note on:** 06
- 1) Turing machine
  - 2) Regular languages
- Q3 A) Construct DFA equivalent to NFA.** 08
- $M(\{q_1, q_2, q_3\}, \{a, b\}, \delta, q_1, q_3)$  where  $\delta$  is given by
- |                   | a              | b              |
|-------------------|----------------|----------------|
| $\rightarrow q_1$ | $\{q_2, q_3\}$ | $\{q_1\}$      |
| $q_2$             | $\{q_1, q_2\}$ | $\Phi$         |
| $*q_3$            | $\{q_2\}$      | $\{q_1, q_2\}$ |
- B) Construct regular expression for following DFA by using Arden's theorem.** 06
- 
- ```

graph LR
    S(( )) --> Q1((Q1))
    Q1 -- 0 --> Q1
    Q1 -- 1 --> Q2(((Q2)))
    Q2 -- 1 --> Q3(((Q3)))
    Q3 -- 0 --> Q3
    Q3 -- 1 --> Q2
  
```
- Q4 a) Construct Turing machine for following language  $L = \{a^n b^n c^n \mid n \geq 1\}$**  08  
**b) Explain Chomsky hierarchy.** 06
- Q.5 a) Convert the following grammar into CNF.** 08
- S  $\rightarrow$  BBB | A  
 A  $\rightarrow$   $\epsilon$   
 B  $\rightarrow$  bB | A
- b) Prove that the language  $L = \{a^n b^n \mid n \geq 1\}$  is not regular.** 06
- Q.6 a) Explain closure properties of regular languages.** 08  
**b) Obtain leftmost, rightmost and derivation tree for a string "000001100" for following grammar.** 06
- S  $\rightarrow$  0AS | 0  
 A  $\rightarrow$  SS | 10 | 0S | S1A
- Q.7 a) Construct PDA for the language  $L = \{0^n 1^{2n} \mid n \geq 1\}$ .** 08  
**b) Construct PDA for following grammar.** 06
- S  $\rightarrow$  aAb|aS  
 A  $\rightarrow$  Bb | a  
 B  $\rightarrow$  Sa|b

**Seat  
No.**

# Set P

**M.C.A. (Semester - IV) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**DATA MINING AND WAREHOUSE**

Day & Date: Monday, 20-11-2017  
Time: 02.30 PM to 05.00 PM

**Max. Marks: 70**

**Instructions:** 1) Questions NO.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.NO.3 to Q.NO.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket.**

10

- 1) An \_\_\_\_\_ system is customer – oriented.

  - a) OLAP
  - b) OLEP
  - c) OLTP
  - d) None of these

2) A \_\_\_\_\_ contains a subset of corporate-wide data that is of value to a specific group of users.

  - a) Virtual warehouse
  - b) Data mart
  - c) Enterprise warehouse
  - d) None of these

3) \_\_\_\_\_, which typically gathers data from multiple, heterogeneous, and external sources.

  - a) Data extraction
  - b) Data cleaning
  - c) Load
  - d) None of these

4) In \_\_\_\_\_ schema, the data warehouse contains a large central table (fact table), and a set of smaller attendant tables (dimension table).

  - a) Fact constellation
  - b) Snowflake
  - c) Star
  - d) None of these

5) This operation performs aggregation on a data cube, either by climbing up the concept hierarchy for a dimension or by dimension reduction.

  - a) Slice
  - b) Dice
  - c) Rotate
  - d) Roll-up

6) Which of the following is not a data mining functionality?

  - a) Characterization and Discrimination
  - b) Classification and regression
  - c) Selection Data House
  - d) Knowledge Data Definition

7) The full form of KDD is \_\_\_\_\_.

  - a) Knowledge Database
  - b) Knowledge Discovery Database
  - c) Knowledge Data House
  - d) Knowledge Data Definition

- 8) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.

  - a) Top-down view
  - b) Data warehouse view
  - c) Data source view
  - d) Business query view

9) The data is stored, retrieved & updated in \_\_\_\_\_.

  - a) OLAP
  - b) OLTP
  - c) SMTP
  - d) FTP

10) Fact tables are \_\_\_\_\_.

  - a) Completely demoralized
  - b) Partially demoralized
  - c) Completely normalized
  - d) Partially normalized

**B) State True/False**

04

- 1) A data-mining task can be specified in the form of a data-mining query, which is input to the data mining system.
  - 2) For the construction of decision tree classifiers require the domain knowledge.
  - 3) Data Integration is not the process of combining multiple data source.
  - 4) Data cleaning is process of adding noise and inconsistent data.

**Q.2 A) Write a short note on following:**

08

- 1) Drill-up operation
  - 2) Data cleaning

**B) Answer the following:**

06

- 1) Explain agglomerative hierarchical clustering method with example.
  - 2) What are the new trends in data mining? Explain it.

### **Q3 Answer the following:**

14

- a)** What is data cube? Explain different forms of multidimensional data model.

**b)** Explain OLAP operations with suitable example.

**Q4 Answer the following:**

14

- a)** Explain the multilevel associations rules from transactional data model.  
**b)** State and explain data mining primitives with suitable example.

#### **Q.5 Answer the following:**

14

- a)** Explain the procedure of Bayesian classification method in detail.  
**b)** State and explain the steps in k-means algorithm.

### **Q 6 Answer the following:**

14

- a)** What is classification? Explain the issues regarding with classifications.  
**b)** Explain various data mining applications.

### Q3 Answer the following:

14

- Answer the following:**

a) What is Cluster analysis? Explain Model based clustering with example.

b) Explain utility of the k-means algorithm.

### b) Explain additional terms

<b>Seat No.</b>	
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**Set P****M.C.A. (Semester - IV) (Old) (CGPA) Examination Oct/Nov-2017****Science****UML**

Day &amp; Date: Wednesday, 22-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

2) Attempt any three questions from Q.NO.3 to Q.NO.7

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) What are the notations for the use case diagrams?
  - a) Use case
  - b) Actor
  - c) Prototype
  - d) Both (a) and (b)
- 2) Which of the following determines state diagram?
  - a) The UML notation for specifying finite automata is the state diagram
  - b) In the state diagrams state are represented by rounded rectangle
  - c) All of the above
  - d) None of the above
- 3) Which of the following is not a purpose for using activity diagrams?
  - a) To show the subsystems that make up a system
  - b) To model a task
  - c) To describe the logic of an operation
  - d) All of the above
- 4) Which of the following is the best definition of an actor?
  - a) An actor represents a user of the system
  - b) An actor represents a role played by a user of the system
  - c) An actor represents a role played by a user of the system or by an external system
  - d) All of the above
- 5) What is an interaction diagram?
  - a) Interaction diagrams are the UML notations for dynamic modeling of collaborations
  - b) Interaction diagrams are a central focus of engineering design
  - c) All of the above
  - d) None of the above
- 6) A package diagram consists of the following?
  - a) Package symbols
  - b) Grouping of use cases, classes components
  - c) Interface
  - d) Both (a) and (b)

- 7) Components can be represented by which of the following?

  - a) Component symbols
  - b) Stereotypes
  - c) Rectangular boxes
  - d) Both (a) and (b)

8) Which among these are the common notations for deployment diagrams?

  - a) Artifacts and nodes
  - b) Stereotypes
  - c) Components
  - d) All of the above

9) Which of the following is not kind prototype?

  - a) Horizontal
  - b) Vertical
  - c) Lateral
  - d) All of the above

10) What is collection of model elements called?

  - a) Box
  - b) Dependency
  - c) UML packages
  - d) Package members

**B) State True/False**

04

- 1) A property is a characteristics of the entity designated by a model element.
  - 2) The main way to extend UML is by constraints, properties etc.
  - 3) A note is a dog-eared box connected to any model element by a dashed line.
  - 4) Use case diagram is a dynamic model of interaction between product and actors in a use case.

**Q.2 A) Write a short note on following:**

08

- 1) Advanced classes**
  - 2) Events and signals**

**B) Explain the following terms?**

06

- 1) Structural modeling
  - 2) Use case diagrams

**Q3 Answer the following:**

- a)** What are the objects of interaction diagram? Explain in detail.  
**b)** What is active class? Write the different between normal class and active class.

#### **Q4 Answer the following:**

- a)** Explain in detail mechanisms and architecture of UML. **07**

**b)** Explain the various terms and concepts used in sequence diagrams. **07**

**Q.5 Answer the following:**

- a)** Draw collaboration diagram for creating an e-mail account and also draw the sequence diagram for sending e-mail. **07**

**b)** What are the benefits of sequence diagrams? Draw the sequence diagram for making a hotel reservation system? **07**

## **Q.6 Answer the following:**

- a)** What are the advantages of UML? Explain object oriented design process. **07**

**b)** Explain the processes and threads used in modeling techniques. **07**

**Q.7 Answer the following:**

- a)** Explain various modeling techniques for component diagrams **07**  
**b)** Explain object Oriented design methodology with Grady Booch's approach. **07**

**Seat  
No.**

# Set P

**M.C.A. (Semester - IV) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**.NET**

Day & Date: Friday, 24-11-2017  
Time: 02.30 PM to 05.00 PM

Max. Marks: 70

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.NO.3 to Q.NO.7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket.** 10

- 1) Which of these methods of class are used to remove the leading and backward whitespaces?
    - a) Starts With ()
    - b) trim ()
    - c) Trim ()
    - d) do Trim ()
  - 2) Which of these classes contains only floating point functions?
    - a) Math
    - b) Process
    - c) System
    - d) Object
  - 3) ASP .NET is
    - a) Windows application
    - b) Web application
    - c) Consol application
    - d) All the above
  - 4) Which of the following character ends every C# statement?
    - a) Period (.)
    - b) Colon (:)
    - c) Semicolon (;)
    - d) Comma (,)
  - 5) From which of these classes, the character based output stream class Stream Write is derived?
    - a) Text Writer
    - b) Text Reader
    - c) Character Stream
    - d) All of the mentioned
  - 6) Default scripting language in ASP.
    - a) EcmaScript
    - b) VBScript
    - c) PERL
    - d) JavaScript
  - 7) What is the use of try & catch?
    - a) It is used to manually handle the exception
    - b) It helps to fix the errors
    - c) It prevents automatic terminating of the program in cases when an exception occurs
    - d) All of the mentioned
  - 8) Which of the following are parts of the .NET Framework?
    - i) The Common Language Runtime (CLR)
    - ii) The Framework Class Libraries (FCL)
    - iii) Microsoft Published Web Services
    - iv) Applications deployed on IIS
    - v) Mobile Applications
    - a) Only 1, 2, 3
    - b) Only 1, 2
    - c) Only 1, 2, 4
    - d) Only 4, 5

**B) Fill in the blanks**

04

- 1) \_\_\_\_\_ is first method that is fired during the page load.
  - 2) All comparison operators return \_\_\_\_\_ type value.
  - 3) \_\_\_\_\_ is a property common to every validation control.
  - 4) \_\_\_\_\_ is used to perform all input & output operations in C#?

**Q.2 A) Write a short note on following:**

08

- 1) Data reader
  - 2) Role of Cookies in asp .net

**B) Answer the following:**

06

- 1) Explain Method overriding  
2) Explain global asax**

### **Q3 Answer the following:**

14

- a)** Differentiate in between ASP and ASP. NET.

**b)** What is namespace? Explain how to create namespace with example

#### **Q4 Answer the following:**

14

- a)** What is inheritance? Explain with example.  
**b)** Explain the differences between ASP and ASP .NET applications.

## **Q 5 Answer the following:**

14

- a)** What is method overriding? Explain with example  
**b)** What is Validation? Explain Custom Validator, Validations Summary

### **Q 6 Answer the following:**

14

- a)** What is the State management? Explain Application in ASP .NET?  
**b)** Explain Auto Post Back and runat properties with example?

### **Q 7 Answer the following:**

14

- a) Write CII programme to find maximum and minimum marks on frame, avg. program.

**b)** What is nesting of methods?

- b) What is master page and explain with an example.

Seat No. \_\_\_\_\_

Set **P****M.C.A (Semester-IV) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**FINITE AUTOMATA**

Day &amp; Date: Monday, 27-11-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Questions No.1 and 2 are Compulsory.

- 2) Attempt any three questions from Q.No.3 to Q.No.7
- 3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternative given in the bracket. 10**

- 1) There are \_\_\_\_\_ tuples in Deterministic Finite Automata.
  - a) 4
  - b) 5
  - c) 6
  - d) None of the above
- 2) Language accepted by finite automata is \_\_\_\_\_ language.
  - a) Type 0
  - b) Type 1
  - c) Type 2
  - d) Type 3
- 3) Regular expression for a language accepting all the strings start with ab and end with bba over alphabet {a, b} is \_\_\_\_\_.
  - a) ab (a\* b\*) bba
  - b) ab (ab)\* bba
  - c) ab (a+b)\* bba
  - d) All of the above
- 4) Which of the following language is regular?
  - a) String of 0's whose length is perfect square
  - b) Strings of 0's are whose length is prime number
  - c) Palindrome strings of even length
  - d) Strings having odd number of 0's
- 5) Complement of  $(a+b)^*$  will be \_\_\_\_\_.
  - a) {}
  - b) a
  - c) b
  - d) None of the above
- 6) If L1 and L2 are regular languages the L1-L2 is \_\_\_\_\_.
  - a) Regular
  - b) Non-Regular
  - c) Context free
  - d) None of the above
- 7) According to Chomsky hierarchy type 2 languages are \_\_\_\_\_ languages.
  - a) Regular
  - b) Context free
  - c) Context Sensitive
  - d) Unrestricted
- 8) Which language is accepted by push down automata?
  - a) Context free language
  - b) Non-regular language
  - c) Both a) and b)
  - d) None of the above
- 9) A grammar is ambiguous if there exists more than \_\_\_\_\_ derivation trees.
  - a) 0
  - b) 1
  - c) 2
  - d) 3

- 10) In Push down Automata the transition function  $Q \times (\Sigma \cup \{\epsilon\} \times \Gamma \rightarrow \underline{\hspace{2cm}})$ .
- a)  $Q \times \Gamma^*$   
 b)  $Q^* \times \Gamma^*$   
 c)  $Q \times \Gamma \times \Sigma$   
 d) None of the above
- B) State True/False** 04
- 1) Turing machine has 7 tuples.
  - 2) A push down automata can only be deterministic.
  - 3) All context free languages are regular also.
  - 4) Regular languages are not closed under homomorphism.
- Q.2 A) Answer the following questions.** 08
- 1) What is left most, right most derivation and derivation tree?
  - 2) Explain NFA and DFA with examples.
- B) Write a short note on:** 06
- 1) Turing machine
  - 2) Regular languages
- Q3 A) Construct DFA equivalent to NFA.** 08
- $M(\{q_1, q_2, q_3\}, \{a, b\}, \delta, q_1, q_3)$  where  $\delta$  is given by
- |                   | a              | b              |
|-------------------|----------------|----------------|
| $\rightarrow q_1$ | $\{q_2, q_3\}$ | $\{q_1\}$      |
| $q_2$             | $\{q_1, q_2\}$ | $\Phi$         |
| $*q_3$            | $\{q_2\}$      | $\{q_1, q_2\}$ |
- B) Construct regular expression for following DFA by using Arden's theorem.** 06
- 
- ```

graph LR
    S(( )) --> Q1((Q1))
    Q1 -- 0 --> Q1
    Q1 -- 1 --> Q2(((Q2)))
    Q2 -- 1 --> Q3(((Q3)))
    Q2 -- 0 --> Q1
    Q3 -- "0,1" --> Q3
    
```
- Q4 a) Construct Turing machine for following language  $L = \{a^n b^n c^n \mid n \geq 1\}$**  08  
**b) Explain Chomsky hierarchy.** 06
- Q.5 a) Convert the following grammar into CNF.** 08
- S  $\rightarrow$  BBB | A  
 A  $\rightarrow$   $\epsilon$   
 B  $\rightarrow$  bB | A
- b) Prove that the language  $L = \{a^n b^n \mid n \geq 1\}$  is not regular.** 06
- Q.6 a) Explain closure properties of regular languages.** 08  
**b) Obtain leftmost, rightmost and derivation tree for a string “000001100” for following grammar.** 06
- S  $\rightarrow$  0AS | 0  
 A  $\rightarrow$  SS | 10 | 0S | S1A
- Q.7 a) Construct PDA for the language  $L = \{0^n 1^{2n} \mid n \geq 1\}$ .** 08  
**b) Construct PDA for following grammar.** 06
- S  $\rightarrow$  aAb|aS  
 A  $\rightarrow$  Bb | a  
 B  $\rightarrow$  Sa|b

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**Set P**

**M.C.A. (Semester - V) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**ARTIFICIAL INTELLIGENCE**

Day &amp; Date: Thursday, 16-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question No. 1 and 2 are compulsory.

- 2) Attempt any 3 questions from Q.No.3 to Q.No.7.
- 3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives****10**

- 1) \_\_\_\_\_ includes reasoning about physical objects and their relationship to each other as well as reasoning about actions and their consequences.  
a) Aptitude reasoning                          b) Theorem proving  
c) Mathematical reasoning                      d) Commonsense reasoning
- 2) Specify one or more states that would be \_\_\_\_\_ as solutions to the problem. These states are called Goal state.  
a) Negligible                                      b) Skip  
c) Acceptable                                      d) deniable
- 3) \_\_\_\_\_ will not trapped exploring a blind alley.  
a) Breadth First Search                        b) Solution Space  
c) Depth First Search                            d) Problem Space
- 4) A plateau is a flat area of search space in which a whole set of neighboring states has the \_\_\_\_\_ value.  
a) Different                                        b) Greater  
c) Minimum                                        d) Same
- 5) A straight forward procedure to solve Crypt-arithmetic Problem might operate in a state space of partial solutions in which letter are assigned particular \_\_\_\_\_ as their values.  
a) Calculation                                     b) Sentence  
c) Numbers                                         d) Alphabets
- 6) The predicate *instance* is a binary one, whose argument is \_\_\_\_\_ and whose second argument is class to which \_\_\_\_\_ belongs.  
a) Attribute                                        b) Value  
c) Abstract                                         d) Object
- 7) Semantic net are a natural way to represent relationship that would appear as ground instances of binary \_\_\_\_\_ in \_\_\_\_\_ logic.  
a) Proposition                                     b) Number  
c) Program                                         d) Predicate
- 8) ELIZA an early AI program that simulated the behavioral of \_\_\_\_\_ therapist.  
a) Baysian                                         b) Inferencial  
c) Dempster                                        d) Rogerian

|            |                                                                                                                                               |                  |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|            | 9) The _____ primitive acts stands for focusing of a sense organ towards a stimulus.                                                          |                  |
|            | a) INGEST                                                                                                                                     | b) SPEAK         |
|            | c) MBUILD                                                                                                                                     | d) ATTEND        |
|            | 10) In _____ analysis, linear, liner sequences of words are transformed into structures that show how the words relate to each other.         |                  |
|            | a) Semantic                                                                                                                                   | b) Morphological |
|            | c) Pragmatic                                                                                                                                  | d) Syntactic     |
| <b>B)</b>  | <b>Truth / False:</b>                                                                                                                         | <b>04</b>        |
|            | 1) First three decades of AI research is that intelligence requires constantly changing nature.                                               |                  |
|            | 2) RETE stores the rules so that they share structures in memory; sets of conditions that appear in several rules are matched once per cycle. |                  |
|            | 3) Sometimes computable function can provide a fairly good estimate of whether a path is good or not.                                         |                  |
|            | 4) User can search backward through the state space from goal start state.                                                                    |                  |
| <b>Q.2</b> | <b>A) Write short notes on the following</b>                                                                                                  | <b>08</b>        |
|            | i) Scripts                                                                                                                                    |                  |
|            | ii) Production System                                                                                                                         |                  |
|            | <b>B) Answer the following</b>                                                                                                                | <b>06</b>        |
|            | i) What do you mean by Certainty Factory?                                                                                                     |                  |
|            | ii) Briefly state concept of Artificial Intelligence?                                                                                         |                  |
| <b>Q.3</b> | <b>Answer the following</b>                                                                                                                   |                  |
|            | a) Briefly state Predicate logic. Discuss concept of Resolution using Predicate logic.                                                        | <b>07</b>        |
|            | b) What do you mean by cut-off? Explain in detail the procedure for adding Alpha -Beta cut-off with suitable example.                         | <b>07</b>        |
| <b>Q.4</b> | <b>Answer the following</b>                                                                                                                   |                  |
|            | a) Define the meaning of Best First Search. Discuss the Best First Search as a part of Heuristic Search technique with suitable example.      | <b>07</b>        |
|            | b) Discuss Forward versus Backward reasoning with four factor influence to decide a better kind of reasoning among them.                      | <b>07</b>        |
| <b>Q.5</b> | <b>Answer the following</b>                                                                                                                   |                  |
|            | a) Explain in detail the different kinds of question as issues in Knowledge representation needs to be addressed?                             | <b>07</b>        |
|            | b) What do you mean by Probability? State and Discuss Dempster-Shafer Theory with suitable example.                                           | <b>07</b>        |
| <b>Q.6</b> | <b>Answer the following</b>                                                                                                                   |                  |
|            | a) Explain in detail steps of Syntactic Processing as the process of Natural Language Processing with suitable example?                       | <b>07</b>        |
|            | b) Explain in detail the concept of Conceptual Dependency as strong slot and filler structure with suitable example?                          | <b>07</b>        |
| <b>Q.7</b> | <b>Answer the following</b>                                                                                                                   |                  |
|            | a) State and explain in detail different task domains of Artificial Intelligence as the target of work in it?                                 | <b>07</b>        |
|            | b) Discuss in detail process of Explanation and Knowledge acquisition as a part of Expert System.                                             | <b>07</b>        |

**Seat  
No.**

## Set P

**M.C.A. (Semester - V) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**WEB DESIGN TECHNIQUES**

Day & Date: Saturday, 18-11-2017  
Time: 10.30 AM to 01.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question No. 1 and 2 are compulsory.

2) Attempt any 3 questions from Q. No. 3 to Q. No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives**

10

- 1) \_\_\_\_\_ attribute of textbox allows limiting the maximum character.

  - a) Size
  - b) Maxlength
  - c) Len
  - d) All of the above

2) To make a numbered list which tag is use.

  - a) <list>
  - b) <nl>
  - c) <ul>
  - d) <ol>

3) Which jquery method is used to hide selected elements?

  - a) Hidden ()
  - b) Hide ()
  - c) Display (none)
  - d) Visible (false)

4) Server-side JavaScript is a collection of objects that make the language useful on.

  - a) Web server
  - b) Client program
  - c) Mouse click
  - d) None

5) Correct HTML tag for lowest heading is \_\_\_\_\_.

  - a) <head>
  - b) <h6>
  - c) <heading>
  - d) <hl>

6) XML designed to

  - a) Transport data
  - b) Store data
  - c) Both a & b
  - d) None of these

7) An external style sheet is ideal when the style is applied to

  - a) Many pages
  - b) Single page
  - c) Few pages
  - d) None of the above

8) <th>..... </th> tag is used for \_\_\_\_\_.

  - a) Table heading
  - b) Table records
  - c) Table row
  - d) None of these

9) Which method is used to specify before any lines that uses the Print Writer?

  - a) SetPageType ()
  - b) SetContextType ()
  - c) SetContentTypes ()
  - d) SetResponseType ()

|                                                                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10) Var my_list = new Array (1,2, "one", "two"); In this declaration an<br>Array object of                                                                |           |
| a) Length four is created and initialized                                                                                                                 |           |
| b) Length two is created and initialized                                                                                                                  |           |
| c) Length four is created                                                                                                                                 |           |
| d) Length two is created                                                                                                                                  |           |
| <b>B) Truth / False:</b>                                                                                                                                  | <b>04</b> |
| 1) Javascript is a default language of Internet Explorer.                                                                                                 |           |
| 2) SOAP is platform independent.                                                                                                                          |           |
| 3) CSS stands for “Central Style Sheet”                                                                                                                   |           |
| 4) XML is used for Parsing.                                                                                                                               |           |
| <b>Q.2 A) Write short notes on the following.</b>                                                                                                         | <b>08</b> |
| i) Border formatting properties of CSS                                                                                                                    |           |
| ii) DOM                                                                                                                                                   |           |
| <b>B) Answer the following.</b>                                                                                                                           | <b>06</b> |
| i) What is jQuery? Why do we use jQuery.                                                                                                                  |           |
| ii) Explain the Frame tag of HTML.                                                                                                                        |           |
| <b>Q.3 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Explain the steps involved in sending and receiving cookies to the client.                                                                             |           |
| b) What is difference between GET and POST method in javascript?                                                                                          |           |
| <b>Q.4 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write the two characteristics of arrays in javaScript? Explain the two ways<br>that array object can be created.                                       |           |
| b) Write a JavaScript program to find factorial of given number.                                                                                          |           |
| <b>Q.5 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Explain DTD and schemas with an example.                                                                                                               |           |
| b) Explain looping structures in javaScript with example.                                                                                                 |           |
| <b>Q.6 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write HTML code to demonstrate student registration page with proper<br>validation.                                                                    |           |
| b) Explain the features of XML in detail in detail with example.                                                                                          |           |
| <b>Q.7 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write a note on <div> and <span> tag with example.                                                                                                     |           |
| b) Write an external cascading style sheet to define the attribute of color and<br>background, text, border, list. Also use the CSS to design a web page. |           |

|                     |  |
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**Set P**

**M.C.A. (Semester- V) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**NETWORK SECURITY**

Day &amp; Date: Tuesday, 21-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory.

2) Attempt any Three Questions from Q.3 to Q.7

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives** **10**

- 1) Data Encryption Standard (DES) as designed by
  - a) Microsoft
  - b) Apple
  - c) IBM
  - d) None of these
- 2) In this case only the digital signature is encoded using base 64.
  - a) Enveloped data
  - b) Signed data
  - c) Clear – signed data
  - d) None of these
- 3) Responsible for defining the overall architecture of the Internet, providing guidance and broad direction to the IETF
  - a) IAB
  - b) IETF
  - c) IESG
  - d) None of these
- 4) A \_\_\_\_\_ involves the passive capture of a data unit and its subsequent retransmission to produce an unauthorized effect.
  - a) Masquerade
  - b) Replay
  - c) Denial of service
  - d) None of these
- 5) The \_\_\_\_\_ service is concerned with assuring that a communication is authentic.
  - a) Authentication
  - b) Access control
  - c) Data integrity
  - d) None of these
- 6) \_\_\_\_\_ is the original message pr data that is fed into the algorithm as input.
  - a) Secret key
  - b) Cipher text
  - c) Cryptanalysis
  - d) Plain text
- 7) A \_\_\_\_\_ processes the input elements continuously, producing output one element at a time, as it goes along.
  - a) Chain cipher
  - b) Block cipher
  - c) Stream cipher
  - d) None of these
- 8) \_\_\_\_\_ is an open – source freely available software package for e-mail security.
  - a) PGP
  - b) ESP
  - c) CGP
  - d) None of these
- 9) A \_\_\_\_\_ is a program that can replicate itself and send copies from computer to computer across network connections.
  - a) Malicious software
  - b) Virus
  - c) Worm
  - d) None of these

|           |                                                                                                                   |                    |
|-----------|-------------------------------------------------------------------------------------------------------------------|--------------------|
| 10)       | A form of virus explicitly designed to hide itself from detection by antivirus software.                          |                    |
| a)        | Parasitic virus                                                                                                   | b) Memory-resident |
| c)        | Boot sector virus                                                                                                 | d) Stealth virus   |
| <b>B)</b> | <b>State True or False</b>                                                                                        | <b>04</b>          |
| 1)        | Unauthorized intrusion into a computer system or network is one of the most serious threats to computer security. |                    |
| 2)        | The denial of service takes place one entity pretends to be a different entity.                                   |                    |
| 3)        | Macro viruses infect documents, not executable portions of code.                                                  |                    |
| 4)        | The authentication service is concerned with assuring that a communication is authentic.                          |                    |
| <b>Q2</b> | <b>A) Write a short note on following:</b>                                                                        | <b>08</b>          |
| 1)        | Authentication                                                                                                    |                    |
| 2)        | Proxy servers                                                                                                     |                    |
| <b>B)</b> | <b>Answer the following:</b>                                                                                      | <b>06</b>          |
| 1)        | What is Cryptanalysis? Explain in short                                                                           |                    |
| 2)        | What is Data Integrity?                                                                                           |                    |
| <b>Q3</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain the procedure for IDEA algorithm.                                                                         |                    |
| b)        | Explain various security services in detail.                                                                      |                    |
| <b>Q4</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain the features of Chinese wall.                                                                             |                    |
| b)        | What is digital signature? How it is useful? Explain in detail.                                                   |                    |
| <b>Q5</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain Internet Protocol in detail.                                                                              |                    |
| b)        | What is Biometric? Explain behavioural characteristics of individuals in biometric.                               |                    |
| <b>Q6</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | What is Packet Filtering? Explain in detail.                                                                      |                    |
| b)        | What is PGP? Explain the importance of PGP in detail.                                                             |                    |
| <b>Q7</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | What is firewall? Explain general techniques of firewall which is use to control access?                          |                    |
| b)        | What are the business requirements of Secure Electronic Transaction (SET)? Explain it.                            |                    |

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| <b>Set</b> | <b>P</b> |
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**M.C.A. (Semester - V) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**DIGITAL IMAGE PROCESSING**

Day & Date: Thursday, 23-11-2017  
Time: 10.30 AM to 01.00 PM

Max. Marks: 70

**Instructions:** 1) Question No.1 and 2 are compulsory.  
2) Attempt any 3 questions from Q.NO. 3 to Q. No. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the most correct alternatives:**

**10**

- 1) Electron microscopes can achieve magnification of more than \_\_\_\_\_.  
  - a) 1,000 X
  - b) 5,000 X
  - c) 10,000 X
  - d) 1,00,000 X
- 2) Pixels P and Q are \_\_\_\_\_.  

|    |   |    |
|----|---|----|
| 0  | 1 | 1P |
| 0  | 1 | 0  |
| 1Q | 0 | 0  |

  - a) 4 connected
  - b) 8 connected
  - c)  $m$  connected
  - d) 8 and  $m$  connected
- 3) The storage space required for storing an image of size 10 x 10 with 16 gray levels is \_\_\_\_\_ bits.  
  - a) 50
  - b) 100
  - c) 400
  - d) 1600
- 4) In contrast stretching the location of points  $(r_1, s_1)$  and  $(r_2, s_2)$  are at (5, 10) and (12, 8). Then the contrast stretching converts to \_\_\_\_\_.  
  - a) Identity transform
  - b) Thresholding function
  - c) Negative transform
  - d) Violation of condition
- 5)  $H(u, v) = e^{-D^2(u,v)/2\sigma^2}$  is the expression for \_\_\_\_\_.  
  - a) Gaussian Low pass filter
  - b) Gaussian High pass filter
  - c) Butterworth Low pass filter
  - d) Butterworth High pass filter
- 6) A \_\_\_\_\_ filter returns average of maximum and minimum value from the list.  
  - a) Midpoint
  - b) Mean
  - c) Median
  - d) Min and Max
- 7) To thin a thicker object to get one pixel thickness \_\_\_\_\_.  
  - a) Only one SE has to be applied once
  - b) Only one SE has to be applied multiple times
  - c) A set of SE has to be applied once
  - d) A set of SE has to be applied multiple times
- 8) The response of second order derivative at ramps in downward direction is \_\_\_\_\_.  
  - a) Zero
  - b) Constant, but positive
  - c) Constant, but negative
  - d) Not constant

**SLR-SM-41**



**B) State True or False:**

04

- 1) D<sub>8</sub> distance between pixels at coordinates (5,9,8) and (6,7,10) is \_\_\_\_\_.
  - 2) In the expression  $g(x, y) = h(x, y)^* f(x, y) + \eta(x, y)$ , \* is known as \_\_\_\_\_.
  - 3) The Gaussian noise PDF is expressed as \_\_\_\_\_.
  - 4) The Miss transform is expressed as \_\_\_\_\_.

**Q.2 A) Write short notes on the following:**

08

- 1) Linear and non – liner operations
  - 2) Outer boundary of object with example.

**B) Answer the following:**

06

- Answer the following:**

  - 1) How to get Normalized histogram
  - 2) Give Example to demonstrate one dimensional signal and its Fourier transform.

### **Q.3 Answer the following:**

14

- a)** What are different electromagnetic spectrums used for digital image processing applications? Explain any two.

**b)** Apply global thresholding algorithm on following image to obtain binary image by selecting initial threshold using mid-point filter. Iteration of algorithm must stop when difference of threshold is less than 0.1.

|    |   |   |
|----|---|---|
| 9  | 4 | 2 |
| 1  | 3 | 0 |
| 15 | 5 | 6 |

#### **Q 4 Answer the following:**

14

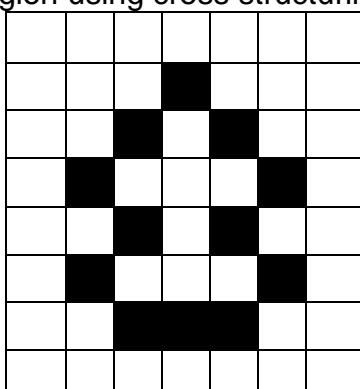
- a)** Discuss formulation of filters for image enhancement using first derivatives or gradients.

**b)** Perform opening of a rectangle with width 8 cm height 6 cm using a circle having radius 1 cm.

#### **Q.5 Answer the following:**

14

- a)** Derives Homomorphic filtering function.  
**b)** Fill following region using cross structuring element.



**Q.6 Answer the following:**

- a) Describe the algorithm for adaptive local noise reduction filter.
- b) Find mean and covariance matrix for the vectors  $x_1 = (1, 1, 1, 1)^T$ ,  $x_2 = (1, 0, 1, 1)^T$ ,  $x_3 = (1, 0, 0, 0)^T$  and  $x_4 = (0, 1, 0, 1)^T$

**Q.7 Answer the following:**

- a) Discuss region splitting and merging algorithm.
- b) Compute median matrix for the following matrix using  $3 \times 3$  filter. Only consider values within boundary for computation.

|     |     |     |
|-----|-----|-----|
| 142 | 212 | 89  |
| 35  | 70  | 166 |
| 90  | 123 | 120 |

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P

**M.C.A. (Semester - V) (Old) (CGPA) Examination Oct/Nov-2017**  
**Science**  
**MOBILE COMPUTING**

**Day & Date:** Saturday, 25-11-2017  
**Time:** 10.30 AM to 01.00 PM

Max. Marks: 70

**Instructions:** 1) Question No.1 and 2 are compulsory.

2) Attempt any 3 questions from Q. No. 3 to Q. No. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the most correct alternatives:**

10

- 1) In \_\_\_\_\_ Frequency Spectrum is divided into smaller spectra and is allocated to each user.
    - a) TDMA
    - b) CDMA
    - c) FDMA
    - d) FGMA
  - 2) The advantage of using frequency reuse is
    - a) Increased capacity
    - b) Limited spectrum is required
    - c) Same spectrum may be allocated to other network
    - d) All of the above
  - 3) The IEEE 802.11 uses \_\_\_\_\_.
    - a) FHSS
    - b) DSSS
    - c) OFDM
    - d) Either a) or b)
  - 4) Bluetooth is a \_\_\_\_\_ technology that connects devices in a small area.
    - a) Wired LAN
    - b) Wireless LAN
    - c) VLAN
    - d) None of the above
  - 5) \_\_\_\_\_ is used for cellular phone, satellite, and wireless LAN communications.
    - a) Radio Waves
    - b) Microwaves
    - c) Infrared waves
    - d) None of these
  - 6) In \_\_\_\_\_ each station transmits its data in its assigned time slot.
    - a) FDMA
    - b) TDMA
    - c) CDMA
    - d) None of the above
  - 7) MAC stands for \_\_\_\_\_.
    - a) Medium Access Control
    - b) Multipath Access Control
    - c) Medium Access Connection
    - d) Mobile Access Connection
  - 8) The board spectrum of the transmitted signal gives rise of \_\_\_\_\_.
    - a) Fading
    - b) Noise
    - c) Spread Spectrum
    - d) All of the above
  - 9) \_\_\_\_\_ contained in the manifest xml file.
    - a) The permission the app requires
    - b) The list of strings used in the app
    - c) The source code
    - d) None of these

|                                                                                                                       |                                |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 10) To create an emulator you need an AVD which stands for _____.                                                     |                                |
| a) Android Virtual Display                                                                                            | b) Android Virtual Device      |
| c) Active Virtual Device                                                                                              | d) Application Virtual Display |
| <b>B) State True or False:</b>                                                                                        | <b>04</b>                      |
| 1) The R.java file is where you edit the resources of android project.                                                |                                |
| 2) There can be only one running activity at a given time.                                                            |                                |
| 3) The maximum throughput for slotted ALOHA is 18.4 per cent.                                                         |                                |
| 4) A mobile node is an end-system or router that can change its point of attachment to the internet using mobile IP.  |                                |
| <b>Q.2 A) Write short notes on the following:</b>                                                                     | <b>08</b>                      |
| 1) Signals                                                                                                            |                                |
| 2) FDMA                                                                                                               |                                |
| <b>B) Answer the following:</b>                                                                                       | <b>06</b>                      |
| 1) What is roaming? Give its example.                                                                                 |                                |
| 2) Explain the terms Bluetooth and Piconet.                                                                           |                                |
| <b>Q.3 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) What is signal propagation? Explain the different ranges of signal propagation.                                    |                                |
| b) What is Modulation? Explain Amplitude shift keying and Frequency shift keying.                                     |                                |
| <b>Q.4 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain how the demand assigned multiple access scheme can be implemented for explicit reservation?                |                                |
| b) Explain how the multiple access with collision avoidance scheme can be used to avoid hidden and exposed terminals? |                                |
| <b>Q.5 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain the protocol architecture of GSM system.                                                                   |                                |
| b) Discuss the authentication and encryption scheme used in GSM security,                                             |                                |
| <b>Q.6 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Write brief notes on congestion control in traditional TCP.                                                        |                                |
| b) Describe data transfer from a mobile node to a correspondent node and vice versa.                                  |                                |
| <b>Q.7 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain android application priority and process states.                                                           |                                |
| b) Explain the Bluetooth discovering and bonding with remote device using android.                                    |                                |

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# Set P

**M.C.A. (Semester - V) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**ARTIFICIAL INTELLIGENCE**

Day & Date: Thursday,16-11-2017

**Max. Marks: 70**

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question No. 1 and 2 are compulsory.

- 2) Attempt any 3 questions from Q.No.3 to Q.No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives**

10

- 9) The \_\_\_\_\_ primitive acts stands for focusing of a sense organ towards a stimulus.
- INGEST
  - SPEAK
  - MBUILD
  - ATTEND
- 10) In \_\_\_\_\_ analysis, linear, liner sequences of words are transformed into structures that show how the words relate to each other.
- Semantic
  - Morphological
  - Pragmatic
  - Syntactic
- B) Truth / False:**
- First three decades of AI research is that intelligence requires constantly changing nature.
  - RETE stores the rules so that they share structures in memory; sets of conditions that appear in several rules are matched once per cycle.
  - Sometimes computable function can provide a fairly good estimate of whether a path is good or not.
  - User can search backward through the state space from goal start state.

|            |                                                                                                                                          |           |
|------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.2</b> | <b>A) Write short notes on the following</b>                                                                                             | <b>08</b> |
|            | i) Scripts<br>ii) Production System                                                                                                      |           |
|            | <b>B) Answer the following</b>                                                                                                           | <b>06</b> |
|            | i) What do you mean by Certainty Factory?<br>ii) Briefly state concept of Artificial Intelligence?                                       |           |
| <b>Q.3</b> | <b>Answer the following</b>                                                                                                              |           |
|            | a) Briefly state Predicate logic. Discuss concept of Resolution using Predicate logic.                                                   | <b>07</b> |
|            | b) What do you mean by cut-off? Explain in detail the procedure for adding Alpha -Beta cut-off with suitable example.                    | <b>07</b> |
| <b>Q.4</b> | <b>Answer the following</b>                                                                                                              |           |
|            | a) Define the meaning of Best First Search. Discuss the Best First Search as a part of Heuristic Search technique with suitable example. | <b>07</b> |
|            | b) Discuss Forward versus Backward reasoning with four factor influence to decide a better kind of reasoning among them.                 | <b>07</b> |
| <b>Q.5</b> | <b>Answer the following</b>                                                                                                              |           |
|            | a) Explain in detail the different kinds of question as issues in Knowledge representation needs to be addressed?                        | <b>07</b> |
|            | b) What do you mean by Probability? State and Discuss Dempster-Shafer Theory with suitable example.                                      | <b>07</b> |
| <b>Q.6</b> | <b>Answer the following</b>                                                                                                              |           |
|            | a) Explain in detail steps of Syntactic Processing as the process of Natural Language Processing with suitable example?                  | <b>07</b> |
|            | b) Explain in detail the concept of Conceptual Dependency as strong slot and filler structure with suitable example?                     | <b>07</b> |
| <b>Q.7</b> | <b>Answer the following</b>                                                                                                              |           |
|            | a) State and explain in detail different task domains of Artificial Intelligence as the target of work in it?                            | <b>07</b> |
|            | b) Discuss in detail process of Explanation and Knowledge acquisition as a part of Expert System.                                        | <b>07</b> |

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# Set P

**M.C.A. (Semester - V) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**WEB DESIGN TECHNIQUES**

Day & Date: Saturday, 18-11-2017  
Time: 10.30 AM to 01.00 PM

**Max. Marks: 70**

**Instructions:** 1) Question No. 1 and 2 are compulsory.

2) Attempt any 3 questions from Q. No. 3 to Q. No.7.  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives**

10

- 1) \_\_\_\_\_ attribute of textbox allows limiting the maximum character.

  - a) Size
  - b) Maxlength
  - c) Len
  - d) All of the above

2) To make a numbered list which tag is use.

  - a) <list>
  - b) <nl>
  - c) <ul>
  - d) <ol>

3) Which jquery method is used to hide selected elements?

  - a) Hidden ()
  - b) Hide ()
  - c) Display (none)
  - d) Visible (false)

4) Server-side JavaScript is a collection of objects that make the language useful on.

  - a) Web server
  - b) Client program
  - c) Mouse click
  - d) None

5) Correct HTML tag for lowest heading is \_\_\_\_\_.

  - a) <head>
  - b) <h6>
  - c) <heading>
  - d) <hl>

6) XML designed to

  - a) Transport data
  - b) Store data
  - c) Both a & b
  - d) None of these

7) An external style sheet is ideal when the style is applied to

  - a) Many pages
  - b) Single page
  - c) Few pages
  - d) None of the above

8) <th>..... </th> tag is used for \_\_\_\_\_.

  - a) Table heading
  - b) Table records
  - c) Table row
  - d) None of these

9) Which method is used to specify before any lines that uses the Print Writer?

  - a) SetPageType ( )
  - b) SetContextType ( )
  - c) SetContentTypes ( )
  - d) SetResponseType ( )

|                                                                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 10) Var my_list = new Array (1,2, "one", "two"); In this declaration an<br>Array object of                                                                |           |
| a) Length four is created and initialized                                                                                                                 |           |
| b) Length two is created and initialized                                                                                                                  |           |
| c) Length four is created                                                                                                                                 |           |
| d) Length two is created                                                                                                                                  |           |
| <b>B) Truth / False:</b>                                                                                                                                  | <b>04</b> |
| 1) Javascript is a default language of Internet Explorer.                                                                                                 |           |
| 2) SOAP is platform independent.                                                                                                                          |           |
| 3) CSS stands for “Central Style Sheet”                                                                                                                   |           |
| 4) XML is used for Parsing.                                                                                                                               |           |
| <b>Q.2 A) Write short notes on the following.</b>                                                                                                         | <b>08</b> |
| i) Border formatting properties of CSS                                                                                                                    |           |
| ii) DOM                                                                                                                                                   |           |
| <b>B) Answer the following.</b>                                                                                                                           | <b>06</b> |
| i) What is jQuery? Why do we use jQuery.                                                                                                                  |           |
| ii) Explain the Frame tag of HTML.                                                                                                                        |           |
| <b>Q.3 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Explain the steps involved in sending and receiving cookies to the client.                                                                             |           |
| b) What is difference between GET and POST method in javascript?                                                                                          |           |
| <b>Q.4 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write the two characteristics of arrays in javaScript? Explain the two ways<br>that array object can be created.                                       |           |
| b) Write a JavaScript program to find factorial of given number.                                                                                          |           |
| <b>Q.5 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Explain DTD and schemas with an example.                                                                                                               |           |
| b) Explain looping structures in javaScript with example.                                                                                                 |           |
| <b>Q.6 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write HTML code to demonstrate student registration page with proper<br>validation.                                                                    |           |
| b) Explain the features of XML in detail in detail with example.                                                                                          |           |
| <b>Q.7 Answer the following.</b>                                                                                                                          | <b>14</b> |
| a) Write a note on <div> and <span> tag with example.                                                                                                     |           |
| b) Write an external cascading style sheet to define the attribute of color and<br>background, text, border, list. Also use the CSS to design a web page. |           |

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**Set P**

**M.C.A. (Semester- V) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**NETWORK SECURITY**

Day &amp; Date: Tuesday, 21-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Q.1 and Q.2 are compulsory.

2) Attempt any Three Questions from Q.3 to Q.7

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct alternatives** **10**

- 1) Data Encryption Standard (DES) as designed by
  - a) Microsoft
  - b) Apple
  - c) IBM
  - d) None of these
- 2) In this case only the digital signature is encoded using base 64.
  - a) Enveloped data
  - b) Signed data
  - c) Clear – signed data
  - d) None of these
- 3) Responsible for defining the overall architecture of the Internet, providing guidance and broad direction to the IETF
  - a) IAB
  - b) IETF
  - c) IESG
  - d) None of these
- 4) A \_\_\_\_\_ involves the passive capture of a data unit and its subsequent retransmission to produce an unauthorized effect.
  - a) Masquerade
  - b) Replay
  - c) Denial of service
  - d) None of these
- 5) The \_\_\_\_\_ service is concerned with assuring that a communication is authentic.
  - a) Authentication
  - b) Access control
  - c) Data integrity
  - d) None of these
- 6) \_\_\_\_\_ is the original message pr data that is fed into the algorithm as input.
  - a) Secret key
  - b) Cipher text
  - c) Cryptanalysis
  - d) Plain text
- 7) A \_\_\_\_\_ processes the input elements continuously, producing output one element at a time, as it goes along.
  - a) Chain cipher
  - b) Block cipher
  - c) Stream cipher
  - d) None of these
- 8) \_\_\_\_\_ is an open – source freely available software package for e-mail security.
  - a) PGP
  - b) ESP
  - c) CGP
  - d) None of these
- 9) A \_\_\_\_\_ is a program that can replicate itself and send copies from computer to computer across network connections.
  - a) Malicious software
  - b) Virus
  - c) Worm
  - d) None of these

|           |                                                                                                                   |                    |
|-----------|-------------------------------------------------------------------------------------------------------------------|--------------------|
| 10)       | A form of virus explicitly designed to hide itself from detection by antivirus software.                          |                    |
| a)        | Parasitic virus                                                                                                   | b) Memory-resident |
| c)        | Boot sector virus                                                                                                 | d) Stealth virus   |
| <b>B)</b> | <b>State True or False</b>                                                                                        | <b>04</b>          |
| 1)        | Unauthorized intrusion into a computer system or network is one of the most serious threats to computer security. |                    |
| 2)        | The denial of service takes place one entity pretends to be a different entity.                                   |                    |
| 3)        | Macro viruses infect documents, not executable portions of code.                                                  |                    |
| 4)        | The authentication service is concerned with assuring that a communication is authentic.                          |                    |
| <b>Q2</b> | <b>A) Write a short note on following:</b>                                                                        | <b>08</b>          |
| 1)        | Authentication                                                                                                    |                    |
| 2)        | Proxy servers                                                                                                     |                    |
| <b>B)</b> | <b>Answer the following:</b>                                                                                      | <b>06</b>          |
| 1)        | What is Cryptanalysis? Explain in short                                                                           |                    |
| 2)        | What is Data Integrity?                                                                                           |                    |
| <b>Q3</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain the procedure for IDEA algorithm.                                                                         |                    |
| b)        | Explain various security services in detail.                                                                      |                    |
| <b>Q4</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain the features of Chinese wall.                                                                             |                    |
| b)        | What is digital signature? How it is useful? Explain in detail.                                                   |                    |
| <b>Q5</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | Explain Internet Protocol in detail.                                                                              |                    |
| b)        | What is Biometric? Explain behavioural characteristics of individuals in biometric.                               |                    |
| <b>Q6</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | What is Packet Filtering? Explain in detail.                                                                      |                    |
| b)        | What is PGP? Explain the importance of PGP in detail.                                                             |                    |
| <b>Q7</b> | <b>Attempt the following questions:</b>                                                                           | <b>14</b>          |
| a)        | What is firewall? Explain general techniques of firewall which is use to control access?                          |                    |
| b)        | What are the business requirements of Secure Electronic Transaction (SET)? Explain it.                            |                    |

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## Set P

**M.C.A. (Semester - V) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**DIGITAL IMAGE PROCESSING**

Day & Date: Thursday, 23-11-2017

**Max. Marks: 70**

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question no. 1 and 2 are compulsory.

- 2) Attempt any 3 questions from Q. no. 3 to Q. no. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose correct alternatives.**

10

- 1) Which of the following zooming methods yields best results?
    - a) Pixel replication
    - b) Bilinear interpolation
    - c) Nearest neighbor interpolation
    - d) Both b and c
  - 2) The size of an 8 bit square RGB color image is 75 bytes. How many rows it contains?
    - a) 5
    - b) 10
    - c) 15
    - d) 25
  - 3) Which of the following is not an order statistic filter?
    - a) Mean filter
    - b) Median filter
    - c) Midpoint filter
    - d) Min filter
  - 4) Which of the following filters may produce ringing effect?
    - a) Ideal
    - b) Gaussian
    - c) Butterworth
    - d) Both b and c
  - 5) The median of a list of values is 50<sup>th</sup> \_\_\_\_\_ of ordered set of values.
    - a) Percentile
    - b) Percentage
    - c) Rank
    - d) Position
  - 6) The hit-or-miss transform uses \_\_\_\_\_ operations.
    - a) Erosion, complement, subtraction, union
    - b) Dilation, complement, subtraction, union
    - c) Erosion, complement, subtraction, intersection
    - d) Dilation, complement, subtraction, intersection
  - 7) Average is same as digital \_\_\_\_\_.
    - a) Differentiate
    - b) Derivation
    - c) Addition
    - d) Integration
  - 8) Example(s) of similarity approach in image segmentation is/are \_\_\_\_\_.
    - a) Edge based segmentation
    - b) Boundary based segmentation
    - c) Region based segmentation
    - d) Both a and b
  - 9) Which of the following statements is correct for covariance matrix?
    - a) Asymmetric matrix
    - b) Diagonal matrix
    - c) Its diagonal elements are zero
    - d) Symmetric matrix with all equal diagonal elements

10) Two classes of fruits are classified using their length, width, weight.

The boundary separating them will be a \_\_\_\_\_.

- a) Line
- b) Curve
- c) Edge
- d) Plane

**B) Fill in the blanks:-**

**04**

- 1) The intensity of a pixel in a 6 bit image is 25. Value after applying negative transform is \_\_\_\_\_.
- 2) The expression for Butterworth highpass filter is \_\_\_\_\_.
- 3) Thresholding converts a gray scale image into \_\_\_\_\_ image.
- 4) The diameter of boundary of an object is expressed as \_\_\_\_\_.

**Q.2 A) Write short notes on the following.**

**08**

- a) Digital path and connected component with examples.
- b) Power-law transformation

**B) Answer the following:**

**06**

- a) A pixel has intensity 50,  $c = 2$  and  $\gamma = 3$ , compute its log and power-law transformations.
- b) If the threshold is 200, check whether a horizontal line exists in the following image segment?

|     |     |     |
|-----|-----|-----|
| 65  | 71  | 210 |
| 170 | 191 | 145 |
| 101 | 49  | 93  |

**Q.3 Answer the following.**

**14**

- a) What are the applications of image processing which use modalities other than electromagnetic spectrum? Explain them.
- b) Perform histogram stretching to 0-7 intensity range for the below image information.

| Intensity     | 0 | 1   | 2   | 3   | 4  | 5 | 6 | 7 |
|---------------|---|-----|-----|-----|----|---|---|---|
| No. of pixels | 0 | 200 | 120 | 100 | 80 | 0 | 0 | 0 |

**Q.4 Answer the following.**

**14**

- a) Derive homomorphic filtering.
- b) Perform opening on a right angle triangle with base and height 6 cm using a circle of 1 cm radius and square of each side 1 cm.

**Q.5 Answer the following.**

**14**

- a) What are notch filters? Discuss their design.
- b) Perform logical NOT operation on following 8 bit image segment.

|     |     |     |     |
|-----|-----|-----|-----|
| 193 | 31  | 37  | 81  |
| 213 | 165 | 39  | 251 |
| 75  | 133 | 9   | 83  |
| 130 | 45  | 201 | 187 |

**Q.6 Answer the following.**

14

- a) How to detect different types of edges from an image? Explain.
- b) Threshold the following image using Global thresholding algorithm. The initial threshold may be selected using the mid-point filter on entire image and the algorithm iteration must stop when difference of threshold is less than 0.1.

|     |     |     |     |
|-----|-----|-----|-----|
| 19  | 189 | 122 | 33  |
| 242 | 14  | 19  | 75  |
| 59  | 86  | 44  | 76  |
| 89  | 65  | 53  | 112 |

**Q.7 Answer the following.**

14

- a) Derive expression for principal component transform.
- b) Find mean vector and covariance matrix for the following vectors:  
 $X_1 = (0, 1, 0, 1)^T, X_2 = (0, 0, 1, 1)^T, X_3 = (1, 1, 0, 0)^T, X_4 = (1, 1, 0, 1)^T$

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## Set

P

**M.C.A. (Semester - V) (New) (CBCS) Examination Oct/Nov-2017**  
**Science**  
**MOBILE COMPUTING**

Day & Date: Saturday, 25-11-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Question No.1 and 2 are compulsory.

2) Attempt any 3 questions from Q. No. 3 to Q. No. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the most correct alternatives:**

10

- 1) In \_\_\_\_\_ Frequency Spectrum is divided into smaller spectra and is allocated to each user.

  - a) TDMA
  - b) CDMA
  - c) FDMA
  - d) FGMA

2) The advantage of using frequency reuse is

  - a) Increased capacity
  - b) Limited spectrum is required
  - c) Same spectrum may be allocated to other network
  - d) All of the above

3) The IEEE 802.11 uses \_\_\_\_\_.

  - a) FHSS
  - b) DSSS
  - c) OFDM
  - d) Either a) or b)

4) Bluetooth is a \_\_\_\_\_ technology that connects devices in a small area.

  - a) Wired LAN
  - b) Wireless LAN
  - c) VLAN
  - d) None of the above

5) \_\_\_\_\_ is used for cellular phone, satellite, and wireless LAN communications.

  - a) Radio Waves
  - b) Microwaves
  - c) Infrared waves
  - d) None of these

6) In \_\_\_\_\_ each station transmits its data in its assigned time slot.

  - a) FDMA
  - b) TDMA
  - c) CDMA
  - d) None of the above

7) MAC stands for \_\_\_\_\_.

  - a) Medium Access Control
  - b) Multipath Access Control
  - c) Medium Access Connection
  - d) Mobile Access Connection

8) The board spectrum of the transmitted signal gives rise of \_\_\_\_\_.

  - a) Fading
  - b) Noise
  - c) Spread Spectrum
  - d) All of the above

9) \_\_\_\_\_ contained in the manifest xml file.

  - a) The permission the app requires
  - b) The list of strings used in the app
  - c) The source code
  - d) None of these

|                                                                                                                       |                                |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 10) To create an emulator you need an AVD which stands for _____.                                                     |                                |
| a) Android Virtual Display                                                                                            | b) Android Virtual Device      |
| c) Active Virtual Device                                                                                              | d) Application Virtual Display |
| <b>B) State True or False:</b>                                                                                        | <b>04</b>                      |
| 1) The R.java file is where you edit the resources of android project.                                                |                                |
| 2) There can be only one running activity at a given time.                                                            |                                |
| 3) The maximum throughput for slotted ALOHA is 18.4 per cent.                                                         |                                |
| 4) A mobile node is an end-system or router that can change its point of attachment to the internet using mobile IP.  |                                |
| <b>Q.2 A) Write short notes on the following:</b>                                                                     | <b>08</b>                      |
| 1) Signals                                                                                                            |                                |
| 2) FDMA                                                                                                               |                                |
| <b>B) Answer the following:</b>                                                                                       | <b>06</b>                      |
| 1) What is roaming? Give its example.                                                                                 |                                |
| 2) Explain the terms Bluetooth and Piconet.                                                                           |                                |
| <b>Q.3 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) What is signal propagation? Explain the different ranges of signal propagation.                                    |                                |
| b) What is Modulation? Explain Amplitude shift keying and Frequency shift keying.                                     |                                |
| <b>Q.4 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain how the demand assigned multiple access scheme can be implemented for explicit reservation?                |                                |
| b) Explain how the multiple access with collision avoidance scheme can be used to avoid hidden and exposed terminals? |                                |
| <b>Q.5 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain the protocol architecture of GSM system.                                                                   |                                |
| b) Discuss the authentication and encryption scheme used in GSM security,                                             |                                |
| <b>Q.6 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Write brief notes on congestion control in traditional TCP.                                                        |                                |
| b) Describe data transfer from a mobile node to a correspondent node and vice versa.                                  |                                |
| <b>Q.7 Answer the following:</b>                                                                                      | <b>14</b>                      |
| a) Explain android application priority and process states.                                                           |                                |
| b) Explain the Bluetooth discovering and bonding with remote device using android.                                    |                                |