Seat No.	

M.C.A. (Science) (Semester – I) (New) (CBCS) Examination, 2017
INTRODUCTION TO COMPUTERS

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *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 is the volatile memory?
a) RAM b) ROM c) EPROM d) EEPROM

2) The input device that is closely related to touch screen is the?
a) Light pen b) Keyboard c) Joystick d) Mouse

3) Which one of the following printer generates characters from a grid of pins?
a) Inkjet b) Laser c) Daisy wheel d) Dot matrix

4) Which one of the following is not considered to be a system software?
a) Assembler b) Compiler c) Interpreter d)COBOL

5) Which one of the following does not generate a hardware interrupt?
a) Printer b) Hard disk
c) Floppy disk d) Program error

6) Connecting different computers in an organized manner within an office building can be termed as?
a) MAN b) WAN c) LAN d) None of these

7) The language understood by a computer without translation is called?
a) Assembly language b) High level language
c) Command language d) Machine language

8) Which number system is commonly used as a shortcut notation for groups of four binary digits?
a) Binary b) Decimal c) Octal d) Hexadecimal

9) CAD stands of _____
a) Computer aided design
b) Computer algorithm for design
c) Computer application in design
d) All of the above

10) Which one the is not input device
a) Speaker b) Mouse c) Scanner d) Keyboard

B) State True/False **04**

1) Cache memory is placed in between the CPU and ROM
2) A system that can process two or more programs is called Multiprogramming.
3) A computer system can be split into input, processing and output.
4) The overall functions of the O.S are to manage I/O, files and memory.

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

1) Compiler
2) Plotter

B) Answer the following: **08**

1) Convert Decimal to Binary $(1245)_{10}$
2) Convert Binary to Decimal $(1101)_2$

Q3 Answer the following: **08**

1) What is programming language? Why it is developed?
2) Describe the internal structure of CRT monitor. **06**

Q4 Answer the following:

A) Explain the following DOS commands. **08**

1) TREE 2) COPY 3) DOSKEY 4) CHKDSK

B). What is debugger? Explain how it helps in programming.

Q.5 Answer the following:

A) List the various scanning devices. Explain any two of them in brief. **07**

B) What is software? Explain different types of software with example. **07**

Q.6 Answer the following:

A) Describe the difference of MS-Word. **07**

B) Explain the difference between machine language & assembly language. **07**

Q.7 Answer the following:

A) What is Operating System? Explain different roles played by O.S. **07**

B) Explain the concept of spread sheet. **07**

Seat No.	

M.C.A. (Science) (Semester – I) (New) (CBCS) Examination, 2017
PROGRAMMING USING C

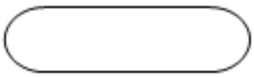
Day & Date: Thursday, 20-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction : *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 geometrical figure shown below in flow chart represents _____.



a) Input/output b) Terminator c) Processing d) Connector

2) The words if, else, auto, float ect. have predefined meaning and users can not use them as variables. These words are called _____.
a) Constants b) Identifiers c) Data types d) Keywords

3) Diagrammatic or symbolic representation of algorithm is called as ___
a) Data flow diagram b) Entity Relationship Diagram
c) Class diagram d) Flow chart

4) Which operator has the lowest priority?
a) ++ b) * c) % d) +

5) The type cast operator is _____.
a) (type) b) // c) Cast( ) d) /* */

6) What is the output of following program?

```
Void main( )
{
        printf("%d", 'B' < 'A');
}
```

a) Error b) 0 c) 1 d) B < A

7) Int **x;
a) X is a not pointer b) X is a pointer to pointer
c) X is long pointer d) The declaration is invalid

8) The operator & is _____ operator.
a) Logical b) Arithmetic c) Relational d) Bitwise

9) Which header file should be included to use functions like malloc( ) and calloc( )?
a) memory.h b) stdlib.h c) stdio.h d) dos.h

10) An external variable is one _____.
   a) which resides in the memory till the end of execution of the program
   b) which is globally accessible by all functions in the program
   c) which is declared outside the body of all the functions
   d) all of the these

B) State whether true or false. **04**

1) The address of a variable is yield by the unary operator '&'.
2) The memory size of union is equal to the memory size of the highest member variable.
3) The function *ftell( )* returns long type value.
4) '*register*' is the default storage class of all the local variable.

Q.2 A) Write short notes on the following: **08**

1) Algorithm
2) Increment and decrement operator

B) Answer the following: **06**

1) Draw a flow chart to find sum of 1 – 10 numbers.
2) List out all the relational operators and its use.

Q.3 Answer the following:

A) Explain the variable data types with an example. **07**

B) Write a program to get character from the user and convert the character into uppercase and store it in a file "myfile.txt". **07**

Q.4 Answer the following:

A) Explain any four string handling functions with example. **08**

B) Write a program to calculate factorial of a number using recursion function. **06**

Q.5 Answer the following:

A) Explain dynamic memory allocations in detail. **08**

B) Design an algorithm to find the maximum and minimum elements in an array of 10 elements. **06**

Q.6 Answer the following:

A) Compare in terms of their functions, the following pairs of statements- **08**
   i) while and do while
   ii) break and continue

B) Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 8. **06**

Q.7 Answer the following:

A) What is file? How would use functions fread( ) and fwrite( )? **08**

B) Write a program that converts a decimal number into binary. **06**

Seat No.	

MCA (Science) (Semester – I) (New) (CBCS) Examination, 2017
Discrete Mathematical Structures

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1) Q.1 and Q.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 alternatives. **10**

1) Let L be lattice then for any a, b, ∈ L, $a \wedge b = a$ if & only if
   a) a V b = b b) a V b = a c) a ∧ b = a d) a ∧ b = a

2) There is no more than one edge between a pair of vertices is called_____
   a) Multigraph b) Regular graph
   c) Simple graph d) None of these

3) In propositional logic, which of the following is equivalent to P∨(P∧Q)
   a) P b) Q c) P∨Q d) None of these

4) A Relation R on a set A is called Poset if
   a) Reflexive b) Antisymmetric
   c) Transitive d) All of the above

5) The function $I_X: X \to X$ such that $I_X(x) = x$ for all $x \in X$ is called the
   a) Constant function b) Identity function
   c) One-one function d) None of these

6) The efficiency of a communication channel can be improved by a device called
   a) Encoder b) Decoder c) Detectable d) Receiver

7) In how may way committee of 6 be chosen from 10 people?
   a) P (10, 5) b) C (10, 5) c) P (10, 6) d) C (10,6)

8) The 'Equal' Relation on a set is
   a) Symmetric Relation b) Transitive Relation
   c) Partial order relation d) Equivalent Relation

9) A square matrix A is said to be a non – singular matrix if
   a) |A|=0 b) |A|≠0 c) |A|=1 d) A=0

10) For any binary operation '.' on a set if identity element exists then

it is

a) Unique b) Different c) Equal d) None of these

B) Fill in the blanks. **04**

1) A single vertex is a path with length is _____
2) If A is skew-symmetric matrix then _____
3) There are _____permutation of 'n' distinct objects in a circle.
4) A complete graph with 'n' vertices has ____ edges.

Q.2 A) 1) Explain Boolean matrix. **03**

2) Define function with example. **03**

B) 1) State the fleury's Algorithm. **04**

2) Show that $n_{P_{n-1}} = n!$ **04**

Q.3 A) Solve the following equation by reduction method **07**

$$x + 3y + 3z = 12$$
$$x + 4y + 4z = 15$$
$$x + 3y + 4z = 13$$

B) Define (G, *) be a group and show that each element in G has only one inverse in G. **07**

Q.4 A) Prove that following equivalence **07**

$$\sim(P \wedge Q) \rightarrow (\sim P \vee (\sim P \vee Q)) \equiv \sim P \vee Q$$

B) Define : **07**

1) Walk 2) Path 3) Cycle 4) Trail with example

Q.5 A) Obtain the Disjunctive Normal form & Conjunctive normal form. **08**

$$(\sim P \vee \sim Q) \rightarrow (P \Leftrightarrow \sim Q)$$

B) Explain the Applications of the Residue Arithmetic's to computers. **06**

Q.6 A) Explain the Warshall's algorithm & using this algorithm find the transitive closure of the given relation. **09**

A = {1, 2, 3, 4} & R = { (1, 1), (1, 4), (2, 2), (2, 3), (3, 2), (3, 3), (4, 1), (4, 4) }

B) Explain Complete graph & Regular graph. **05**

Q.7 A) A family of 3 sisters & 5 brothers to be arrange for a photograpgh. In how many ways they can be sited if **07**

1) No condition
2) All the sister sit together

B) For the parity check matrix **07**

$$H = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Determine (2, 5) encoding function $e_H : B^2 \rightarrow B^5$

Seat No.	

MCA (Science) (Semester – I) (New) (CBCS) Examination, 2017
OPEARTIONS RESEARCH

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1) Q.1 and Q.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 alternatives. **10**

1) Operation Research attempts to find the best & _____solution to a problem.
   a) Optimum b) Perfect c) Degenerate d) None of above

2) The objective function & constraints are linear relationship between _____
   a) Variables b) Constraints c) Function d) All of above

3) Graphic method can be applied to solve a LPP when there are only ____variable.
   a) One b) More than one c) Two d) Zero

4) If the feasible region of a LPP is empty, the solution is _____
   a) Infeasible b) Unbounded
   c) Alternative d) None of these

5) In simplex method we add _____ variables in the case of '___'
   a) Slack variable b) Surplus variable
   c) Artificial variable d) None of these

6) _____is another method to solve a given LPP involving some artificial variable?
   a) Big-M method b) Method of Penalties
   c) Two-phase simplex method d) None of these

7) A feasible solution to a transportation problem containing m origins & n destination is said to be _____
   a) Independent b) Degenerate
   c) Both A & B d) Non – degenerate

8) One can find the initial basic feasible solution by using ____?
   a) VAM b) MODI c) Optimality test d) None of these

9) A s-t cut is a partition (A, B) of the vertices _____
   a) $S \in A$ & $t \in B$ b) $t \in A$ & $S \in B$

c) S ∈ A & t ∈ A d) t ∈ A & t ∈ B

10) If the total supply is less than the total demand, a dummy source (row) is included in the cost matrix with _____
a) Dummy demand b) Dummy supply
c) Zero cost d) Both A & B

B) Fill in the blanks. **04**

1) _____path is a simple s→t path P in the residual graph G.
2) An extreme point is the _____ point of the set.
3) Critical event is defined as the difference between _____&___ event time.
4) The long form of Project management PERT is _____.

Q.2 A) Define : 1) Feasible solution **04**
2) Basic feasible solution

B) Explain convex function with example. **03**

C) Write the Advantages of Linear programming Techniques. **03**

D) A hyperplane in R^n is a convex set. **04**

Q.3 A) Explain the graphical method of a solving a linear programming problem involving two variables. **07**

B) Use Two-phase simplex method to the solve following LPP. **07**

Maximize $Z = 5x_1 + 3x_2$

Subject to the constraints

$2x_1 + x_2 \leq 1,\ x_1 + 4x_2 \geq 6\ \&\ \ x_1 \geq 0\ \&\ x_2 \geq 0$

Q.4 A) Solve the following problem by dual simplex method **07**

Maximize $Z = 3x + y$

subject to the constraints

$x + y \geq 1,\ 2x + 3y \geq 2\ \&\ x \geq 0, y \geq 0.$

B) Explain the Kuhn-Tucker condition. **07**

Q.5 A) Find the Initial Basic solution of the following Transportation problem **08**

Warehouse factory	W_1	W_2	W_3	W_4	Factory capacity
F1	19	30	50	10	7
F2	70	30	40	60	9
F3	40	8	70	20	18
Warehouse requirement	5	8	7	14	34

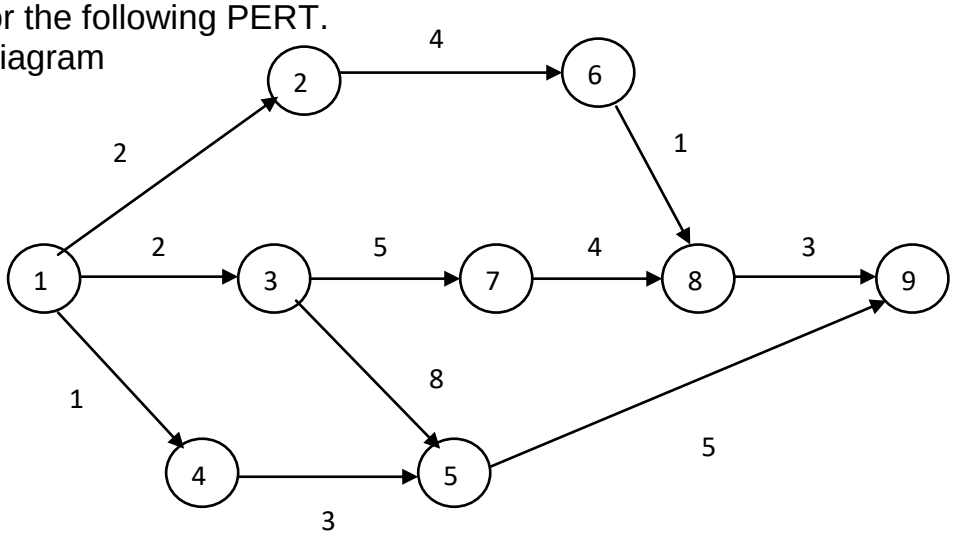
B) If X is any feasible solution to the primal & W is any feasible solution to the dual problem by simplex method then $\mathrm{CX} \leq \mathrm{b^T W}$ **06**

Q.6 A) Explain the Max-flow Min-cut Theorem. **07**

B) Explain the Matroid with example. **07**

Q.7 **A)** Determine the critical path & calculate the slack time for each event for the following PERT. **08**

Diagram



B) Explain the ford-fulkerson algorithm. **06**

Seat No.	

M.C.A.(Science)(Semester-I) (New) (CBCS) Examination, 2017
Digital Circuits and Microprocessors

Day & Date: Tuesday, 25-04-2017 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) Which is the basic stack operation
   a) PUSH b) POP
   c) Both a and b d) None of these

2) Which technology using the microprocessor is fabricated on a single chip
   a) POS b) MOS
   c) ALU d) ABM

3) A combinational circuit that selects one from many inputs
   a) encoder b) decoder
   c) mux d) None of the above

4) The main difference between JK and RS flip-flop is that
   a) JK flip-flop does not need a clock pulse
   b) JK flip-flop is acronym of junction cathode multivibrator
   c) JK flip-flop accepts both inputs as 1
   d) None of the above

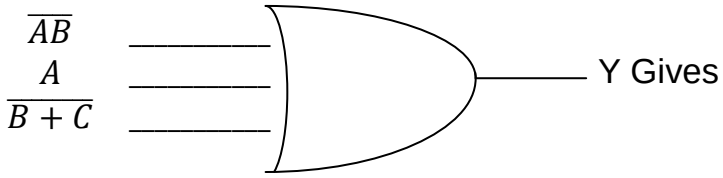
5) How many truth table entries are necessary for a four-input circuit
   a) 16 b) 12
   c) 8 d) None of these

6) A simple flip-flop
   a) Is a four state device b) Is 2 bit memory
   c) has nothing to do with memory d) None of the above

7) How many different states does a 3-bit asynchronous counter have
   a) 8 b) 4
   c) 16 d) None of the above

8) The CF is known as
   a) Condition flag
   b) Common flag
   c) Carry flag
   d) None of the above

9) NOP instruction introduces
   a) Address
   b) Delay
   c) Memory location
   d) None of the above

10) 

   a) $\overline{AB}.A.\overline{B+C}$
   b) $\overline{AB}+\overline{B+C}$
   c) $\overline{A+B+C}$
   d) None of these

B) State true or false: **04**

1) Data transfer group of instructions does not affect the flags
2) INC destination increments the content of destination by 1
3) Control bus is bidirectional.
4) The IP is 8 bits in length.

Q.2 A) What is decoder? Explain 3:8 decoder. **08**

B) Write 8085 program to exchange contents of two memory locations. **06**

Q.3 A) What is multiplexer? Explain 4:1 multiplexer. **08**

B) Explain working of T Flip-Flop. **06**

Q.4 A) Explain Buffered system bus of 8086 in minimum mode. **08**

B) Draw timing diagram for LXI instruction **06**

Q.5 A) What is register? Explain 4-bit serial in parallel out shift register. **08**

B) Explain derived logic gates. **06**

Q.6 A) What is counter? Explain 2-bit ripple up asynchronous counter. **08**

B) Explain working of half subtracter. **06**

Q.7 A) Explain stack and machine control instructions of 8085. **08**

B) Explain code segment and stack segment of 8086. **06**

SLR-K – 06

Seat No.	

M.C.A. (Science) (Semester – I) (New) (CBCS) Examination, 2017
Management

Day & Date: Thursday, 27-04-2017 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) An entry recorded on both side of the cash Book is known _____as entry.
   a) Opening b) Closing c) Contra d) Transfer

2) In SWOT analysis W stands for _____.
   a) White b) Whole c) Waste d) Weakness

3) Training to the staff improves _____.
   a) Working skill b) Tension
   c) Negligence d) Working Problems

4) Strategy helps the organization to achieve its _____.
   a) Targets b) Goals c) Budget d) Desire

5) Cost unit for Furniture is _____.
   a) Kgs b) Number c) Length d) Height

6) Passbook is issued by _____.
   a) Bank b) Creditor c) Lender d) Customer

7) Which of the following is a Current Asset?
   a) Building b) Plant c) Machinery d) Cash

8) _____discount will always appear in the books of Accounts.
   a) Cash b) Bank c) Trade d) Quantity

9) Key success variable for sugar Industry is _____.
   a) Number of Insurance Policies
   b) Number of Customers
   c) Recovery per tone
   d) Complaints of Customers

10) A purchase of worse in cash should be debited to
   a) Live stock A/c b) Cash A/C
   c) Bank A/C d) Suppliers A/C

B) State True or False: **04**

1) ABC or EOQ techniques are not used for Material Management.
2) RBI is the regulatory Authority for Banking Industry in India.
3) Debtor means to whom the businessman has to pay the amount.
4) M/S stands for More Information System.

Q.2 A) Write short Notes on: **08**

1) Importance of ratio analysis.
2) Impact of Brand & Logos

B) Explain the following: **06**

1) Crossing of a cheque
2) Budget committee

Q.3 A) From the following information prepare production budget for the month of Sept.2015 **07**

Product :	Estimated stock on 1st sept 2015	Estimated stock on 30th sept 2015	Estimated sales as per Budget
M	6000	5000	38000
N	4000	3000	24000

B) What is EOQ? **07**

From the following data work out the EOQ of a particular Component.

Annual Demand 5000 units — Ordering Cost Rs.60 per order
Price per unit – RS 100 — Inventory Carrying Cost 15 % on average inventor

Q.4 A) From the following Figures prepare profit & loss Account & ascertain the amount of Net Profit. **07**

Postage A/C	Rs.4300	Commission received	Rs 1700
Salaries A/C	67000	Insurance A/C	2350
Depreciation A/C	3900	Printing & stationery	1400
Dividend received	790	Gross profit	115600
Office rent A/C	12000		
Bad debts A/C	670		

B) Prepare a simple cash book from the following details. **07**

2016 Aug	1.	Balance of cash	75,500
	3.	Brought additional Capital	11,000
	5.	Purchase goods from SV & Co. & paid half the amount immediately	18,000
	7.	Received Commission from Arati Traders	3,650
	8.	Salaries paid	24,000
	10.	Cash sales	8,900
	15.	Deposited into bank all cash in excess Rs.15000	

Q.5 Following information in respect of XYZ Ltd is available on 31.3.2016.

	Rs.		Rs.
Reserves	130000	Cash Balance	80000
Debtors	32000	Stock	75000
Machinery	210000	Bank Balance	67000
Sundry Creditors	58000	Building	95000
		Net profit	31000

A) Prepare the Balance sheet of the Firm and ascertain the amount of capital. **07**

B) Compute. **07**

i) Current Ratio ii) Amount of Net working capital

Q.6 Answer the following:

A) Explain the concept of SWOT **07**

B) What are the characteristics of Good Marketing Information System? **07**

Q.7 Answer the following:

A) Discuss the organization of Budget **07**

B) Explain the advantages of on the job Training. **07**

SLR-K – 7

Seat No.	

M.C.A. (Science) (Semester – I) (Old) (CBCS) Examination, 2017
INTRODUCTION TO COMPUTERS

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *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 is the volatile memory?
a) RAM b) ROM c) EPROM d) EEPROM

2) The input device that is closely related to touch screen is the?
a) Light pen b) Keyboard c) Joystick d) Mouse

3) Which one of the following printer generates characters from a grid of pins?
a) Inkjet b) Laser c) Daisy wheel d) Dot matrix

4) Which one of the following is not considered to be a system software?
a) Assembler b) Compiler c) Interpreter d)COBOL

5) Which one of the following does not generate a hardware interrupt?
a) Printer b) Hard disk
c) Floppy disk d) Program error

6) Connecting different computers in an organized manner within an office building can be termed as?
a) MAN b) WAN c) LAN d) None of these

7) The language understood by a computer without translation is called?
a) Assembly language b) High level language
c) Command language d) Machine language

8) Which number system is commonly used as a shortcut notation for groups of four binary digits?
a) Binary b) Decimal c) Octal d) Hexadecimal

9) CAD stands of _____
a) Computer aided design
b) Computer algorithm for design
c) Computer application in design
d) All of the above

10) Which one the is not input device
a) Speaker b) Mouse c) Scanner d) Keyboard

B) State True/False **04**

1) Cache memory is placed in between the CPU and ROM
2) A system that can process two or more programs is called Multiprogramming.
3) A computer system can be split into input, processing and output.
4) The overall functions of the O.S are to manage I/O, files and memory.

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

1) Compiler
2) Plotter

B) Answer the following: **08**

1) Convert Decimal to Binary $(1245)_{10}$
2) Convert Binary to Decimal $(1101)_2$

Q3 Answer the following: **08**

1) What is programming language? Why it is developed?
2) Describe the internal structure of CRT monitor. **06**

Q4 Answer the following:

A) Explain the following DOS commands. **08**

1) TREE 2) COPY 3) DOSKEY 4) CHKDSK

B). What is debugger? Explain how it helps in programming.

Q.5 Answer the following:

A) List the various scanning devices. Explain any two of them in brief. **07**

B) What is software? Explain different types of software with example. **07**

Q.6 Answer the following:

A) Describe the difference of MS-Word. **07**

B) Explain the difference between machine language & assembly language. **07**

Q.7 Answer the following:

A) What is Operating System? Explain different roles played by O.S. **07**

B) Explain the concept of spread sheet. **07**

Seat No.	

M.C.A. (Science) (Semester – I) (Old) (CBCS) Examination, 2017
PROGRAMMING USING C

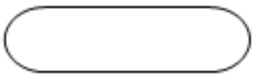
Day & Date: Thursday, 20-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction : *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 geometrical figure shown below in flow chart represents _____.



a) Input/output b) Terminator c) Processing d) Connector

2) The words if, else, auto, float ect. have predefined meaning and users can not use them as variables. These words are called _____.
a) Constants b) Identifiers c) Data types d) Keywords

3) Diagrammatic or symbolic representation of algorithm is called as ___
a) Data flow diagram b) Entity Relationship Diagram
c) Class diagram d) Flow chart

4) Which operator has the lowest priority?
a) ++ b) * c) % d) +

5) The type cast operator is _____.
a) (type) b) // c) Cast( ) d) /* */

6) What is the output of following program?

```
Void main( )
{
        printf("%d", 'B' < 'A');
}
```

a) Error b) 0 c) 1 d) B < A

7) Int **x;
a) X is a not pointer b) X is a pointer to pointer
c) X is long pointer d) The declaration is invalid

8) The operator & is _____ operator.
a) Logical b) Arithmetic c) Relational d) Bitwise

9) Which header file should be included to use functions like malloc( ) and calloc( )?
a) memory.h b) stdlib.h c) stdio.h d) dos.h

10) An external variable is one _____.
   a) which resides in the memory till the end of execution of the program
   b) which is globally accessible by all functions in the program
   c) which is declared outside the body of all the functions
   d) all of the these

B) State whether true or false. **04**

1) The address of a variable is yield by the unary operator '&'.
2) The memory size of union is equal to the memory size of the highest member variable.
3) The function *ftell( )* returns long type value.
4) '*register*' is the default storage class of all the local variable.

Q.2 A) Write short notes on the following: **08**

1) Algorithm
2) Increment and decrement operator

B) Answer the following: **06**

1) Draw a flow chart to find sum of 1 – 10 numbers.
2) List out all the relational operators and its use.

Q.3 Answer the following:

A) Explain the variable data types with an example. **07**

B) Write a program to get character from the user and convert the character into uppercase and store it in a file "myfile.txt". **07**

Q.4 Answer the following:

A) Explain any four string handling functions with example. **08**

B) Write a program to calculate factorial of a number using recursion function. **06**

Q.5 Answer the following:

A) Explain dynamic memory allocations in detail. **08**

B) Design an algorithm to find the maximum and minimum elements in an array of 10 elements. **06**

Q.6 Answer the following:

A) Compare in terms of their functions, the following pairs of statements- **08**
   i) while and do while
   ii) break and continue

B) Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 8. **06**

Q.7 Answer the following:

A) What is file? How would use functions fread( ) and fwrite( )? **08**

B) Write a program that converts a decimal number into binary. **06**

Seat No.	

MCA (Science) (Semester – I) (Old) (CBCS) Examination, 2017
Discrete Mathematical Structures

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1) Q.1 and Q.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 alternatives. **10**

1) Let L be lattice then for any a, b, ∈ L, $a \wedge b = a$ if & only if
   a) a V b = b b) a V b = a c) a ∧ b = a d) a ∧ b = a

2) There is no more than one edge between a pair of vertices is called_____
   a) Multigraph b) Regular graph
   c) Simple graph d) None of these

3) In propositional logic, which of the following is equivalent to P∨(P∧Q)
   a) P b) Q c) P∨Q d) None of these

4) A Relation R on a set A is called Poset if
   a) Reflexive b) Antisymmetric
   c) Transitive d) All of the above

5) The function $I_X: X \to X$ such that $I_X(x) = x$ for all $x \in X$ is called the
   a) Constant function b) Identity function
   c) One-one function d) None of these

6) The efficiency of a communication channel can be improved by a device called
   a) Encoder b) Decoder c) Detectable d) Receiver

7) In how may way committee of 6 be chosen from 10 people?
   a) P (10, 5) b) C (10, 5) c) P (10, 6) d) C (10,6)

8) The 'Equal' Relation on a set is
   a) Symmetric Relation b) Transitive Relation
   c) Partial order relation d) Equivalent Relation

9) A square matrix A is said to be a non – singular matrix if
   a) |A|=0 b) |A|≠0 c) |A|=1 d) A=0

10) For any binary operation '.' on a set if identity element exists then

it is

a) Unique b) Different c) Equal d) None of these

B) Fill in the blanks. **04**

1) A single vertex is a path with length is _____
2) If A is skew-symmetric matrix then _____
3) There are _____permutation of 'n' distinct objects in a circle.
4) A complete graph with 'n' vertices has ____ edges.

Q.2 A) 1) Explain Boolean matrix. **03**

2) Define function with example. **03**

B) 1) State the fleury's Algorithm. **04**

2) Show that $n_{P_{n-1}} = n!$ **04**

Q.3 A) Solve the following equation by reduction method **07**

$$x + 3y + 3z = 12$$
$$x + 4y + 4z = 15$$
$$x + 3y + 4z = 13$$

B) Define (G, *) be a group and show that each element in G has only one inverse in G. **07**

Q.4 A) Prove that following equivalence **07**

$$\sim(P \wedge Q) \rightarrow (\sim P \vee (\sim P \vee Q)) \equiv \sim P \vee Q$$

B) Define : **07**

1) Walk 2) Path 3) Cycle 4) Trail with example

Q.5 A) Obtain the Disjunctive Normal form & Conjunctive normal form. **08**

$$(\sim P \vee \sim Q) \rightarrow (P \Leftrightarrow \sim Q)$$

B) Explain the Applications of the Residue Arithmetic's to computers. **06**

Q.6 A) Explain the Warshall's algorithm & using this algorithm find the transitive closure of the given relation. **09**

A = {1, 2, 3, 4} & R = { (1, 1), (1, 4), (2, 2), (2, 3), (3, 2), (3, 3), (4, 1), (4, 4) }

B) Explain Complete graph & Regular graph. **05**

Q.7 A) A family of 3 sisters & 5 brothers to be arrange for a photograpgh. In how many ways they can be sited if **07**

1) No condition
2) All the sister sit together

B) For the parity check matrix **07**

$$H = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Determine (2, 5) encoding function $e_H : B^2 \rightarrow B^5$

Seat No.	

M.C.A.(Science)(Semester-I) (Old) (CBCS) Examination, 2017
Digital Circuits and Microprocessors

Day & Date: Tuesday, 25-04-2017 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) Which is the basic stack operation
   a) PUSH b) POP
   c) Both a and b d) None of these

2) Which technology using the microprocessor is fabricated on a single chip
   a) POS b) MOS
   c) ALU d) ABM

3) A combinational circuit that selects one from many inputs
   a) encoder b) decoder
   c) mux d) None of the above

4) The main difference between JK and RS flip-flop is that
   a) JK flip-flop does not need a clock pulse
   b) JK flip-flop is acronym of junction cathode multivibrator
   c) JK flip-flop accepts both inputs as 1
   d) None of the above

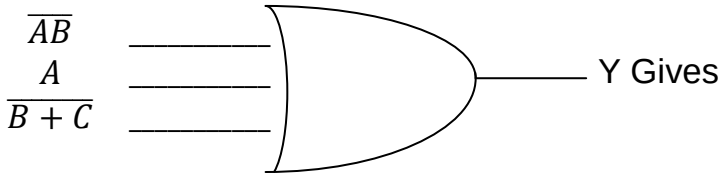
5) How many truth table entries are necessary for a four-input circuit
   a) 16 b) 12
   c) 8 d) None of these

6) A simple flip-flop
   a) Is a four state device b) Is 2 bit memory
   c) has nothing to do with memory d) None of the above

7) How many different states does a 3-bit asynchronous counter have
   a) 8 b) 4
   c) 16 d) None of the above

8) The CF is known as
   a) Condition flag
   b) Common flag
   c) Carry flag
   d) None of the above

9) NOP instruction introduces
   a) Address
   b) Delay
   c) Memory location
   d) None of the above

10) 

   a) $\overline{AB}.A.\overline{B+C}$
   b) $\overline{AB}+\overline{B+C}$
   c) $\overline{A+B+C}$
   d) None of these

B) State true or false: **04**

1) Data transfer group of instructions does not affect the flags
2) INC destination increments the content of destination by 1
3) Control bus is bidirectional.
4) The IP is 8 bits in length.

Q.2 A) What is decoder? Explain 3:8 decoder. **08**

B) Write 8085 program to exchange contents of two memory locations. **06**

Q.3 A) What is multiplexer? Explain 4:1 multiplexer. **08**

B) Explain working of T Flip-Flop. **06**

Q.4 A) Explain Buffered system bus of 8086 in minimum mode. **08**

B) Draw timing diagram for LXI instruction **06**

Q.5 A) What is register? Explain 4-bit serial in parallel out shift register. **08**

B) Explain derived logic gates. **06**

Q.6 A) What is counter? Explain 2-bit ripple up asynchronous counter. **08**

B) Explain working of half subtracter. **06**

Q.7 A) Explain stack and machine control instructions of 8085. **08**

B) Explain code segment and stack segment of 8086. **06**

SLR-K – 11

Seat No.	

M.C.A. (Science) (Semester – I) (Old) (CBCS) Examination, 2017
Management

Day & Date: Thursday, 27-04-2017 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) An entry recorded on both side of the cash Book is known _____as entry.
   a) Opening b) Closing c) Contra d) Transfer

2) In SWOT analysis W stands for _____.
   a) White b) Whole c) Waste d) Weakness

3) Training to the staff improves _____.
   a) Working skill b) Tension
   c) Negligence d) Working Problems

4) Strategy helps the organization to achieve its _____.
   a) Targets b) Goals c) Budget d) Desire

5) Cost unit for Furniture is _____.
   a) Kgs b) Number c) Length d) Height

6) Passbook is issued by _____.
   a) Bank b) Creditor c) Lender d) Customer

7) Which of the following is a Current Asset?
   a) Building b) Plant c) Machinery d) Cash

8) _____discount will always appear in the books of Accounts.
   a) Cash b) Bank c) Trade d) Quantity

9) Key success variable for sugar Industry is _____.
   a) Number of Insurance Policies
   b) Number of Customers
   c) Recovery per tone
   d) Complaints of Customers

10) A purchase of worse in cash should be debited to
   a) Live stock A/c b) Cash A/C
   c) Bank A/C d) Suppliers A/C

B) State True or False: **04**

1) ABC or EOQ techniques are not used for Material Management.
2) RBI is the regulatory Authority for Banking Industry in India.
3) Debtor means to whom the businessman has to pay the amount.
4) M/S stands for More Information System.

Q.2 A) Write short Notes on: **08**

1) Importance of ratio analysis.
2) Impact of Brand & Logos

B) Explain the following: **06**

1) Crossing of a cheque
2) Budget committee

Q.3 A) From the following information prepare production budget for the month of Sept.2015 **07**

Product :	Estimated stock on 1st sept 2015	Estimated stock on 30th sept 2015	Estimated sales as per Budget
M	6000	5000	38000
N	4000	3000	24000

B) What is EOQ? **07**

From the following data work out the EOQ of a particular Component.

Annual Demand 5000 units — Ordering Cost Rs.60 per order
Price per unit – RS 100 — Inventory Carrying Cost 15 % on average inventor

Q.4 A) From the following Figures prepare profit & loss Account & ascertain the amount of Net Profit. **07**

Postage A/C	Rs.4300	Commission received	Rs 1700
Salaries A/C	67000	Insurance A/C	2350
Depreciation A/C	3900	Printing & stationery	1400
Dividend received	790	Gross profit	115600
Office rent A/C	12000		
Bad debts A/C	670		

B) Prepare a simple cash book from the following details. **07**

2016 Aug	1.	Balance of cash	75,500
	3.	Brought additional Capital	11,000
	5.	Purchase goods from SV & Co. & paid half the amount immediately	18,000
	7.	Received Commission from Arati Traders	3,650
	8.	Salaries paid	24,000
	10.	Cash sales	8,900
	15.	Deposited into bank all cash in excess Rs.15000	

Q.5 Following information in respect of XYZ Ltd is available on 31.3.2016.

	Rs.		Rs.
Reserves	130000	Cash Balance	80000
Debtors	32000	Stock	75000
Machinery	210000	Bank Balance	67000
Sundry Creditors	58000	Building	95000
		Net profit	31000

A) Prepare the Balance sheet of the Firm and ascertain the amount of capital. **07**

B) Compute. **07**

i) Current Ratio ii) Amount of Net working capital

Q.6 Answer the following:

A) Explain the concept of SWOT **07**

B) What are the characteristics of Good Marketing Information System? **07**

Q.7 Answer the following:

A) Discuss the organization of Budget **07**

B) Explain the advantages of on the job Training. **07**

SLR-K – 12

Seat No.	

M.C.A. (Science)(Semester – II) (New) (CBCS) Examination, 2017
OBJECT ORIENTED PROGRAMMING USING C++

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 10:30 AM to 01.00 PM

N.B. : *1)* ***Q.1*** *and* ***Q2*** *are* ***compulsory*** *Questions.*
2) ***Attempt*** *any* ***Three*** *Questions from* ***Q .No 3*** *to No.7.*
*3) Figures to the r****ight*** *indicate full* ***marks****.*

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

1) Which one is not a correct variable type in C++?
   a) Float b) Real c) Int d) double

2) Pointers are of _____.
   a) Integer data type b) Character data type
   c) Unsigned integer data types d) None of these

3) Default of the following is not the member of calss?
   a) No argument b) One Argument
   c) Two Argument d) None of these

4) Which of the following is not the member of class?
   a) Static function b) Friend function
   c) Const function d) Virtual function

5) How many types of polymorphisms are supported by C++?
   a) 1 b) 2 c) 3 d) 4

6) Which of the following correctly describes overloading of functions?
   a) Virtual polymorphism b) Transient polymorphism
   c) Ad-hoc polymorphism d) Pseudo polymorphism

7) Which of the following ways are legal to access a class data member using this pointer?
   a) This->x b) This. x c) *this. x d) *this-x

8) Which of the following is not a type of Inheritance?
   a) Multiple b) Multilevel c) Distributive d) Hierarchical

9) Inline function are expanded during_____.
   a) Run time b) Compile c) Debug d) Coding Time

10) Which one of the following option is correct?
   a) Friend function can access public data members of the class.
   b) Friend function can access protected data member of the class.
   c) Friend function can access private data members of the class.
   d) All of the above.

B) True / False: **04**

1) Type specifier is optional when declaring a function.
2) Sub classes may also be called child classes/Derived classes.
3) A function may any number of return statements each returning different values.
4) Adding a derived class to a base class requires fundamental changes to the base class.

Q.2. A) Write short notes on the following. **08**

Parameterized Constructor
Virtual functions

B) Answer the following: **06**

Explain file stream classes in cpp.
Explain visibility mode in inheritance.

Q.3 Answer the following: **14**

A) Explain dynamic memory allocation in C++. State the difference between malloc and new.
B) Explain Exception handing mechanism with one example.

Q.4 Answer the following: **14**

A) Write a program in C++ to generate Fibonacci series by overloading prefix operator.
B) Explain inline function with example.

Q.5 Answer the following **14**

A) Explain dynamic memory allocation in C++.
B) Explain any three manipulators with example.

Q.6 Answer the following **14**

A) Write a note on static member and member function. Write a program to create the object of Student class total no. of students created.
B) Write the Differences between public and private derivation of inheritance.

Q.7 Answer the following **14**

A) What is function overloading and operator overloading. Write a program to swap the values using function overloading.
B) Explain how do the following statement differ?
   a) char * const p;
   b) char const *p;

SLR-K 13

Seat No.	

M.C.A. (Science) (Semester – II) (New) (CBCS) Examination, 2017
DATA STRUCTURES

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B.: *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**

1) A two dimensional array int a [2][4] contains _____ elements.
a) 2 b) 4 c) 8 b) 16

2) Through Linked List one cam implement
a) Stack b) Queue c) Graph d) All of these

3) Priority Queue can be
a) Ascending b) Descending
c) Both (a) and (b) d) None of these

4) Which of the following is not a feature of Tree?
a) It is a Data Structure
b) It has a main node-root
c) It has only one path from a node to another node
d) It can have cycle

5) Stack is _____ structure
a) LIFO b) FIFO c) FILO d) FCFS

6) The list with no nodes on it is called _____
a) Empty List b) Null List
c) Both (a) and (b) d) None of these

7) In Queues, the end form where items inserted is called _____
a) Rear b) Front c) Top d) Base

8) A _____ is an ordered collection of items from which items may be deleted at one end and onto which items may be inserted at the another end
a) Stack b) Array c) Queue d) Graph

9) The address of the first element of an array is called _____
a) First Address b) Base Address
c) Initial Address d) Location Address

10) When we traverse the tree in pre-order ,_____ node is visited first.
a) The top b) The end c) root d) binary

B) State whether True or False: **04**

1) All the nodes are concentrated in the right sub tree while the left sub tree is empty is called a right skewed tree.
2) A sparse matrix is a matrix having very few non-zero elements and large number of elements are zero.
3) Children of the different parent are called siblings.
4) In DFS method, we display the tree level wise.

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

1) Sparse Matrix
2) Hash indexing

B) Answer the following: **06**

1) What is Priority queue?
2) What is complexity of an algorithm?

Q.3 Answer the following:

A) Define the term Sorting, Perform selection sort algorithm to sort following numbers in ascending order. **07**
Datap:66, 35, 105, 13, 78, 55, 28, 86, 49, 65, 99, 23, 1, 81, 44

B) Describe height balanced trees with example. **07**

Q.4 Answer the following:

A) Explain Binary tree indexing **07**

B) Define the term data type. Discuss in detail Primitive and Composite data type with suitable example. **07**

Q.5 Answer the following:

A) Discuss in detail meaning of Backtracking and its mechanism with suitable example. **07**

B) Perform Binary search and Linear search and show the results of the both of the search on given series to find the digit 100 in it. **07**
Series: 6, 35, 98, 13, 89, 77, 55, 103, 613, 100, 19, 61.

Q.6 Answer the following:

A) Differentiate between Stack and Linked List **07**

B) What is Queue? Explain its different types. **07**

Q.7 Answer the following:

A) What is stack? Write an algorithm to push element in to a stack using array. **07**

B) Write a program to implement insertion operation on a singly linked list. **07**

SLR-K-14

Seat No.	

M.C.A. (Science) (Semester-II) (New) (CBCS) Examination, 2017
OPERATING SYSTEM

Day & Date: Monday, 24-04-2017 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 makrs.*

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

1) A vulnerability of firewalls is spoofing, in which an unauthorized host pretends to be _____ host by meeting some criterion.
   A) Invader B) Workstation machine
   C) Authorized D) Server

2) The _____ provides the means for proper use of hardware, software and data in the question of the computer system.
   E) Hardware system F) Computer tool
   G) I/O devices H) Operating system

3) Time sharing requires interactive computer system, which provides ____ communication between the user and the system.
   A) Direct B) Indirect
   C) Simplex D) Easy

4) The list of processes waiting for a particular ____ is called a _____queue. Each _____ has its own _____ queue.
   A) Mailbox B) Device
   C) Circular D) Multilevel

5) Cooperative processes require an inter-process communication mechanism that will allow them to exchange _____
   A) Data and information B) Text section
   C) Lists D) Program Counter

6) ____ SJF scheduling is sometimes called shortest-remaining-time-first scheduling.

A) Shortest Job Finish
B) Non-preemptive
C) Preemptive
D) Gantt Chart

7) With_____ allocation, each file is a ____ list of disk blocks; the disk blocks may be scattered anywhere on the dist.
A) Contiguous
B) Linked
C) Double ended
D) None of these

8) ___ graph, it can be shown that, if the graph contains no cycles, then no process in the system is deadlocked.
A) Processor allocation
B) Resource allocation
C) Mutual exclusion
D) Transaction management

9) Paging involves breaking logical memory into blocks of the same size called ____
A) Frames
B) Fragments
C) Segments
D) Pages

10) Priority scheduling algorithm can leave some ____ priority processes waiting indefinitely.
A) High
B) Medium
C) Low
D) None of these

B) State True or False **04**

1) A volatile storage loses its contents when the power to the device is removed.
2) The sequence of directories searched when a file is named, this operation is called search path.
3) The virtual memory abstracts main memory into a large, uniform array of storage, separating logical memory as viewed by the user from physical memory.
4) A single threaded process has one program counter specifying the next instructions to execute.

Q2 A) Write a short note **08**

i. Critical Region
ii. PCB

B) Answer the following **06**

i. What do you mean by Swapping?
ii. Define the term File.

Q3 Answer the following **07**

A) Explain different kinds of fragmentation with suitable example?
B) 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

Q4 Answer the following

A) Explain mechanism of Round Robin scheduling for processes given below - **07**

PID	Name	Burst Time	Time Quantum
101	ABC	20 minute	05 Minute
102	XYZ	05 minute	
103	PQR	15 minute	
104	MNO	10 minute	

B) State the meaning of allocation methods. Discuss various kinds of allocation method in file system implementation. **07**

Q5 Answer the following

A) State the meaning of Demand Paging. Explain in detail various step to handle a page fault? **07**

B) Explain in detail working of First Come, First Served algorithm when a Disk head is positioned at 85. **07**
Queue – 95, 38, 81, 49, 64, 102, 51, 55, 68, 72, 12

Q6 Answer the following

A) What do you mean by virus? Discuss in detail different kinds of virues to cause a program threat. **07**

B) Explain in detail principle of process synchronization for handling producer-consumer problem? **07**

Q7 Answer the following

A) What do you mean by Multiprocessor time sharing systems? Differentiate between Distributed OS and Network OS? **07**

B) Define the term Safe and Unsafe state. Discuss in detail methods to detect deadlock? **07**

SLR-K - 15

Seat No.	

M.C.A. (Science) (Semester-II) (New) (CBCS) Examination, 2017
SOFTWARE ENGINEERING

Day & Date: Saturday, 29-04-2017 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 indicates full marks

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

1) Selection of particular life cycle model is based on
   a) Requirements
   b) Technical knowledge of development team
   c) Project types and associated risks
   d) All of the above

2) Regression testing is a major part of which of the life cycle?
   a) Waterfall model b) V model
   c) Iterative model d) All of the above

3) Which of the following is not type of SDLC models?
   a) Big bang model b) Code and fix model
   c) Spiral model d) Capability Maturity model

4) Which activity is carried out first?
   a) Verification b) Validation
   c) Both d) None of the above

5) Which of the following is an indirect measure of product?
   a) Quality b) Complexity
   c) Reliability d) All of the mentioned

6) The user system requirements are the parts of which document
   a) SDD b) SRS
   c) DDD d) None of these

7) Behavioral testing also known as
   a) White box testing b) Black box testing
   c) Gray box testing d) None of these

8) The construction of object-oriented software begins with the creation of
   a) Design model
   b) Analysis model
   c) Code levels
   d) Both design and analysis model

9) Unit testing is done by
   a) Users
   b) Developers
   c) Customers
   d) None of these

10) Which of the following supports the concept of hierarchical classification?
   a) Polymorphism
   b) Encapsulation
   c) Abstraction
   d) Inheritance

B) State whether following statements are true or false: **04**

1) In waterfall model, output of one phase is input to next phase.
2) Software doesn't "Wear out".
3) Verification is focused on Product.
4) Software costs more to maintain than it does to develop.

Q.2 A) Write short notes on the following **08**

1) Principles for software design
2) Software characteristic

B) Answer the following **06**

1) What is software prototyping?
2) Explain Basic Path Testing.

Q.3 Answer the following

a) Explain linear sequential model in detail. **06**
b) What is testing? Explain the test case parameters with an example. **08**

Q.4 Answer the following

a) Explain Metric in process and the project domains. **08**
b) Explain McCall's quality factors. **06**

Q.5 Answer the following

a) Explain System Testing in detail. **08**
b) Explain Software design and software engineering. **06**

Q.6 Answer the following

a) Explain Object oriented concepts in detail **07**
b) Explain Software Requirements Specification and its characteristics. **07**

Q.7 Answer the following

a) Explain elements of the analysis model. **8**
b) Explain behavioral modeling. **6**

SLR-K – 19

Seat No.	

M.C.A. (Science) (Semester – II) (Old) (CBCS) Examination, 2017
OBJECT ORIENTED PROGRAMMING USING C++

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 10:30 AM to 01.00 PM

N.B. : *1) **Q.1** and **Q2** are **compulsory.***
*2) Attempt any **three** Questions from Q .No **3** to No.**7**.*
*3) Figures to the r**ight** indicate full **marks**.*

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

1) The act of communicating with an object to get something done called as_____.
   a) Message passing b) Function calling
   c) Initialization d) None

2) Ability of a function or operator to act in a different way on different data type is called as _____.
   a) Inheritance b) Overloading
   c) Virtual base class d) This pointer

3) _____ can not be virtual.
   a) Functions b) Destructors c) Constructors d) class

4) _____ means that the code is associated with the given process is not known until the time of call run time.
   a) Abstraction b) Overloading
   c) Static binding d) Dynamic binding

5) _____ are the operators that are used to format data display.
   a) Manipulators b) Format specification
   c) Both a & b d) None

6) When properties of one class are inherited by more than one class as _____ inheritance.
   a) Hierarchical b) Hybrid c) Multiple d) multilevel

7) The exception handling mechanism in c++ is designed to handle_____ exceptions.
   a) Asynchronous b) Parallel
   c) Synchronous d) Both a & c

8) In the declaration, template <class T>, T is _____.
   a) Template b) Data type c) Reference d) All of above

9) _____ allow us to use same function call to execute member functions of different classes.
   a) Function overloading b) Massage passing
   c) Virtual functions d) None

10) Binding of data and functions together is called_____.
   a) Abstraction b) Data hiding c) Encapsulation d)None

B) Fill in the blanks. **04**

1) _____ function can be called using class name.
2) Program using _____ function take up more memory.
3) Friend function usually have _____ as argument.
4) In protected derivation, public members of base class become _____ members of derived class.

Q.2. A) Write short notes on the following. **08**

Basic stream classes
Pointer to objects

B) Answer the following: **06**

Explain Default argument to a function.
Explain passing parameter to base class constructor.

Q.3 Answer the following: **14**

A) When will you make a function inline? Why?
B) What is generic programming? How it is implemented in C++?

Q.4 Answer the following: **14**

A) What are the special characteristics of constructor function? Explain copy constructor?
B) Overload unary- using friend function?

Q.5 Answer the following **14**

A) What is Polymorphism? Explain run time polymorphism with examples.
B) Explain call by reference and return by reference.

Q.6 Answer the following **14**

A) Explain array of objects? Why we need it?
B) Explain multilevel inheritance with examples?

Q.7 Answer the following **14**

A) What is function overloading explain with examples.
B) When is catch (…) handler used?

SLR-K- 20

Seat No.	

M.C.A. (Science) (Semester – II)(CBCS) (Old) Examination, 2017
DATA STRUCTURE

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction : *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**

1) If binary tree contains n nodes, then its possible maximum height is _____ & minimum height is _____ respectively.
a) n & $\log_2(n+1)$ b) $\log_2 n$&n c) 2n-1 & n b) 2^n&n+1

2) Which of the following algorithm works by taking a decision that appears best at that moment?
a) Greedy algorithm b) Divide & conquer
c) Backtracking d) All of these

3) Match the following.

1 Completeness	i) How long does it take to find solution
2 Time Complexity	ii) How much memory needs to perform the Serach
3 Space Complexity	iii) Is the strategy guaranteed to find the solution when there is one

a) 1-iii, 2-ii, 3-i b) 1-i, 2-ii, 3-iii c) 1-iii, 2-i, 3-ii d) 1-i, 2-iii, 3-ii

4) Two or more nodes which have same parent is called _____
a) Sibling b) Brothers c) both a & b c) none of these

5) The node which has only incoming edges but not having outgoing edge is called _____
a) Source b) Sink c) both a & b d) none of these

6) Merge sort has _____ performance.
a) O(nlogn) b) $O(n^2)$ c) O(1) d) O(n)

7) Which of the following abstract data type can be used to represent a one to many relation?
a) Tree only b) Graph only
c) Both a & b d) None of these

8) Which of the following statement is False?
   a) Every tree is bipartite graph
   b) A tree cannot contain cycle
   c) A tree with n nodes can contain n+1 edge
   d) A tree is connected graph

9) If every node u in G has same degree then it is known as _____ Graph
   a) Isolated b) regular c) finite d) Strongly connected

10) Which of the following searching technique may be work with sorted as well as unsorted data?
   a) Linear search b) Hashing
   c) Linked search d) Binary search

B) State whether True or False: **04**

1) Topological sorting is not possible if there is a cycle.
2) random numbers are used to take decision in backtracking algorithm.
3) Quick Sort also known as partition exchange sort.
4) Extended binary tree also known as complete tree.

Q.2 **A)** What is an AVL tree? Explain AVL rotations with example **06**
B) What is an abstract Data Type? Explain List ADT, Stack ADT & Queue ADT **08**

Q.3 **A)** What is data structure? Explain linear & Non-Linear data structure **06**
B) Explain how to reverse string using stack. Explain with appropriate example **08**

Q.4 **A)** What is Queue? Explain Array implementation of Queue using appropriate functions **06**
B) What is binary search? Write an algorithm for binary search. Give one example. **08**

Q.5 **A)** What is circular Queue? Explain process of inserting & deleting node from circular queue. **06**
B) Explain concept of polynomial arithmetic with linked list. Give appropriate example. **08**

Q.6 **A)** What is binary tree? Explain linked representation with example. **06**
B) Sort following data using bubble sort: 23, 12, 20, 42, 88, 92, 8, 56. Give analysis. **08**

Q.7 **A)** What is Hashing? Explain different hashing functions with example **06**
B) What is traversing? Explain Traversing technique in graph. **08**

SLR-K-21

Seat No.	

M.C.A. (Science) (Semester-II) (Old) (CBSC) Examination, 2017
OPERATING SYSTEM

Day & Date: Monday, 24-04-2017 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 the right indicate full marks.

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

1) A…… is a named collection of related information that is recorded on secondary storage.
   A) Physical storage B) File
   C) Disk structure D) Device

2) If policy is to use the recent past as an approximation of the near future, then policy is to replace the pages that has not been used for the longest period of item, then this approach is the …… algorithm.
   E) FIFO F) Most Frequently Used
   G) Least Frequently Used H) Least Recently Used

3) A…… is a memory management scheme that supports user view of memory.
   A) Segmentation B) Fragmentation
   C) Memory Support System D) Swapping

4) The ……. share the memory and the resources of the process to which they belong.
   A) CPU B) Devices
   C) Thread D) Job Queue

5) In page table, when a bit is set to ……., the associated page is in the process's logical address space.
   A) Null B) Valid
   C) 14 bit D) Invalid

6) A state is ……. if the system can allocate resources to each

process in some order and still avoid a deadlock.

A) Unsafe B) Safe
C) Both (a) and (b) D) Blocking

7) ……. is mechanism for controlling the access of processes or users to the resources defined by a computer system.

A) Security B) Protection
C) Resource utilization D) Error Detection

8) A……..generally also includes the ……. stack, which contains temporary data.

A) Kernel B) Memory
C) CPU D) Process

9) ……. System is a logical extension of multiprogramming, in which CPU executes multiple jobs by frequently switching among them.

A) Clustered B) Time Sharing
C) Handheld D) None of these

10) The …… is the time for disk arm to move the heads to the cylinder containing the desired sector.

A) Dispatch latency B) Rotational latency
C) Mount Time D) Seek Time

B) State True of False **04**

1) A major problem with Shortest Job First Scheduling algorithm is aging.
2) Multiprogramming increases CPU utilization by organizing jobs so that the CPU always has none to execute.
3) A virtual memory is a technique that allows the execution of a process that is not completely in memory.
4) User-level threads are managed by CPU library and the kernel is completely aware of them.

Q2 A) Answer the following **06**

i) What do you mean by System calls?
ii) Briefly state a task of Context Switch

B) Write a short note on the following **08**

i) Priority Scheduling
ii) Semaphore

Q3 Answer the following

A) Define the term Directory. Discuss in detail the most common schemes for defining the logical structure of a directory. **07**

B) What do you mean by Process? Explain in detail the mechanism of an Inter Process Communication for the purpose of process **07**

Management.

Q4 Answer the following

A) Define the term Operating System. Explain detail various types of Operating System? **07**

B) State the principle of Least Recently Used (LRU) page replacement algorithm. Perform LRU page replacement algorithm and calculate the page fault rate on following string- **07**

Number of frames-03

Reference string – 9, 1, 2, 3, 1, 4, 1, 5, 3, 4, 1, 4, 3, 2, 3, 1, 2, 9, 1, 2

Q5 Answer the following

A) What do you mean by Deadlock? Discuss in details deadlock avoidance algorithm with suitable example. **07**

B) State and describe the principal of Shortest Seek Time First (SSTF) disk scheduling algorithm. Perform SSTF with a disk queue requests for I/O to blocks on cylinder are as follows- **07**

Queue = 88, 175, 28, 112, 13, 118, 63, 65, 38, 122, 53

Head starts at 50

Q6 Answer the following

A) What do you mean by Preemptive Scheduling? Discuss multilevel feedback queue scheduling with suitable example. **07**

B) Discuss in details concept of Demand paging by describing steps involved in handling a page fault. **07**

Q7 Answer the following.

A) What do you mean by Security? Enlist and describe in details that includes forms of accidental and malicious security violations. **07**

B) What do you mean by Network Operating System (NOS)? Elaborate NOS as CASE study and related analysis. **07**

SLR-K-22

Seat No.	

M.C.A.(Science) (Semester-II) (Old) (CBCS) Examination, 2017
Software Engineering

Day & Date: Saturday, 29-04-2017 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 indicates full marks

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

1) The software includes……..
   a) Instructions b) Data structures
   c) Documentation d) All of these

2) ……. Is a metric or combination of metrics that provides insight into software process, software project or the product itself.
   a) Measure b) Indicator
   c) Key process area d) Architecture

3) …….. is a software engineering task that brides the gap between system level requirement engineering and software design.
   a) Requirements analysis b) Risk analysis
   c) Project planning d) System design.

4) A description of each function presentation in the DFD is contained in …….
   a) Project Specification b) Control Specification
   c) Process Specification d) Product Specification

5) ……. Is a representation of the logical relationship among individual elements of data.
   a) Entity Relationship Diagram b) Data Structure
   c) State Transition Diagram d) Control Structure

6) …… is process of executing a program with intent of finding an error.
   a) Debugging b) Testing
   c) Correctness d) Perfectiveness

7) The means by which objects interact are……
   a) Methods b) Operations
   c) Messages d) Relationship

8) Which of the following is not part of software engineering layered technology?
   a) Process b) Methods
   c) Tools d) Project

9) ……. defines the properties of a data object.
   a) Relationship b) Entity
   c) Cardinality d) Attribute

10) Software is divided into separately named and addressable components, often called as ……., that are integrated to satisfy problem requirements.
   a) Fragments b) Partitions
   c) Modules d) Decompositions

B) State True/False **04**

1) Software is manufactured; it is not developed or engineered in classical sense.
2) At the core of analysis model, lies the data dictionary
3) Software architecture represents the organization of program components and implies hierarchy of control.
4) Loop testing is black box testing technique.

Q.2 A) Write short notes on the following **08**

1) White box testing
2) Function oriented metrics

B) Answer the following **06**

1) Explain the management myths in detail.
2) What is measurement? Describe about direct and indirect measures.

Q.3 Answer the following

a) Describe evolutionary software process models in brief. **07**
b) Explain the rapid application development model in detail. **07**

Q.4 Answer the following

a) Explain the concept of software quality assurance and also discuss about metrics for software quality. **07**
b) What is process metric? Explain improvements in software process. **07**

Q.5 Answer the following

a) What is software analysis? Explain analysis principles in brief. **07**
b) Explain different communication techniques for software requirement analysis. **07**

Q.6 Answer the following

a) Describe the elements of analysis model **07**
b) Explain the fundamental concepts of software design. **07**

Q.7 Answer the following

a) Explain the black box testing in detail. **07**
b) Deecuss different object oriented concepts in brief. **07**

SLR-K - 23

Seat No.	

M.C.A. (Science) (Semester – II) (Old) (CBCS) (Examination, 2017
NUMERICAL ANALYSIS

Day & Date: Friday, 28-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction :- *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** indicate **full** marks.*
*4) Use of **Calculator** is allowed.*

Q.1 A) Fill in the blanks. **05**

1) The effect of the error _____ with the order of the difference.
2) The algebraic sum of error in any difference column is _____.
3) The Newton-Raphson method fails when $f^1(x)$ is_____.
4) The convergence in bisection method is _____.
5) Error in Simpson's $\frac{3^{th}}{8}$ rule is _____

B) State whether true or false. **05**

1) In Gauss-elimination method the coefficient matrix is reduced to an upper triangular system.
2) E = 1 + Δ
3) If there is one & only one independent variable then differential Equation is called partial Differential equation.
4) Secant method is also called "reguli falsi" method.
5) The convergence in Newton-Raphson method is quadratic.

C) Define the following : **04**

1) Truncation error
2) Inherent error

Q.2

1) Prove that 1⟩ $\mu^2 = 1 + \left(\frac{1}{4}\right)\delta^2$ 2⟩$\nabla - \Delta = \Delta\nabla$ **04**
2) If $y_0 = 1, y_1 = 2$ & $y_2 = 4$ then $\Delta^2 y_0$ =? **03**
3) Write errors in Trapezoidal & Simpson's $\frac{1^{rd}}{3}$ rules. **03**
4) Define order of Differential Equation and Degree of Differential Equation. **04**

Q.3 A) Evaluate I = $\int_0^1 \frac{1}{1+x}\,dx$ correct to three decimal places with h=0.125 using Trapezoidal & Simpson's $\frac{1^{rd}}{3}$ rules. **10**

B) Define Δ, ∇ & δ **04**

Q.4 **A)** Find the root of Equation $x^3 - 2x - 5 = 0$ using Newton Raphson Method. **07**

B) Derive Newton forward Difference interpolation formula. **07**

Q.5 **A)** Show that by using method of separation of symbols. **08**

1) $\Delta^n u_{x-n} = u_x - nu_{x-1} + \frac{n(n-1)}{2} u_{x-2} + - - - - + (-1)^n u_{x-n}$

2) $e^x(u_o + x\Delta u_o + \frac{x^2}{21_o} \Delta^2 u_o + - - - -) = u_o + u_1 x + u_2 \frac{x^2}{21_o} + - - -$

B) Using Lagranges interpolation formula find the value of $\log_{10}$ 301 the corresponding values of x & log_{10}^x are (300,2.4771) (304,2.4829) (305,2.4843) & (307, 2.4871) **06**

Q.6 **A)** Write a note on Euler's method **07**

B) Give that equation $x^{2.2} = 69$ has a root between 5 & 8.Use the method of Regula–falsi to determine it correct to four decimal places. **07**

Q.7 **A)** Solve the system of Equation by LU decomposition method. **07**

$5x$ - 2y +z = 4

$7x$ + y – 5z = 8

$3x$ + 7y + 4z =10

B) Write an algorithm of finding the root of f(x) =0 by secant method.

SLR-K – 24

Seat No.	

M.C.A (Science) (Semester – III) (New) (CBCS) Examination, 2017
COMPUTER COMMUNICATION NETWORK

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *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) The data link layer takes the packets from _____ and encapsulates them into frames for transmission.
   a) Network layer b) Physical layer
   c) Transport layer d) Application layer

2) Which one of the following task is not done by data link layer?
   a) Framing b) Error control
   c) Flow control d) Channel coding

3) Which one of the following protocol delivers/stores mail to receiver server?
   a) Simple mail transfer
   b) Post office protocol
   c) Internet mail access protocol
   d) Hypertext transfer protocol

4) When collection of various computer seems a single coherent to its client, is called
   a) Computer network b) Distributed system
   c) Both (a) and (b) d) None of the mentioned

5) The _____ is the mentioned
   a) Ppath b) Medium
   c) Protocol d) Route

6) Which on e of the following is an internet standard protocol for managing devices on IP network?
   a) Dynamic host configuration protocol
   b) Simple network management protocol
   c) Internet message access protocol
   d) Media gateway protocol

7) Which one on the following routing algorithm can be used for network layer design?
   a) Shortest path algorithm b) Distance vector routing
   c) Link sate routing d) All of the mentioned

8) In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are
   a) Added b) Removed c) Rearranged d) Modified

9) In computer network nodes are
   a) The computer that originates
   b) The computer that routes the data
   c) The computer that terminates the data
   d) All of the mentioned

10) The first Network
   a) CNNET b) NSFNET c) ASAPNEET d) ARPANET

B) State True/False **04**

1) First network is ARPANET.
2) User datagram protocol is called connectionless because all UDP packets are treated independently by transport layer.
3) In virtual circuit network each packet contains a short VC number.
4) Physical, data link and network layers are network support layers and session. Presentation and application layers are user support layers.

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

1) Jitter control
2) Piggybacking

B) Answer the following: **08**

1) What is the CRC code of frame: 11010111011 & generator: 10011?
2) What are IP addresses? Explain the classes.

Q3 1) Explain connection oriented and connectionless services. **07**

2) Describe the architecture of internet. **07**

Q4 1) Explain Go back N protocol

2) Describe Hierarchical routing algorithm.

Q.5 1) What is quality of service? Explain the techniques for achieving good quality of service. **07**

2) Write note on Berkeley Sockets and Crash recovery. **07**

Q.6 1) Write a note on DNS name pace and electronic mail. **07**

2) Explain the architecture of world wide web on client side and servers side. **07**

Q.7 1) What are the contents in HTTP massage header? Explain the server application. **07**

2) Writ note on congestion control in virtual-circuit and Hop-by-Hop choke **07**

SLR-K–25

Seat No.	

M.C.A. (Science) (Semester – III) (New) (CBCS) Examination, 2017
JAVA PROGRAMMING

Day & Date: Thursday, 20-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

Instruction: *1) Question No.1 and 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 alternative: **10**

1) What is used to execute parameterized query?
   a) Statement interface b) PreparedStatement interface
   c) ResultSet interface d) None of the above

2) Variables declared within a method or block are called _____.
   a) static variable b) local variable
   c) instance variable d) global variable

3) Which of the following is true in the case of abstract class?
   a) Abstract constructors cannot be created.
   b) Abstract classes cannot be inherited.
   c) An abstract class contains only abstract methods.
   d) All of the above.

4) A _____ is a component that can hold other components.
   a) A window b) A container c) A control d) A frame

5) Which of the following are passed as an argument to the paint ( ) method?
   a) A Canvas object b) A Graphics object
   c) An Image object d) A paint object

6) What are the sequences of method executed when an Applet starts execution?
   a) init(), start(), stop(), destroy()
   b) load(), start(), stop(), unload()
   c) init(), activate(), deactivate(), destroy()
   d) start(), init(), destroy(), stop()

7) _____ method is used to perform DML statements in JDBC?
   a) execute() b) executeQuery()
   c) executeUpdate() d) executeResult()

8) _____ is the ability of an application to perform multiple tasks at the same time.

a) Multiprogramming b) Multithreading
c) Multiprocessing d) Multitasking

9) Which of the following is not a wrapper class?
a) Vector b) Character c) Boolean d) Integer

10) A applet tag is written in body tag of _____.
a) WWW b) HTTP c) HTML d) Applet

B) State whether true or false : **04**

1) Final() method is used to garbage collect an object.
2) The suspend()method is used to terminate a thread.
3) Any user-defined exception class is a subclass of the Exception class.
4) User-defined package cannot import like the standard packages.

Q.2 A) Write short notes on the following: **08**

1) Differentiate overloading and overriding.
2) Importance of finally block.

B) Answer the following: **06**

1) What is JVM? State its purposes.
2) Differentiate threads and processes.

Q.3 Answer the following: **14**

A) What do you mean by synchronization? Explain with example.
B) What is the main advantage of PreparedStatement class in Java? Explain with an example.

Q.4 Answer the following: **14**

A) What is Exception? Explain any three built-in exceptions.
B) What is Applet? Explain Applet lifecycle in detail.

Q.5 Answer the following: **14**

A) Explain Adapter class with suitable example.
B) Explain the AWT controls.
i) Checkbox ii) Text Field

Q.6 Answer the following:

A) Explain BorderLayout class with suitable example. **14**
B) Explain different features if Java.

Q.7 Answer the following: **14**

A) What is a package? List the steps for creating a package with example.
B) Explain Event Delegation Model in detail.

SLR-K 26

Seat No.	

MCA (Science) (Semester – III) (New) (CBCS) Examination, 2017
System Software

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 02.30 AM 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) Translate for low level programming language were termed as _
   a) Assembler b) Complier c) Loader d) Linker

2) Symbolic names can be associated with _____
   a) Information b) Phase library
   c) Operand d) Data or instruction

3) The translator which perform macro expansion is called _____
   a) Macro processor b) Macro pre processor
   c) Micro pre processor d) Mnemonic operation

4) Program in execution is called _____
   a) Process b) Instruction c) Procedure d) Function

5) An assembler is _____
   a) Programming language dependent b) Syntax dependent
   c) Machine dependent d) Data dependent

6) The expansion of nested macro cal follows _____
   a) FIFO rule b) LIFO rule
   c) LILO rule d) Priority rule

7) A linker program
   a) Places the program in the memory for the purpose of execution.
   b) Relocates the program to execute from the specific memory area allocated to it.
   c) Links the program with other programs needed for its execution.
   d) Interfaces the program.

8) Macro processor is an inbuilt function of ?
   a) Loader b) Editor c) Linker d) Assembler

9) Which of the following is not a type of assembler?
   a) one pass
   b) two pass
   c) three pass
   d) load and go

10) A Lex compiler generates?
   a) Lex object code
   b) Transition tables
   c) C Tokens
   d) None of above

B) Write whether true or false. **04**

1) Performing LC processing is a part of synthesis phase.
2) The syntax of the assembler directive EQU is <symbol> EQU <address space>.
3) Action implementing instructions meaning are actually carried out by instruction execution.
4) A set of technologies that allow to execute a program which is not entirely in memory is called virtual memory.

Q.2 Answer the following

A) Write a short note on **08**

1) MSAM macro processor
2) Machine independent loader

B) Answer the following **06**

1) Explain in brief N-pass complier
2) Explain Basic loader function briefly.

Q.3 Answer the following.

A) What is parsing? Write down the drawback of top down parsing **07**

B) Discuss the various machine independent assembler features. **07**

Q.4 Answer the following.

A) With the help of VAX architecture explain CISC machine. **07**

B) Differentiate SIC, SIC/XE, CISC and RISC machine. **07**

Q.5 Answer the following.

A) Discuss machine-dependent assembler feature.

B) Explain MS-DOS linker and SUN OS Linker. **07**

07

Q.6 Answer the following.

A) Discuss MACRO PROCESSOR Design Options **07**

B) Explain YACC compiler **07**

Q.7 Answer the following.

A) Explain machine independent macro processor feature **07**

B) Write the difference between system software and application software. **07**

SLR-K-27

Seat No.	

M.C.A.(Computer Science) (Sem-III) (New) (CBCS) Examination, 2017
Database Management System

Day & Date: Tuesday, 25-04-2017 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) In E-R diagram, derived attributes are denoted by…….
   a) Double ellipse b) Dotted ellipse
   c) Ellipse d) None of these

2) ACID stands for
   a) Atomicity, Consistency, Isolation, Durability.
   b) Atomicity, Consistent, Isolated, Durability.
   c) Atomicity, Consistent, Integrated, Durability.
   d) Atomicity, Consistent, Integration, Durability.

3) …….. is the initial state of the transaction
   a) Active b) Partially committed
   c) F ailed d) Aborted

4) ..... is the result of taking a subset of a higher level entity set to form a lower-level entity set.
   a) Generalization b) Specializaion
   c) Both A) and B) d) None of these

5) ..... Execution of transactions guarantees that consistency is preserved.
   a) Concurrent b) Serial
   c) Both A) and B) d) None of these

6) In the SQL cursor, which attribute is TRUE when a cursor has some rows remained to fetch, and FALSE when a cursor has no rows left to fetch.
   a) %ROWCOUNT b) %FOUND
   c) %NOTFOUND d) %ISOPEN

7) The variable or expression passed from a calling subprogram are
   a) Formal parameters b) Actual parameters
   c) Both A) and B) d) None of the above

8) .....Join returns every occurrence of each table with every occurrences of other table.
   a) Cross Join b) Equi join
   c) Self join d) None of the above

9) In a 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

10) A database schema is specified by a set of definitions that are expressed using a……
   a) DDL b) DML
   c) DCL d) None of the above

B) State whether following statements are true or false: **4**

1) Transaction operations on database perform accessing and updating of data.
2) Composite key is a combination of two or more attributes used as primary key.
3) SQL is a case sensitive language.
4) In PL/SQL 'for' loop counter is automatically incremented by 1.

Q.2 A) Write short notes **8**

1) States of transaction.
2) Strong and weak entity set

B) Answer the following: **6**

1) Explain types of distributed database.
2) Explain users of DBMS.

Q.3 Answer the following

a) Construct an ERD for Hotel Management System **8**
b) Explain multivalve dependency and 4NF with example. **6**

Q.4 Answer the following

a) Explain steps in query processing and advantages of query optimization in detail. **8**
b) Explain varying array with example.

Q.5 Answer the following **14**

a) What is two phasing locking two phase commit protocol?
b) What is shadow paging technique? Explain in detail.

Q.6 Answer the following **8**

a) Explain INF and 3NF with example.
b) Explain generalization and specialization in detail.

Q.7 Answer the following **14**

a) What is Relational algebra? Explain select, project, union, intersect operations with example.
b) Explain database views with example.

SLR-K-28

Seat No.	

M.C.A. (Science) (Semester – III) (New) (CBSC) Examination, 2017
COMPUTER ORIENTED STATISTICS

Day & Date: Thursday, 27-04-2017 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.*
4) Use of simple or scientific calculator is allowed.

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

1) For a frequency distribution if A.M. > mode, then it is _____.
   a) symmetric b) +vely skewed
   c) – vely skewed d) None of these

2) If $\bar{d}$=30 and d =$\frac{x-5}{10}$, then $\bar{X}$= _____.
   a) 305 b) 2.5 c) 160 d) None of these

3) If each observation is multiplied by 10, then rang becomes ___.
   a) as it is b) increased by 10
   c) 10 times d) none of these

4) If P (AUB) = P(A) + P(B), then events A and B are _____.
   a) exhaustive b) certain
   c) mutually exclusive d) equally likely

5) If event A is subset of event B, then P (B/A) = _____.
   a) 1 b) Zero c) P(A) d) P(B)

6) If X →H (20, 8, 3), then possible values taken by X are _____.
   a) 0, 1, 2, 3 b) 0, 1, 2,…., 8
   c) 0, 1, 2,…., 20 d) None of these

7) If P(X) abd F(X) be the p.m.f and c.d.f of a discrete r.v. X, then _____.
   a) F(k) = P(X ≤ k) b) F(k) = P(X < k)
   c) P(k) = F(X ≤ k) d) None of these

8) Statistical table are used to obtain probabilities of events related to _____ distribution only.
   a) exponential b) normal
   c) both (a) and (b) d) none of these

9) Both regression coefficients have same algebraic sign if correlation is _____.
   a) perfect b) high degree c) low degree d) all of these

10) Frequency is _____.
   a) A positive integer always
   b) A number showing how many times a particular item repeated in the data
   c) Both (a) and (b)
   d) None of these

B) State whether following statements are True or False: **04**

1) Measures of dispersion provides a single value that represents the whole data
2) Intersection of mutually exclusive events is a null event.
3) Regression coefficient gives rate of change in dependent variable per unit change in dependent variable.
4) Multiplicative congruential generator is one of the methods of generating random numbers deterministically.

Q.2 A) i) Define mutually exclusive events, if A and B are mutually exclusive events with P(A) = 0.35 and P(B) = 0.42, find PAUB **04**

ii) Given: n=10, $\sum(X) = 50$, $\sum(X)^2 = 354$. Find coefficient of variation. **04**

B) i) Define Geometric distribution and state its additive property. **03**

ii) Find value of K if A.M. of observations 20, 15, k, 12, 10 is 14. **03**

Q.3 A) The probability that a new product will be successful if a competitor dose not launches a similar product is 0.67. The probability that a new product will be successful in the presence of competitor's new product is 0.42. The probability that the competitor will launch a new product is 0.35. What is probability that the product will be success? **07**

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

$$P(x) = k\,x^2,\ X = 1,2,3,4$$

Find i) value of k ii) $P(|2 - x| > 1)$ iii) $P(x^2 \leq 10)$

Q.4 A) Define exponential distribution. If life time of certain type of bulb follows exponential distribution with mean life time 1200 hours. Find number of bulbs out of 1000 those are survived more than 1500 hours. **07**

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

Q.5 A) A random variable X has hyper geometric distribution with parameters (15, 8, 5) **07**

B) Define tabulation, explain different parts of good table. **07**

Q.6 **A)** Define c.d.f of discrete r.v. State its properties. **07**

B) The following is the distribution of height of students find medium. **07**

Height (in cm.)	140-145	145-150	150-155	155-160	160-165	165-170
No. of student	10	18	22	20	14	9

Q.7 **A)** A sample of 20 pairs of observations on (X, Y) gives the following information. **07**
$\sum x = 320$, $\sum Y = 210$, $\sum X^2 = 3200$, $\sum Y^2 = 2100$, $\sum XY = 1945$
Obtain the equation of line of regression X on Y and hence estimate X for Y = 20.

B) Define binomial distribution. If a computer centre has 10 computers. The chance of their failure is same during the given period and is equal to 0.3. find probability that during a given period at least 2 computers will fail. **07**

Seat No.	

M.C.A (Science) (Semester – III) (Old) (CGPS) Examination, 2017
COMPUTER COMMUNICAION NETWORK

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *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) State whether the following is True or False.

1) In bus topology, heavy Network traffic slows down the bus speed.
2) It is multipoint configuration.
   a) True, True b) True, False
   c) False, True d) False, False

2) Which one of the following is a transport layer protocol used in Internet?
   a) TCP b) UDP
   c) Both (a) and (b) d) None of the mentioned

3) Which sublayer of the data link layer performs data link functions that depend upon the type of medium?
   a) Logical link control sublayer
   b) Media access control sublayer
   c) Network interface control sublayer
   d) None of the mentioned

4) Which one of the following protocol delivers/stores mail to receiver server?
   a) Simple mail transfer protocol
   b) Post office protocol
   c) Internet mal access protocol
   d) Hypertext transfer protocol

5) Which one of the following computer network is built on top of another network?
   a) Prior network b) Chief network
   c) Prime network d) Overlay network

6) Socket-style API for windows is called.
   a) Wsock b) Winsock c) Wins d) None of the mentioned

7) Which one of the following is a version UDP with congestion control?
   a) Datagram congestion control protocol
   b) Stream control transmission protocol
   c) Structured stream transport
   d) None of the mentioned

8) Which of this not a network edge device?

a) PC b) Smartphones c) Servers d) Switch

9) The network layer concerns with
a) Bits b) Frames c) Packets d) None of the mentioned

10) Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes form local host to remote host?
a) HTTP b) FTP c) Telnet d) None of the mentioned

B) State True/False **04**

1) Message travel from sender to receiver via a medium using a protocol.
2) Transmission data rate is decided by transport layer.
3) User datagram protocol is called connectionless because all UDP packets are treated independently by transport layer.
4) Physical, data link and network layers are network support layers and session, presentation and application layers are user support layers.

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

1) Flow Control
2) Computer network home applications.

B) Answer the following: **06**

1) Describe one-bit sliding windows protocol.
2) What is framing? Name of different framing methods.

Q3 Answer the following: **14**

1) Describe the general principal of congestion control
2) What is Internet? Explain IP addresses in details. **06**

Q4 Answer the following:

1) Describe the wireless TCP and UDP in details. **14**
2) Write note on Transport service primitives.

Q.5 Answer the following:

1) Describe in details Domain Name System.
2) Explain architecture and services of Electronic mail

Q.6 Answer the following: **14**

1) Explain the Elementary data link protocol.
2) Write a short no protocol hierarchies.

Q.7 Answer the following: **14**

1) Write a short note on NSFNET.
2) What is computer network and what are the business application?

SLR-K – 30

Seat No.	

M.C.A. (Science) (Semester – III) (New) (CBCS) Examination, 2017
JAVA PROGRAMMING

Day & Date: Thursday, 20-04-2017 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) Choose correct alternatives **10**

1) Which one of these lists contains only Java programming language keywords?
   a) class, if, void, long, Int, continues
   b) goto, instanceof, native, finally, default, throws
   c) try, virtual, throw, final, volatile, transient
   d) strictfp, constant, super, implements, do

2) Which will legally declare, construct, and initialize an array?
   a) int [] myList = {“1”, “2”, “3”};
   b) int [] myList = (5, 8, 2);
   c) int myList [] [] = {4, 9, 7, 0};
   d) int myList [] ={4, 3, 7};

3) What will be the output of the program?

```
Public void test(int x)
{
    int odd = 1;
    if(odd) /* Line 4 */
  {
    Sytem.out.println(“odd”);
  }
 else
 {
    System.out.println(“even”);
 }
}
```

Which statement is true?
   a) Compilation fails.
   b) “odd” will always be output.
   c) “even” will always be output.
   d) “odd” will be output for odd values of x, and “even” for even values.

4) What will be the output of the program?

```
int i = 1, j = 10;
do
{
    If(i > j)
   {
    break;
  }
  j--;
} while (++<5);
System.out.println("i = " + i+ " and j = " + j);
```

a) i = 6 and j = 5
b) i = 5 and j = 5
c) i = 6 and j = 4
d) I = 5 and j = 6

5) What will be the output of the program

```
public class Aclass
{
    void Aclass()
    {
      System.out.println("Class A");
    }
   Public static void main(String[] args)
   {
     new Aclass();
    }
}
```

a) Class A
b) Compilation fails.
c) An exception is thrown at line 3.
d) The code executes with no output.

6) Which of the following is/are legal method declarations?

1) Protected abstract void m1();
2) Static final void m1() {}
3) Synchronized public final void m1 () {}
4) Private native void m1();

a) 1 and 3
b) 2 and 4
c) 1 only
d) All of them are legal declarations.

7) Which one creates an instance of an array?

a) int [ ] ia = new int[15];
b) float fa = new float[20];
c) char[ ] ca = "Some String";
d) int ia[ ] [ ] = {4, 5, 6}, {1, 2, 3};

8) Which is a valid declaration within an interface?
   a) public static short stop = 23;
   b) protected short stop = 23;
   c) transient short stop = 23;
   d) final void madness(short stop);

9) What will be the output of the program?

```
public  class x
{
    public static void main(String [] args)
    {
       try
       {
         badMethod();
         System.out.print("A");
       }
       catch (Exception ex)
       {
         System.ot.print("B");
       }
       finally
       {
           System.out.print("C");
       }
           System.out.print("D");
     }
       public static void badMethod() {}
}
```

   a) AC b) BC c) ACDS d) ABCD

10) Which cannot directly cause a thread to stop executing?
   a) Calling the SetPriority() method on an Thread object.
   b) Calling the wait() method on an object.
   c) Calling notify() method on an object.
   d) Calling read() method on an InputStream object

B) Write whether true or false. **04**

1) Can we compare int variable with a boolean variable?
2) The method toLowerCase( ) changes all lowercase letters to uppercase and all uppercase letter to lowercase.
3) The method indexOf(",") will allow you to search for the location of a comma.
4) All variable must be declared before they can be used.

Q.2 A) Write short notes on the following **08**

i) Method Overriding
ii) Thread Priority

B) Answer the following **06**

i) Explain with suitable example, how to use a try-catch block, Explain with example.

ii) Explain steps in creation and implementation of package with example.

Q.3 Answer the following **14**

A) Explain inter-thread communication with example

B) WAP to read number from used and print Fibonacci Series up to that numbers. If given number is less than 2 then throw exception and give message “Enter number greater than two”.

Q.4 Answer the following **09**

A) Explain how to draw following shape in applet

1. Ellipse
2. Arcs
3. Polygon

B) Explain Applet Life cycle with example **05**

Q.5 Answer the following

A) Explain with suitable example how to extend exception. **07**

B) State the feature of Gride Layout and explain how to implement it. **07**

Q.6 Answer the following

A) State the purpose of the following JDBC classes an interfaces **08**

i. Driver manager
ii. Connection
iii. Statement
iv. Result set

B) State the feature of Flow Layout and explain how to implement it **06**

Q.7 Answer the following

A) Explain any MouseMotionListener methods with example and how to check which mouse button is pressed by using MouseEvent class **07**

B) What is difference between String and String buffer and explain 3 methods of String and String buffer class with example. **07**

SLR-K- 31

Seat No.	

MCA (Science) (Semester – III) (Old) (CGPA) (Examination, 2017
System Software

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 02.30 AM 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) In a two-pass assembler, the task of the Pass II is to
   a) separates the symbols, mnemonics, operands
   b) build the symbol table
   c) construct intermediate code
   d) synthesize the target program.

2) Pentium Pro processor is uses
   a) RISC approach b) CISC approach
   c) both a and b d) None of these

3) The output of the lexical analyzer is
   a) set of tokens b) string of characters
   c) set of regular expressions d) syntax tree

4) Which of the following are language processors
   a) Compiler b) Assembler c) Interpreter d) All of these

5) Loaders that allow for program relocation is called
   a) absolute loaders b) bootstrap loaders
   c) relocating loaders d) direct loader

6) Scanner is the part of the compiler that performs following tasks except
   a) Scanning the source statement
   b) recognizing and classifying the various tokens
   c) Both a and b
   d) None of these

7) Synthesis Phase of the compiler does
   a) Intermediate Code Generation b) Code optimization
   c) Code generation d) All of these

8) Load address origin is the load address for the _____
   a) First word of a program b) Whole program
   c) Last word of a program d) None of these

9) Which of the following statement is not used in an assembly program
   a) Interactive b) Imperative
   c) Directive d) Declarative

10) The _____ is not assembler directives.
   a) START b) RESB c) BYTE d) None of these

B) State true or false **04**

1) Assembler accepts only High Level Language inputs.
2) The output of the lexical analyzer is string of characters.
3) The new addresses given to the variables by the loader are called load-time address.
4) WORD Generate one- word integer constant..

Q.2 A) Write short notes on **08**

1) bootstrap loader
2) YACC

B) Answer the following **06**

1) Explain location counter in assembler
2) Explain ultra SPARC architecture.

Q.3 Answer the following. **14**

A) What is forward reference in one pass assembler? How is resolve?
B) Explain different assembly directives used in assembly languages? Language program.

Q.4 Answer the following. **14**

A) What is parsing? Explain any two parsing techniques.
B) What is machine independent code optimization?

Q.5 Answer the following. **14**

A) Define and explain the following
   1) Assembler
   2) Interpreter
   3) Compiler
B) Explain dynamic linking?

Q.6 Answer the following. **14**

A) Differentiate loader and linker
B) What is macro processor? Explain data structures used for it.

Q.7 Answer the following. **14**

A) Explain MASM microprocessor.
B) Explain MS-DOS loader.

SLR-K-32

Seat No.	

M.C.A.(Science) (Sem-III) (Old) (CGPA)Examination, 2017
DATABASE MANAGEMENT SYSTEM

Day & Date: Tuesday, 25-04-2017 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) A top-to-bottom relationship among the items in a database is established by a …….
   a) Hierarchical schema b) Network schema
   c) Relational Schema d) All of the above

2) Data independence means……
   a) Programs are not dependent on the physical attributes of data
   b) Programs are not dependent on the logical attributes of data
   c) Both A and B
   d) None of these

3) Transaction processing is associated with everything below except.
   a) Producing detail, summery, or exception reports
   b) Recording a business activity
   c) Confirming an action or triggering a response
   d) Maintaining data

4) …….. is the complex search criteria in the where clause.
   a) Sub string b) Drop Table
   c) Predict d) Predicate

5) …… is preferred method for enforcing data integrity.
   a) Constraints b) Stored Procedure
   c) Packages d) Cursors

6) To eliminate duplicate rows…….is used
   a) NODUPLICATE b) ELIMINATE
   c) DISTINCT d) None of these

7) ……. Character function can be used to return a specified portion of a character String.
   a) INSTR b) SUBSTRING

c) SUBSTR d) POS

8) …….. provides option for entering SQL queries as execution time, rather than at the development stage.
   a) PL/SQL b) SQL*Plus
   c) SQL d) Dynamic SQL

9) A…….. represents the number of entities to which another entity can be associated
   a) Mapping cardinality b) Table
   c) Schema d) Information

10) A…… allows to make copies of the database periodically to help in the cases of crashes disasters.
   a) Recovery utility b) Backup utility
   c) Monitoring utility d) Data loading utility

B) State whether following statement are true or false: **04**

1) The view is used to provide the security.
2) You can return more than one value using stored procedure.
3) Database contains only one table.
4) When no any applicable value that time stored the null value.

Q.2 Answer the following **14**

a) Define concept of aggregation? Explain two application of aggregation.
b) Why there is need of sub-queries with example

Q.3 Answer the following: **14**

a) Explain concurrency control method showing serial and concurrent transaction.
b) Write PL/SQL block to generate auto generated primary key using trigger.

Q.4 Answer the following **14**

a) What is cursor? Explain with suitable example.
b) What is Deadlock? Explain deadlock prevention mechanism.

Q.5 Answer the following **14**

a) What is stored procedure? Explain IN, OUT parameters with suitable example.
b) Explain the term with examples
   1. Relation 2. Domain 3. Tuple

Q.6 Answer the following **14**

a) What is Transaction? Write about different states of example.
b) Explain concept of Crash Recovery.

Q.7 Answer the following

a) Explain different Join operation of relation algebra with example.
b) What are roles? How roles and privileges are granted and revoke.

SLR-K-33

Seat No.	

M.C.A. (Science) (Semester – III) (Old) (CGPA) Examination, 2017
COMPUTING ORIENTED STATISTICS

Day & Date: Thursday, 27-04-2017 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) Choose the most correct alternatives: **10**

1) _____ divides the data into two equal parts.
   a) Median b) Mode c) Mean d) None of these

2) The variance of geometric (P) is _____.
   a) q/p b) q/p^2 c) np d) npq

3) If any of the observations is zero then _____ can not be defined.
   a) Arithmetic mean b) Geometric mean
   c) Harmonic mean d) None of these

4) Total area under the curve in probability of density function is __
   a) 0 b) -1 c) 1 d) Infinity

5) Average remains good representative if dispersion is _____.
   a) More b) Less c) Constant d) None of these

6) Each trial in Binomial distribution has _____.
   a) One outcome b) Two outcome
   c) Three outcome d) Four outcome

7) Second moment about mean is _____.
   a) Standard deviation b) Variance
   c) Mean d) Coefficient of Variation

8) In case of symmetric distribution _____.
   a) Mean=Median=Mode b) Mean>Mode>Median
   c) Mean<Mode<Median d) None of these

9) The mean of Poisson distribution is _____.
   a) Always less than its variance
   b) Always more than its variance
   c) Always equal to standard deviation
   d) Always equal to variance

10) Normal distribution is _____.
   a) Leptokurtic b) Mesokurtic
   c) Platykurtic d) None of these

B) Fill in the blanks. **04**

1) Probability always lies in between _____.
2) Range of Karl Person's coefficient of correlation is _____.
3) The arithmetic mean of absolute deviation from mean is called as _____.
4) If standard deviation is 5 and arithmetic mean is 25 then coefficient of variation is _____.

Q.2 A) i) Define probability. **03**

ii) If n=100, $\sum X = -20$, $\sum X^2 = 220$, find S.D and Coefficient of variation. **03**

B) i) Explain the concept of normal distribution. **04**

ii) Suppose a pair of an unbiased dice is tossed. Find the probability of getting same numbers on the upper faces of dice. **04**

Q.3 A) What do you mean by central tendency? Describe the various measures of central tendency. **07**

B) What is frequency curve? Draw a frequency curve for the following data. **07**

Class	100-300	300-500	500-700	700-900	900-1100	1100-1300
Frequency	6	16	24	20	10	4

Q.4 A) Calculate mean deviation about median and coefficient of mean deviation about median for following frequency distribution. **07**

Marks	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	4	6	10	18	9	3

B) Obtain a line of regression of Y on X for the following data. **07**

X	2	3	5	7	9	10	12	15
Y	2	5	8	10	12	14	15	16

Q.5 A) Give the procedure of generating random observations from uniform distribution. **07**

B) Define exponential distribution. On the average, a certain computer part lasts 10 years. The length of time the computer part lasts is exponentially distributed. What is the probability that a computer part lasts more than 7 years? **07**

Q.6 A) Four cards are down from the pack of 52 playing cards. Find the probability of getting. **07**

i) One card of each suit ii) Two club cards and two hearts.

B) If r.v. X has binomial distribution with mean 16 and variance 8, find P(X=0) and P(X=1). **07**

Q.7 A) State the different measures of correlation and describe Karl Pearson's coefficient of correlation. **07**

B) Explain the concept of Poisson distribution. For a Cake shop, per day 1 customer is arrives, obtain probability of 2 persons arrive tomorrow. **07**

SLR-K – 34

Seat No.	

M.C.A. (Science) (Semester – IV) (New) (CBCS) Examination, 2017
DISTRIBUTED OPRATING SYSTEM

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 2:30 PM to 05.00 PM

N.B. : *1)* ***Q.1*** *and* ***Q2*** *are* ***compulsory.***
2) ***Attempt*** *any Three* ***Questions*** *from* ***Q .No 3*** *to No.*
3) Figures to the ***Right*** *indicate full* ***marks****.*

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

1) In distributed system, a logical clock is associated with.
   a) Each instruction b) Each process
   c) Each register d) None of the above

2) If timestamp of two events are same then the events are.
   a) Concurrent b) Non-concurrent
   c) Monotonic d) Blocked

3) In the token passing approach of distributed systems process are organized in a ring structure.
   a) Logically b) Physically
   c) Both (a) and (b) d) All of the above

4) _____ of the distributed file system are dispersed among various machines of distributed system.
   a) Client b) Server
   c) Storage devices d) All of the above

5) _____ is not possible in distributed file system.
   a) File replication b) Migration
   c) Client interface d) Remote access

6) To differentiate a many network services a system support _____ are used.
   a) Variable b) Sockets
   c) Ports d) None of the above

7) In case of failure, a new transaction coordinator can be elected by
   a) Bully algorithm b) Ring algorithm
   c) Both(a) and (b) d) None of the above

8) Which of the following is a synchronization tool?
a) Thread b) Pipe c) Semaphore d) socket

9) Mutual exclusion can be provided by the _____
a) Mutex locks b) Binary semaphore
c) Both (a) and (b) d) None of the above

10) A deadlock eventually cripples system throughput and will cause the CPU utilization to_____
a) Increase b) Drop c) Stay still d) All of the above

B) State whether true or false. **04**

1) Each site (node) in a distributed system is subject to the same type of failure as in centralized system.
2) Databases that are stored on computers at multiple locations are not interconnected by a network are known as distributed databases.
3) Data replication is favored where most process requests are read-only and where the data are relatively static.
4) The purpose of time stamping is to avoid the use of locks.

Q.2. A) Write short notes on the following: **08**

i. File Replication.
ii. Virtual memory.

B) Answer the following: **06**

i. Explain domain name system.
ii. What is stub? Explain method for stub generation.

Q.3 Answer the following:

A) Describe distributed approach for implementing mutual exclusion in distributed system. **07**

B) Discuss the communication protocol protocol used in RPC. **07**

Q.4 Answer the following:

A) State and explain the concept of client- server model. **07**

B) Explain clock synchronization in detail.

Q.5 Answer the following

A) What are the steps involved in process migration. Discuss the desirable features of good process migration. **07**

B) What is election algorithm? Explain ring algorithm. **07**

Q.6 Answer the following

A) Discuss about the distributed file system. **07**

B) Explain the atomic transaction. **07**

Q.7 Answer the following

A) State and explain the concept of novel Netware. **07**

B) Explain about distributed deadlock. **07**

SLR-K 35

Seat No.	

M.C.A.(Science) (Semester – IV) (New) (CBCS) Examination, 2017
DATA MINING AAND WAREHOUSE

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B.: *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**

1) An _____ system is market oriented.
a) OLAP b) OLTP c) OLEP b) None of these

2) An _____ collect all the information about subject spanning the Entire organization.
a) Virtual warehouse b) Data mart
c) Enterprise warehouse d) None of these

3) _____, which detects errors in the data and rectifies them when possible.
a) Data extraction b) Data cleaning
c) Load d) Refresh

4) The _____ schema, is a variant of the star schema model, Where some dimension tables are normalized, thereby further splitting the data into additional tables.
a) Fact constellation b) snowflake
c) star d) None of these

5) It navigates from less detailed data to more detailed data.
a) Slice b) Dice c) Rotate d) Drill-down

6) _____ is a summarization of the general characteristics or features of a target class of data.
a) Data Characterization b) Data Classification
c) Data discrimination d) Data selection

7) The out put of KDD is _____
a) Data b) Information c) Query d) Useful information

8) Which of the following is not a kind of data warehouse application?"
a) Information processing b) Analytical processing

c) Data mining d) Transaction processing

9) _____ describes the data contained in the data warehouse.
a) Relational data b) Operational data
c) Metadata d) Informational data

10) The star schema is composed of _____ fact table.
a) One b) Two c) Three d) four

B) State whether the following statement is True or False: **04**

1) The snowflake schema is a variant of the star schema model, where some dimension tables are normalized.
2) Data Integration is not the process of combining multiple data Sources
3) A data – mining task can be specified in the form of a data-mining Query, which is input to the data mining system
4) Bayesian classifiers are statistical classifiers.

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

1) Drill-down operation
2) Data cleaning as a process

B) Attempt the following: **06**

1) Explain divisive hierarchical clustering method with example
2) Define Data mining? Explain the new trends in data mining

Q.3 Attempt the following: **14**

A) What is data Data warehouse? Explain the difference between OLTP and OLAP.
B) Explain different forms of multidimensional data model.

Q.4 Attempt the following: **14**

A) What is association rule? Explain the use of market basket analysis with example
B) State and explain data mining primitives with suitable example

Q.5 Attempt the following: **14**

A) Explain the procedure of Back propagation method in detail.
B) State and explain the steps in k-medoids algorithm

Q.6 Attempt the following: **14**

A) What is classification? Explain the steps in decision tree induction method.
B) Explain various data mining applications.

Q.7 Attempt the following: **14**

A) What is Cluster analysis? Explain Density-based clustering method with example.
B) Explain the features of data mining query language.

SLR-K - 36

Seat No.	

M.C.A. (Science) (Semester-IV) New (CBCS) Examination, 2017
UML

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

Instruction: *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) What is collection of model elements called?
   a) Box b) Dependency
   c) UML packages d) Package members

2) What encapsulates both data and data manipulation functions?
   a) Object b) Class
   c) Super Class d) Sub class

3) Which of the following is not element of UML diagram notation?
   a) Icons b) Vertex
   c) String d) None of the above

4) In UML diagram of a class
   a) State of object cannot be represented
   b) State is irrelevant
   c) State is represented as an attribute
   d) State is represented as a result of an operation.

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) What is the programming style of the object oriented conceptual mode ?
   a) Invariant relationships
   b) Algorithms

c) Classes & Objects
d) Goal often expressed in a predicate calculus

7) An Operation can be described as?
a) Object behavior b) Class behavior
c) Functions d) Both(a) and (b)

8) Which among the following are not the valid notations for package and component diagram?
a) Nodes b) Box
c) Extension mechanism d) Packages

9) Which among these are the rules to be considered to form class diagram?
a) Class symbols must have at least a name compartment.
b) Compartment can be in a random order.
c) Attributes and operations can be listed at any suitable place.
d) None of the above

10) Which of the following is not kind of prototype?
a) Horizontal b) Vertical
c) Lateral d) All of the above

B) State True or False **4**

1) Encapsulation is when a client of a module is NOT able to know more than is in the interface.
2) Artifacts instances & types have same names
3) Association lines may be unlabeled or they may show association name.
4) Use case diagram is a dynamic model of interaction between product and actors in a use case.

Q2 A) Write short notes of the following **8**

I) Class and object diagrams.
II) State machines.

B) Explain the following terms? **7**

I) Synchronization in processes.
II) Conceptual model of UML

Q3 Answer the following

a) Explain the importance of object oriented design modeling **7**
b) Explain in detail the common mechanisms used in structural modeling **7**

Q4 Answer the following.

a) Explain the terms and concepts used in use case diagram and activity diagram. **7**

b) What are the advantages of UML? Also explain the building blocks of UML. **7**

Q5 Answer the following.

a) Explain UML software development life cycle? **7**

b) Explain aggregation and composition with the help of suitable example **7**

Q6 Answer the following.

a) Draw the class diagram and sequence diagram for online digital library system **7**

b) What is a package? How it is represented in UML? Describe importing and exporting of package **7**

Q7 Answer the following.

a) What is an interaction diagram? What is the difference between sequence diagram and collaboration diagram **7**

b) Explain various notations used in UML. **7**

SLR-K – 37

Seat No.	

M.C.A (Science) (Semester – IV) (New) (CBCS) Examination, 2017
.NET

Day & Date: Saturday, 29-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *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) From which of these classes, the character based output stream class Stream Writer is derived?
   a) Text Writer b) Text Reader
   c) Character Stream d) All of the mentioned

2) Which is the correct way of defining and initializing an array of 3 integers?
   a) int [] aa = {78, 9, 54};
   b) int [] aa;
      aa = new int [3];
      aa [1] = 78;
      aa [2] = 9;
      aa [3] = 54;
   c) int [] aa;
      aa = new int {78, 9, 54};
   d) int [] aa;
      aa = new int [3] {78,9,54.7};

3) Which of these exceptions will occur if we try to access the index of an array beyond its length?
   a) Arithmetic Exception
   b) Array Exception
   c) Array Argument Exception
   d) Index Out Of Range Exception

4) Which of these methods of class String is used to separate a substring from a String object?
   a) Substr() b) Substring()
   c) Sub String() d) None of the mentioned

5) 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()

6) Which of these clauses will be executed even if no exceptions are found?
   a) Throws b) Finally c) Throw d) catch

7) A single try block must be followed by which of these?
   a) Finally b) Catch
   c) Both a & b d) None of the mentioned

8) Which of the following keywords is used by the calling function to guard against the exception that is thrown by called function?
   a) Try b) Throw c) Throws d) catch

9) Which of these classes contains only floating point functions?
   a) Math b) Process c) System d) Object

10) 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

B) State True/False **04**

1) Flush () is a method used to clear all the data present in output buffers?
2) Catch () will be executed even if no exception are found?
3) VBScript is Default scripting language in ASP
4) ASP.NET is window application

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

1) CLR
2) Data Adapter

B) Answer the following: **06**

1) What is used of App-code folder? Explain with example.
2) Explain turning off client side validation.

Q3 Answer the following: **14**

1) Explain .NET framework in detail.
2) What is preprocessor? Describe different preprocessors in C#.

Q4 Answer the following: **14**

1) What is inheritance? Explain with example
2) Define Web Form. Explain how to maintain the state of Web form with suitable example.

Q.5 Answer the following: **14**

A) What are difference between client side validation and server side Validation?

B) Explain ASP.NET life cycle.

Q.6 Answer the following: **14**

A) Explain view state with example. How to disable view state in asp.nte

B) Design a windows application and write code to inserts an employee record

Q.7 Answer the following: **14**

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

B) What is Validation? Explain Compare Validator, Regular Expression Validator.

SLR-K - 38

Seat No.	

M.C.A. (Science) (Semester – IV) (New) (CBCS) (Examination, 2017
FINITE AUTOMATA

Day & Date: Friday, 28-04-2017 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 indicate full marks.

Q.1 A) Choose the Correct Alternatives **10**

1) There are _____ tuples in Grammar.
a) 4 b) 5 c) 6 d) None of the above

2) NPDA stands for _____.
a) Non Determinate Push Down Automata.
b) Non Deterministic Push Down Automata.
c) Non Decided Push Down Automata
d) None of the above.

3) Regular languages are closed under _____.
a) Union b) Intersection
c) Both (a) and (b) d) None of the these

4) Number of states required to accept all the strings that ends with 10 is_____.
a) 3 b) 2 c) 1 d) Cannot be predicted

5) Complement of a DFA can be obtained by_____.
a) Making start state as final
b) No trial method
c) Making final state as non-final and non-final as final.
d) Making final state as start state.

6) A _____ is a substitution such and non- final string for each a.
a) Homomorphism b) Closure
c) Interchange d) Inverse homomorphism

7) In a context free grammar the left hand side of the production rule will be _____.
a) Terminal b) Non-terminal/variable
c) Both (a) and (b) d) None of the above

8) In NFA the transition function δ:(Q x Σ)→ _____.

a) 2^Q b) 2Q c) Q d) None of these

9) According to Chomsky hierarchy type 1 languages are_____.
   a) Regular b) Context free
   c) Context Sensitive d) Unrestricted

10) The regular expression that will accept all the strings that will end with ab over $\{a, b\}$ will be?
a) (a+b)*ab b) a (a+b)*b c) (ab)*ab d) (ab)*

B) State whether true or false. **04**

1) A DFA can have multiple final states.
2) Regular languages are not closed under kleene closure.
3) The language accepted by PAD is context free language.
4) A Turing machine uses stack as storage memory.

Q.2 A) Answer the following questions. **08**

1) Eliminate the ε production and obtain equivalent grammar for the following grammar.
   A→ $aBb|bBa$
   B→ $aB|bB|bB|\varepsilon$
2) What is ε –NFA? Explain with example.

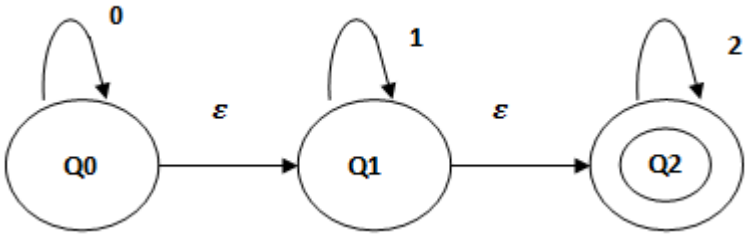
B) Write a short note on **06**

1) Leftmost and rightmost derivation of a grammar.
2) Turing Machine.

Q.3 A) Convert the following grammar into CNF. **08**

S→ $aaAB$
A→ bAB
B→ $Baa|A|\varepsilon$

B) Obtain DFA equivalent to following NFA.

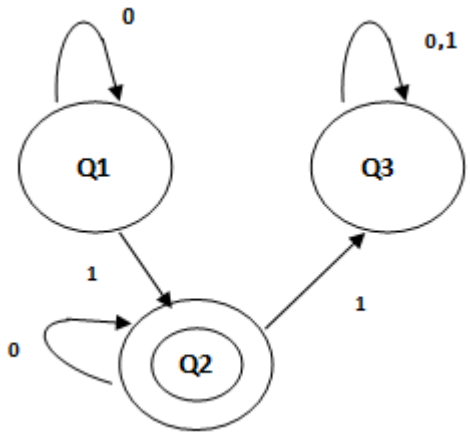


Q.4 A) What is Push Down Automata? PDA for following language. **08**
L=$\{a^m b^n c^m | m, n \geq 1\}$

B) Obtain NFA with ε moves for following regular expression.
$(ab + ba)$*aa (ab+ba)*

Q.5 A) Prove that regular languages are closed under Intersection and reversal. **08**

B) Construct regular expression for following DFA. **06**



A) What is pumping lemma? Prove that the language L=$\{a^m b^m | m \geq 1\}$ is not regular. **08**

B) Construct DFA for a language that will accept all the strings which ends with 2 and having 11 as substring. **06**

Q.7 **A)** What is ambiguous grammar? Remove the ambiguity form following grammar. **06**

S→ $iCtS|iCtSeS|a$

C→ bS

B) What is Chomsky hierarchy? Explain in detail.

SLR-K – 39

Seat No.	

M.C.A. (Science) (Semester – IV) (Old) (CGPA) Examination, 2017
DISTRIBUTED OPRATING SYSTEM

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 2.30 PM to 05.00 PM

N.B. : *1)* ***Q.1*** *and* ***Q2*** *are* ***compulsory.***
2) ***Attempt*** *any Three* ***Questions*** *from* ***Q .No 3*** *to No.*
3) Figures to the ***Right*** *indicate full* ***marks****.*

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

1) In distributed system, a logical clock is associated with.
   a) Each instruction b) Each process
   c) Each register d) None of the above

2) If timestamp of two events are same then the events are.
   a) Concurrent b) Non-concurrent
   c) Monotonic d) Blocked

3) In the token passing approach of distributed systems process are organized in a ring structure.
   a) Logically b) Physically
   c) Both (a) and (b) d) All of the above

4) _____ of the distributed file system are dispersed among various machines of distributed system.
   a) Client b) Server
   c) Storage devices d) All of the above

5) _____ is not possible in distributed file system.
   a) File replication b) Migration
   c) Client interface d) Remote access

6) To differentiate a many network services a system support _____ are used.
   a) Variable b) Sockets
   c) Ports d) None of the above

7) In case of failure, a new transaction coordinator can be elected by
   a) Bully algorithm b) Ring algorithm
   c) Both(a) and (b) d) None of the above

8) Which of the following is a synchronization tool?
a) Thread b) Pipe c) Semaphore d) socket

9) Mutual exclusion can be provided by the _____
a) Mutex locks b) Binary semaphore
c) Both (a) and (b) d) None of the above

10) A deadlock eventually cripples system throughput and will cause the CPU utilization to_____
a) Increase b) Drop c) Stay still d) All of the above

B) State whether true or false. **04**

1) Each site (node) in a distributed system is subject to the same type of failure as in centralized system.
2) Databases that are stored on computers at multiple locations are not interconnected by a network are known as distributed databases.
3) Data replication is favored where most process requests are read-only and where the data are relatively static.
4) The purpose of time stamping is to avoid the use of locks.

Q.2. A) Write short notes on the following: **08**

i. File Replication.
ii. Virtual memory.

B) Answer the following: **06**

i. Explain domain name system.
ii. What is stub? Explain method for stub generation.

Q.3 Answer the following:

A) Describe distributed approach for implementing mutual exclusion in distributed system. **07**

B) Discuss the communication protocol protocol used in RPC. **07**

Q.4 Answer the following:

A) State and explain the concept of client- server model. **07**

B) Explain clock synchronization in detail.

Q.5 Answer the following

A) What are the steps involved in process migration. Discuss the desirable features of good process migration. **07**

B) What is election algorithm? Explain ring algorithm. **07**

Q.6 Answer the following

A) Discuss about the distributed file system. **07**

B) Explain the atomic transaction. **07**

Q.7 Answer the following

A) State and explain the concept of novel Netware. **07**

B) Explain about distributed deadlock. **07**

SLR-K 40

Seat No.	

M.C.A.(Science) (Semester – IV) (Old) (CGPA) Examination, 2017
DATA MINING AAND WAREHOUSE

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B.: *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**

1) An _____ system is market oriented.
a) OLAP b) OLTP c) OLEP b) None of these

2) An _____ collect all the information about subject spanning the Entire organization.
a) Virtual warehouse b) Data mart
c) Enterprise warehouse d) None of these

3) _____, which detects errors in the data and rectifies them when possible.
a) Data extraction b) Data cleaning
c) Load d) Refresh

4) The _____ schema, is a variant of the star schema model, Where some dimension tables are normalized, thereby further splitting the data into additional tables.
a) Fact constellation b) snowflake
c) star d) None of these

5) It navigates from less detailed data to more detailed data.
a) Slice b) Dice c) Rotate d) Drill-down

6) _____ is a summarization of the general characteristics or features of a target class of data.
a) Data Characterization b) Data Classification
c) Data discrimination d) Data selection

7) The out put of KDD is _____
a) Data b) Information c) Query d) Useful information

8) Which of the following is not a kind of data warehouse application?"
a) Information processing b) Analytical processing

c) Data mining d) Transaction processing

9) _____ describes the data contained in the data warehouse.
a) Relational data b) Operational data
c) Metadata d) Informational data

10) The star schema is composed of _____ fact table.
a) One b) Two c) Three d) four

B) State whether the following statement is True or False: **04**

1) The snowflake schema is a variant of the star schema model, where some dimension tables are normalized.
2) Data Integration is not the process of combining multiple data Sources
3) A data – mining task can be specified in the form of a data-mining Query, which is input to the data mining system
4) Bayesian classifiers are statistical classifiers.

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

1) Drill-down operation
2) Data cleaning as a process

B) Attempt the following: **06**

1) Explain divisive hierarchical clustering method with example
2) Define Data mining? Explain the new trends in data mining

Q.3 Attempt the following: **14**

A) What is data Data warehouse? Explain the difference between OLTP and OLAP.
B) Explain different forms of multidimensional data model.

Q.4 Attempt the following: **14**

A) What is association rule? Explain the use of market basket analysis with example
B) State and explain data mining primitives with suitable example

Q.5 Attempt the following: **14**

A) Explain the procedure of Back propagation method in detail.
B) State and explain the steps in k-medoids algorithm

Q.6 Attempt the following: **14**

A) What is classification? Explain the steps in decision tree induction method.
B) Explain various data mining applications.

Q.7 Attempt the following: **14**

A) What is Cluster analysis? Explain Density-based clustering method with example.
B) Explain the features of data mining query language.

SLR-K - 41

Seat No.	

M.C.A. (Science) (Semester-IV) Old (CGPA) Examination, 2017
UML

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

Instruction: *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) What is collection of model elements called?
   a) Box b) Dependency
   c) UML packages d) Package members

2) What encapsulates both data and data manipulation functions?
   a) Object b) Class
   c) Super Class d) Sub class

3) Which of the following is not element of UML diagram notation?
   a) Icons b) Vertex
   c) String d) None of the above

4) In UML diagram of a class
   a) State of object cannot be represented
   b) State is irrelevant
   c) State is represented as an attribute
   d) State is represented as a result of an operation.

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) What is the programming style of the object oriented conceptual mode ?
   a) Invariant relationships
   b) Algorithms

c) Classes & Objects
d) Goal often expressed in a predicate calculus

7) An Operation can be described as?
a) Object behavior b) Class behavior
c) Functions d) Both(a) and (b)

8) Which among the following are not the valid notations for package and component diagram?
a) Nodes b) Box
c) Extension mechanism d) Packages

9) Which among these are the rules to be considered to form class diagram?
a) Class symbols must have at least a name compartment.
b) Compartment can be in a random order.
c) Attributes and operations can be listed at any suitable place.
d) None of the above

10) Which of the following is not kind of prototype?
a) Horizontal b) Vertical
c) Lateral d) All of the above

B) State True or False **4**

1) Encapsulation is when a client of a module is NOT able to know more than is in the interface.
2) Artifacts instances & types have same names
3) Association lines may be unlabeled or they may show association name.
4) Use case diagram is a dynamic model of interaction between product and actors in a use case.

Q2 A) Write short notes of the following **8**

I) Class and object diagrams.
II) State machines.

B) Explain the following terms? **7**

I) Synchronization in processes.
II) Conceptual model of UML

Q3 Answer the following

a) Explain the importance of object oriented design modeling **7**
b) Explain in detail the common mechanisms used in structural modeling **7**

Q4 Answer the following.

a) Explain the terms and concepts used in use case diagram and activity diagram. **7**

b) What are the advantages of UML? Also explain the building blocks of UML. **7**

Q5 Answer the following.

a) Explain UML software development life cycle? **7**

b) Explain aggregation and composition with the help of suitable example **7**

Q6 Answer the following.

a) Draw the class diagram and sequence diagram for online digital library system **7**

b) What is a package? How it is represented in UML? Describe importing and exporting of package **7**

Q7 Answer the following.

a) What is an interaction diagram? What is the difference between sequence diagram and collaboration diagram **7**

b) Explain various notations used in UML. **7**

SLR-K – 42

Seat No.	

M.C.A (Science) (Semester – IV) (Old) (CGPA) Examination, 2017
.NET

Day & Date: Saturday, 29-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *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) From which of these classes, the character based output stream class Stream Writer is derived?
   a) Text Writer b) Text Reader
   c) Character Stream d) All of the mentioned

2) Which is the correct way of defining and initializing an array of 3 integers?
   a) int [] aa = {78, 9, 54};
   b) int [] aa;
      aa = new int [3];
      aa [1] = 78;
      aa [2] = 9;
      aa [3] = 54;
   c) int [] aa;
      aa = new int {78, 9, 54};
   d) int [] aa;
      aa = new int [3] {78,9,54.7};

3) Which of these exceptions will occur if we try to access the index of an array beyond its length?
   a) Arithmetic Exception
   b) Array Exception
   c) Array Argument Exception
   d) Index Out Of Range Exception

4) Which of these methods of class String is used to separate a substring from a String object?
   a) Substr() b) Substring()
   c) Sub String() d) None of the mentioned

5) 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()

6) Which of these clauses will be executed even if no exceptions are found?
   a) Throws b) Finally c) Throw d) catch

7) A single try block must be followed by which of these?
   a) Finally b) Catch
   c) Both a & b d) None of the mentioned

8) Which of the following keywords is used by the calling function to guard against the exception that is thrown by called function?
   a) Try b) Throw c) Throws d) catch

9) Which of these classes contains only floating point functions?
   a) Math b) Process c) System d) Object

10) 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

B) State True/False **04**

1) Flush () is a method used to clear all the data present in output buffers?
2) Catch () will be executed even if no exception are found?
3) VBScript is Default scripting language in ASP
4) ASP.NET is window application

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

1) CLR
2) Data Adapter

B) Answer the following: **06**

1) What is used of App-code folder? Explain with example.
2) Explain turning off client side validation.

Q3 Answer the following: **14**

1) Explain .NET framework in detail.
2) What is preprocessor? Describe different preprocessors in C#.

Q4 Answer the following: **14**

1) What is inheritance? Explain with example
2) Define Web Form. Explain how to maintain the state of Web form with suitable example.

Q.5 Answer the following: **14**

A) What are difference between client side validation and server side Validation?

B) Explain ASP.NET life cycle.

Q.6 Answer the following: **14**

A) Explain view state with example. How to disable view state in asp.nte

B) Design a windows application and write code to inserts an employee record

Q.7 Answer the following: **14**

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

B) What is Validation? Explain Compare Validator, Regular Expression Validator.

SLR-K - 43

Seat No.	

M.C.A. (Science) (Semester – IV) (Old) (CGPA) Examination, 2017
FINITE AUTOMATA

Day & Date: Friday, 28-04-2017 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 indicate full marks.

Q.1 A) Choose the Correct Alternatives **10**

1) There are _____ tuples in Grammar.
   a) 4 b) 5 c) 6 d) None of the above

2) NPDA stands for _____.
   a) Non Determinate Push Down Automata.
   b) Non Deterministic Push Down Automata.
   c) Non Decided Push Down Automata
   d) None of the above.

3) Regular languages are closed under _____.
   a) Union b) Intersection
   c) Both (a) and (b) d) None of the these

4) Number of states required to accept all the strings that ends with 10 is_____.
   a) 3 b) 2 c) 1 d) Cannot be predicted

5) Complement of a DFA can be obtained by_____.
   a) Making start state as final
   b) No trial method
   c) Making final state as non-final and non-final as final.
   d) Making final state as start state.

6) A _____ is a substitution such and non- final string for each a.
   a) Homomorphism b) Closure
   c) Interchange d) Inverse homomorphism

7) In a context free grammar the left hand side of the production rule will be _____.
   a) Terminal b) Non-terminal/variable
   c) Both (a) and (b) d) None of the above

8) In NFA the transition function δ:(Q x Σ)→ _____.

a) 2^Q b) 2Q c) Q d) None of these

9) According to Chomsky hierarchy type 1 languages are_____.
   a) Regular b) Context free
   c) Context Sensitive d) Unrestricted

10) The regular expression that will accept all the strings that will end with ab over $\{a, b\}$ will be?
a) (a+b)*ab b) a (a+b)*b c) (ab)*ab d) (ab)*

B) State whether true or false. **04**

1) A DFA can have multiple final states.
2) Regular languages are not closed under kleene closure.
3) The language accepted by PAD is context free language.
4) A Turing machine uses stack as storage memory.

Q.2 A) Answer the following questions. **08**

1) Eliminate the ε production and obtain equivalent grammar for the following grammar.
   A→ $aBb|bBa$
   B→ $aB|bB|bB|\varepsilon$
2) What is ε –NFA? Explain with example.

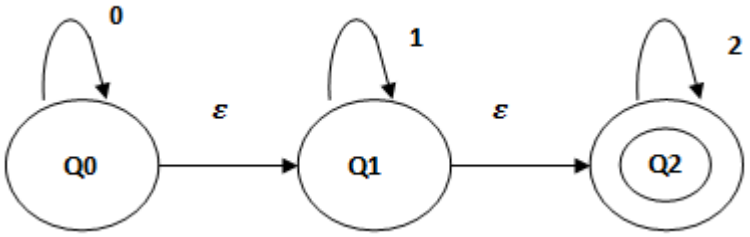
B) Write a short note on **06**

1) Leftmost and rightmost derivation of a grammar.
2) Turing Machine.

Q.3 A) Convert the following grammar into CNF. **08**

S→ $aaAB$
A→ bAB
B→ $Baa|A|\varepsilon$

B) Obtain DFA equivalent to following NFA.

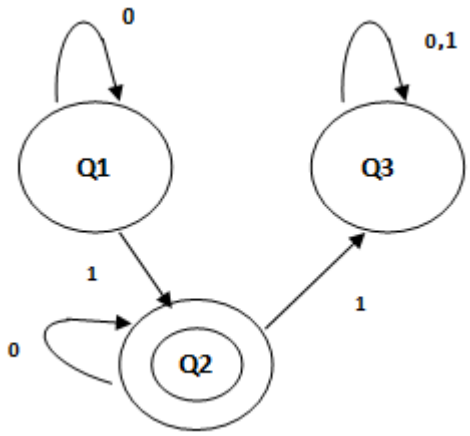


Q.4 A) What is Push Down Automata? PDA for following language. **08**
L=$\{a^m b^n c^m | m, n \geq 1\}$

B) Obtain NFA with ε moves for following regular expression.
$(ab + ba)$*aa (ab+ba)*

Q.5 A) Prove that regular languages are closed under Intersection and reversal. **08**

B) Construct regular expression for following DFA. **06**



A) What is pumping lemma? Prove that the language L=$\{a^m b^m | m \geq 1\}$ is not regular. **08**

B) Construct DFA for a language that will accept all the strings which ends with 2 and having 11 as substring. **06**

Q.7 **A)** What is ambiguous grammar? Remove the ambiguity form following grammar. **06**

S→ $iCtS|iCtSeS|a$

C→ bS

B) What is Chomsky hierarchy? Explain in detail.

Seat No.	

M.C.A. (Science) (Semester – V) (Old) (CGPA) Examination, 2017
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 10:30 AM to 01.00 PM

N.B. : *1)* ***Q.1*** *and* ***Q2*** *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**

1) _____, which can be applied to several commonsense tasks as well as to the problem of performing symbolic manipulations of logical expression.
   a) Specific Problem Solver b) General Problem Solver
   c) Principa Mathematica d) Simple Problem Solver

2) Specify one or more states within that space describe possible situations from which the problem solving process may start. These are called_____.
   a) Problem state b) Initial state
   c) Solution state d) Goal state

3) Depth First Search requires _____ memory since only the nodes on the current path are stored.
   a) Maximum b) Less c) Too large d) Not less

4) A_____ is a flat area of search space in which a whole set of neighboring states has the same value.
   a) Plateau b) Local maxima c) Ridge d) Foothills

5) A straight forward procedure to solve Crypt-arithmetic Problem might operate in a state space of partial solutions in which _____ are assigned particular number as their values.
   a) Digits b) Figures c) Sentences d) Letters

6) The predicate *instance* is a binary one, whose first argument is object and whose second argument is _____ to which object belongs.
   a) variable b) Token c) Class d) Abstract

7) _____ are a natural way to represent relationship that would as ground instances of binary predicates in predicate logic.
   a) Resolution b) Proposition Logic
   c) Semantic Net d) Frame

8) ELIZA an early AI program that simulated the _____ of Rogerian therapist.
   a) Actionable b) Divisional c) Behavioral d) Physical

9) The _____ primitive acts for transfer of physical location of an object.
   a) MOVE b) PTRANS c) ATRANS d) INGEST

10) In _____ analysis, the structures created by the syntactic analyzer are assigned meanings.
   a) Syntactic b) Pragmatic c) Semantic d) morphological

B) State True or False. **04**

1) First three decades of AI research is that intelligence requires inspiration.
2) A well defined computable function can play an important part in efficiently guiding a search process toward a solution.
3) User can search forward through the state space from the start to a goal state.
4) RETE remembers its previous calculations and is able to merge new binding's information efficiently.

Q.2. A) Write a short note **08**

i. Production System
ii Artificial Intelligence

B) Answer the following: **06**

i. State and describe Bayes' Theorem.
ii What do you mean by knowledge Representation?

Q.3 Answer the following:

A) Define logic as Predicate logic. Discuss the concept of Natural deduction with suitable example. **07**

B) Define the term cut- off or pruning? Discuss the procedure for adding Alpha-Beta cut-off with suitable example. **07**

Q.4 Answer the following:

A) What do you by Best First Search? Explain Best First Search as a part of Heuristic Search technique with suitable example. **07**

B) What do you mean by Reasoning? Explain in detail the four factor influence to decide a better kind of reasoning? **07**

Q.5 Answer the following

A) What are the different kinds of question as issues in knowledge representation needs to be addressed? **07**

B) Define the term Probability. State and explain in detail Dempster-Shafer Theory with suitable example. **07**

Q.6 Answer the following

A) Explain in detail steps of Syntactic Processing as the process of Natural Language Processing with suitable example? **07**

B) Explain in detail the concept of Conceptual Dependency as strong slot and filler structure with suitable example? **07**

Q.7 Answer the following

A) Discuss in detail various task domains of Artificial Intelligence as the target of work in it. **07**

B) Explain in detail process of Explanation and Knowledge acquisition as a part of Expert System? **07**

SLR-K – 45

Seat No.	

M.C.A. (Science) (Semester – V) (New) (CGPA) Examination, 2017
WEB DESIGN TECHNIQUES

Day & Date: Thursday, 20-04-2017 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 used to increase the column width?
   a) cellspacing b) cellpadding
   c) rowspan d) colspan

2) Consider the following script :

```
<html>
<head><title>JavaScript<title></head>
<body>
<script language="JavaScript">
var a=80
var b=(a==80?"pass","fail")
document.write(b)
</script>
</body>
</html>
```

   What will be the output of the above script ?
   a) Pass b) Fail c) Null d) 80

3) HTTP stands for
   a) Hypertext Transfer Protocol
   b) Hyper text Technology Protocol
   c) Both a and b
   d) None of this

4) To create a combo box which tag we used
   a) <list> b) <select>
   c) <input type="select" d) None of this

5) <BODY BGCOLOR = Yellow>
   a) It changes background color to yellow
   b) It changes text color to yellow
   c) It changes both the color
   d) None of this

6) An external style sheet is ideal when the style is applied to
   a) Many pages b) Single page
   c) Few pages d) None of this

7) The default scripting language for _____is javascript.
   a) Internet Explorer b) Netscape Navigator
   c) Google Chrome d) Mozilla Firefox

8) HTTP is a _____ protocol.
   a) Stateless b) State full c) Session d) None of this

9) Which attribute is used with <img> tag to display the text if image could not load in browser?
   a) Description b) name c) alt d) id

10) XML is design to
   a) Store and Travel b) Load and display
   c) Transport and store d) Display and data

B) Truth / False: **04**

1) XMI stands for Extreme Media Language
2) The attribute 'alt' is used in <img> tag to display alternate text if image cannot display.
3) SOAP is platform independent.
4) Java<BODY BACKIMAGE="../flower.jpg">

Q.2 A) Write short notes on the following **08**

i) Anatomy of a jQuery Script
ii) URL (Uniform Resource Locator)

B) Answer the following **06**

i) State the properties of <table>tag.
ii) Write a javaScript program to display prime numbers between first 100 numbers.

Q.3 Answer the following **7+7**

A) What is cascading style sheet? Explain various style sheets with examples.

B) Write and explain the following HTML tags with their attributes:
   a) Button b) Submit c) Checkbox
   d) Radio Button e) Textbox

Q.4 Answer the following **7+7**

A) Using frames divide the web pages as follows:

B) What is jquery? Explain toggle () method with example.

Q.5 Answer the following **7+7**

A) Write features of XML? Explain the XML with one example.

B) Explain Table tag of HTML with one example.

Q.6 Answer the following **7+7**

A) Write a javaScript program to display the sum of first 100 numbers.

B) Explain the DOM architecture.

Q.7 Answer the following **7+7**

A) Explain Web server architecture in detail.

B) Explain the internal and external linking in HTML with example.

SLR-K-46

Seat No.	

MCA (Science) (Semester – V) (New) (CGPA) Examination, 2017
NETWORK SECURITY

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 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) IPSec is designed to provide the security at the
   a) transport layer b) network layer
   c) application layer d) session layer

2) One of protocols to provide security at application layer is
   a) Pretty Good Privacy b) Handshake Protocol
   c) Alert Protocol d) Record Protocol

3) Responsible for defining the overall architecture of the Internet, providing guidance and broad direction to the IFTF
   a) IESG b) IETF c) IAB d) None of these

4) A _____ takes place when one entity pretends to be a different entity.
   a) masquerade b) Replay
   c) Denial of service d) None of these

5) _____ is the ability to limit and control the access to host systems and applications via communications links.
   a) authentication b) Access control
   c) Data integrity d) Data confidentiality

6) The process of attempting to discover the plaintext or key is known as
   a) Cryptography b) Cryptology
   c) Cryptodignosis d) Cryptanalysis

7) A _____ processes the input one block of elements at a time, producing an output block for each input block.
   a) Block cipher b) Stream cipher
   c) Chain cipher d) None of these

8) _____ attacks involve some modification of the data stream or the creation of a false stream.

a) Passive b) Negative c) Active d) None of these

9) _____is software that is intentionally included or inserted in a system for harmful purpose.
   a) Virus b) Worm
   c) Malicious software d) None of these

10) A _____ virus attaches itself to executable files and replicates, when the infected program is executed, by finding other executable files to infect.
   a) Parasitic b) Memory-resident
   c) Boot sector d) Stealth

B) State whether the following statements are true or false: **04**

1) Intrusion detection involves detecting unusual patterns of activity or patterns of activity that are known to correlate with instrusion.
2) PGP incorporates tools for developing a private-key trust model and private-key certificate management.
3) Plaintext is the scrambled message produced as output
4) A polymorphic virus creates copies during replication that are functionally equivalent but have distinctly different bit patterns.

Q.2 A) Write short notes on the following: **08**

1) Internet security protocol
2) Software firewall

B) Answer the following: **06**

1) What is Encryption algorithm? Explain in short.
2) What is Non-repudiation? Explain it

Q.3 Attempt the following questions: **14**

A) What is the difference between a block cipher & Steam cipher? Explain with examples.

B) What is Attack? Explain types of passive attacks.

Q.4 Attempt the following questions: **14**

A) What is Access Matrix? Explain Access control model.

B) What is digital signature? Explain its importance with example.

Q.5 Attempt the following questions: **14**

A) Explain various objectives of Network security.

B) What smart card? Explain the advantages of smart card.

Q.6 Attempt the following questions: **14**

A) What is Intruder? Explain types of intruders.

B) What is PGP? Explain application area of PGP.

Q.7 Attempt the following questions: **14**

A) Explain the architecture of Secure Socket Layer (SSL) with its applications.

B) What is firewall? Explain general techniques of firewall is use to control access.

SLR-K-47

Seat No.	

M.C.A. (Science) (Semester-V) (New) (CGPA) Examination, 2017
Digital Image Processing Real Time System

Day & Date: Tuesday, 25-04-2017 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 correct alternatives: **10**

1) The early Bartlane systems introduced in 1920 was capable of coding images in ……. distinct levels of gray.
   A) 3 B) 5
   C) 9 D) 15

2) The formation of an image depends on the amount of rays,…..when source of energy is x-ray.
   A) Reflected B) Transmitted
   C) Dispersed D) Both (A) and (C)

3) The storage space required for storing an image of size 64 x 64 with 256 gray levels is …… KB.
   A) 64 B) 4
   C) 8 D) 16

4) In the power-law transform the process used to correct the power-law response phenomena is called……..correction.
   A) Alpha B) Beta
   C) Gamma D) Delta

5) The terms $P(u,v), |F(u,v)|$ and $\emptyset(u,v)$ are….., ….. and …… respectively.
   A) Fourier spectrum, Phase angle, Power spectrum
   B) Phase angle, Fourier spectrum, Power spectrum
   C) Phase angle, Power spectrum, Fourier spectrum
   D) Power spectrum, Fourier spectrum, phase angle

6) Which of the probability density function is useful when noisy image has skewed histogram?
   A) Impulse noise B) Periodic noise
   C) Uniform noise D) Rayleigh noise

7) When an object A is eroded with a square SE and then

subtracted from A then the area within the boundary of resulting image will be…..

A) Remain same
B) Increased depending on SE
C) Decreased depending on SE
D) Decreases but does not depend on SE

8) A mask with – 1 in upper and lower rows and 2 in middle row is used to fine……..

A) Horizontal lines B) Vertical lines
C) Diagonal lines D) Isolated points

9) Euler number of a shape is 4. It has 2 holes, 6 vertices and 4 faces. How many edges are there?

A) 1 B) 2
C) 3 D) 4

10) In case of two class problem with two features which of the following statement is true?

A) The mean vector points are at equidistance from bisecting line
B) The line joining mean vectors is parallel to line bisecting to classes
C) The line joining mean vectors is perpendicular to line bisecting to classes
D) One mean vector is always near to bisecting line than the other

B) Fill in the blanks or true / false: **04**

1) Euclidean distance between pixels at coordinate (2, 4) and (6, 1) is……
2) In the ……. Filtering approach, filtering is applied separately on illumination and reflectance components.
3) The man of Rayleigh density function is……
4) Any one property used to measure the texture is…….

Q2 A) Write short notes on the following: **08**

1) Different distance measures among pixels and examples.
2) Basic steps in frequency domain filtering.

B) Answer the following: **06**

1) Explain Bit plane slicing
2) What are properties of texture?

Q3 Answer the following **7+7**

A) Discuss storage representation of digital image.

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

1	5	9
0	7	15
4	2	6

Q4 Answer the following: **7+7**

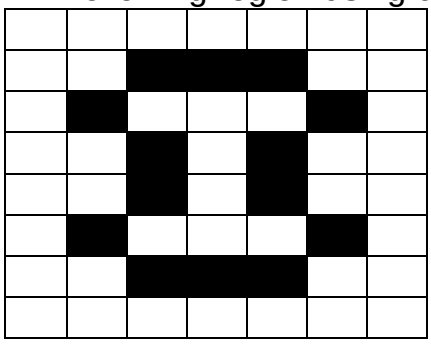
A) Briefly explain basic gray level transforms.

B) Perform erosion of a triangle with each side's 6cm using square having 2 cm each side.

Q5 Answer the following: **7+7**

A) Derive 2D Fourier transform and its inverse.

B) Fill following region using cross structuring element.



Q6 Answer the following: **7+7**

A) What are different order statistics filters? Briefly discuss them.

B) Find mean and covariance matrix for the vectors $x_1 = (0, 1, 1,)^T$, $x_2=(1, 0, 0)^T$, $x_3 = (1, 1, 0)^T$ and $x_4 = (1, 1, 1)^T$

Q7 Answer the following: **7+7**

A) Discuss object recognition based on structural method with example.

B) Apply min filter for the following matrix using 3 x 3 filters. Only consider values within boundary for computation.

180	19	72
41	53	80
210	199	65

SLR-K – 48

Seat No.	

M.C.A.(Science)(Semester – V) (New) (CGPA) Examination, 2017
PATTERN RECOGNITION MOBILE COMPUTING

Day & Date: Thursday, 27-04-2017 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) Real antennas behave like _____.
   a) Isotropic Radiator b) Non-isotropic Radiator
   c) Monotonic Radiator d) None of these

2) In cellular technology the concept used is _____.
   a) Time Reuse b) Code Reuse
   c) Frequency Reuse d) None of these

3) Bluetooth is an example of _____.
   a) Infrastructure network b) Ad-hoc network
   c) Streamed network d) None of these

4) _____ is centralized scheme with one master and several slaves.
   a) Polling b) Aloha c) SDMA d) All of these

5) The uplink frequency of P-GSM system is _____.
   a) 1850-1910 MHz b) 1710-1785 MHz
   c) 890-915 MHz d) None of these

6) _____ is not a part of classical TCP.
   a) Indirect TCP b) Mobile TCP
   c) Snooping TCP d) All of these

7) The type of access used in GSM technology is _____.
   a) FDMA/TDMA b) CDMA c) OFDMA d) None of these

8) The _____ protocol salves the problem of hidden and exposed terminal.
   a) PRMA b) DAMA c) TDMA d) MACA

9) What is the life cycle of services in android?
   a) onCreate()->onStartCommand()->onDestroy()
   b) onRecieve()
   c) final()
   d) Service life cycle is same as activity life cycle.

10) What is APK in android?
   a) Android packages
   b) Android pack
   c) Android packaging kit
   d) None of above

B) State True or False: **04**

1) The subscriber identity module (SIM), which stores all user-specific data.
2) The security services offered by GSM include non-confidentiality.
3) Application contexts are independent of the activity life cycle.
4) There can be only one activity at given time.

Q.2 A) Write short notes on the following: **08**

i) Hidden and Exposed terminals.
ii) Near and Far terminals.

B) Answer the following: **06**

i) What are the advantages of using the infra-red technology?
ii) Define the terms mobile node and correspondent node.

Q.3 Answer the following: **14**

A) What is multiplexing? Explain frequency division multiplexing scheme.
B) Explain cellular system. Write its advantages and disadvantages.

Q.4 Answer the following: **14**

A) Explain the functional architecture of GSM system.
B) Explain the data transfer from mobile node to a correspondent node and vice versa.

Q.5 Answer the following: **14**

A) Describe in brief the congestion control in traditional TCP.
B) Explain localization and calling in GSM.

Q.6 Answer the following: **14**

A) Explain android system architecture with its components.
B) Explain the life cycle of an android activity.

Q.7 Answer the following: **14**

A) What is Bluetooth? Explain how to control the Bluetooth hardware using different methods.
B) Explain how to manage your Wi-Fi using Wi-Fi Manager android Wi-Fi connectivity service?

SLR-K – 49

Seat No.	

M.C.A. (Science) (Semester – V) (Old) (CGPA) Examination, 2017
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 10:30 AM to 01.00 PM

N.B. : *1)* ***Q.1*** *and* ***Q2*** *are* ***compulsory.***
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**

1) How is Fuzzy Logic different from conventional control methods?
   a) IF and THEN Approach b) FOR Approach
   c) WHILE Approach d) DO Approach
2) What is the term used for describing the judgmental or commonsense part of problem solving?
   a) Heuristics b) Value Based
   c) Analytical d) Intelligence
3) In a rule-based system, procedural domain knowledge is in the form of:
   a) Production Rules b) Rule Interpreters
   c) Control Rules d) All of the above
4) An AI technique that allows computers to understand associations and relationship between objects and events is called:
   a) Heuristic Processing b) Cognitive Science
   c) Expert System d) Pattern Matching
5) What is the name of the computer program that simulates the thought processes of human beings?
   a) Human Logic b) Expert System
   c) Intelligence d) Machine Learning
6) Natural language processing is divided into the two subfields of:
   a) Symbolic and Numeric
   b) Understanding and Generation
   c) Algorithm and heuristics
   d) None of the above
7) The explanation facility of an expert system may be use to:
   a) Construct a diagnosing model
   b) System reasoning process
   c) Debugging process
   d) Both (b) and (c)

8) A natural language generation program must decide:
   a) What to Say b) When to Say Something
   c) Both (a) and (b) d) None of these
9) A network with named nodes and labeled arcs that can be used to represent certain natural language grammars to facilitate parsing.
   a) Star Network b) Transition Network
   c) Tree Network d) Complete Network
10) Semantic Net represents
   a) Syntactic relation between concepts
   b) Semantic relations between concepts
   c) Both a and b
   d) Neither a nor b

B) State True or False. **04**

1) The frames are used when one has knowledge that is best understood as a set of concepts that are related to one another.
2) The traditional set theory is also known as Crisp Set theory.
3) To answer probabilistic query Bayes' rule can be used.
4) The natural language generation is the main task of Natural language processing.

Q.2. A) Write short notes on the following: **08**

i. Expert System Shell
ii Frames

B) Answer the following: **06**

i. What is simulated annealing?
ii What is production system?

Q.3 Answer the following:

A) Explain simple facts representation in logic. **07**
B) Explain forward versus backward reasoning. **07**

Q.4 Answer the following:

A) What is conceptual dependency? Show a conceptual dependency representation of the sentence: "I gave the man a book" **07**
B) Explain Alpha Beta cutoffs. **07**

Q.5 Answer the following

A) Explain knowledge acquisition process in expert system. **07**
B) Explain procedural versus declarative knowledge. **07**

Q.6 Answer the following

A) Describe the different approaches for knowledge representation. **07**
B) Explain problem characteristics with example. **07**

Q.7 Answer the following

A) Describe the procedure of MINIMAX search in game playing. **07**
B) Explain syntactic processing and semantic analysis in natural language processing. **07**

SLR-K–50

Seat No.	

M.C.A. (Science) (Semester – V) (Old) (CGPA) Examination, 2017
WEB TECHNOLOGY

Day & Date: Thursday, 20-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction : *1) Question No.**1** and **2** are **compulsory**.*
*2) Attempt **any 3** questions from Q. No. **3** to Q. No. **7**.*

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

1) Tags and test are not directly displayed on the page are written in _____ section.
a) <html> b) <head> c) <title> None of these

2) Which of the following HTML code is valid.
a) <font colour=”red”> b) <font color=”red”>
c) <red><font> d) All of these

3) What is the limit of data to be passed from HTML when doGet() method is used.
a) 4K b) 8K c) 2K d) None of these

4) Browser generates _____ request when the user enters a URL on the address line.
a) Get request b) POST request
c) Server request d) None of these

5) _____ Executed once when the servlet is first loaded.
a) Service b) Init c) Destroy d) None of these

6) _____ gets the cookie name.
a) getName b) getMax c) getCookiename d) none of these

7) Response.sendRedirect (String url) can
a) Sets status code to 302 b) Sets Location response header also
c) Both a and b d) None of these

8) You can call _____ if you want complete list of all parameters in the current request.
a) Request.getParameterNames b) Request.getParameterValues
c) Request.getParameter d) None of these

9) <P> tag will
   a) start a new paragraph
   b) break the line
   c) end the current paragraph
   d) none of the

10) _____ Returns time at which session was first created.
   a) getLastAccessedTime
   b) getCreationTime
   c) both a and b
   d) none of these

B) **State true or false:** **4**

1) getlastAccessedTimereturns time at which session was last sent from client.
2) 404 HTTP 1.1 status Codes used No such page is available.
3) The life cycle of a servlet is managed by servlet container.
4) Delete called when server deletes servlet instance.

Q.2 A) Write short notes on the following: **8**

1) Explain types of loops available in JavaScript.
2) Explain structure of HTML document.

B) Answer the following:

1) New features of servlets 3.0. **6**
2) <img> tag of HTML.

Q.3 A) What is servlet? Explain asynchronous request processing in servlet. **8**
B) Explain different types of HTTP status codes. **6**

Q.4 A) Explain integrating servlet and JSP in a Web Application. **8**
B) Write a JavaScript program to find out factorial of a number. **6**

Q.5 A) What is cookie? Explain sending and receiving of cookies with an example. **8**
B) Write a program to create session in servlet. **6**

Q.6 A) What is JSP? Explain scripting elements of JSP with an example. **8**
B) Write a program to create cookie and store information in servlet. **6**

Q.7 A) Explain declarative and programmatic security for preventing unauthorized access to resources in a web application. **8**
B) Explain servlet life cycle. **6**

Seat No.	

MCA (Science) (Semester – V) (Old) (CGPA) Examination, 2017
NETWORK SECURITY

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1) Q.1 and Q.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 alternatives. **10**

1) SSL is designed to provide security and compression services to data generated from _____layer.
   a) Data link b) Network c) Application d) Transport

2) The cryptography algorithms used in S / MIME are _____
   a) IDEA b) RC4 c) RSA, DES-3 d) RC5

3) _____attacks are very difficult to detect because they do not involve any alteration of data.
   a) Active attack b) Passive attack
   c) Null attack d) None

4) The process to discover plain text or key is known as ___
   a) Cryptanalysis b) Cryptodesign
   c) Crypto processing d) Cryptographic

5) Pretty Good privacy (PGP) is used in
   a) Browser security b) E-mail security
   c) FTP security d) None of these

6) DES involves the following block cipher technique.
   a) ECB b) RSA c) CBC d) SHA 1

7) _____ are very crucial for success of RSA algorithm.
   a) Integers b) Prime numbers
   c) Negative number d) Fraction

8) The _____prevents or inhibits the normal use or management of communications facilities.
   a) Masquerade b) Replay
   c) Modification of messages d) Denial of service

9) DES was devised by _____.
   a) Intel b) IBM c) Sun d) Microsoft

10) _____in transport mode protects the information coming from the transport layer.
a) SSL b) TLS c) IPSec d) IDEA

B) State true or false. **04**

1) SSL provides only authentication.
2) Integrity is the protection of transmitted data from passive attacks.
3) Nonrepudiation is concerned with assuring that a communication is authentic.
4) The letters of plaintext are replaced by other letters or by numbers or symbols in substitution cipher.

Q.2 A) Write short notes on: **08**

1) Intruders
2) Confidentially

B) Answer the following. **06**

1) Explain Encapsulating Security Payload.
2) Explain common techniques for guessing password.

Q.3 A) Explain clerk-Wilson model in detail. **08**
B) Explain triple DES in detail. **06**

Q.4 A) Explain S / MME in detail. **08**
B) Which are the various types of firewall? Explain in short. **06**

Q.5 A) Explain the features of digital signature with example. **08**
B) Explain rule based intrusion detection method. **06**

Q.6 A) Define Access Matrix. Explain Access Control Model. **08**
B) Explain smart card in detail. **06**

Q.7 A) Explain network security model in detail. **08**
B) Explain packet filter firewall. **06**

SLR-K-52

Seat No.	

M.C.A.(Science) (Semester- V) (Old) (CGPA) Examination, 2017
Digital Image Processing / Real Time System

Day & Date: Tuesday, 25-04-2017 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) Each bundle of energy is called a_____
   a) Photon b) Electron
   c) Pixel d) Neutron

2) _____techniques is to bring out detail that is obscured, or simply to highlight certain features of interesting an image.
   a) Enhancement b) Histogram
   c) Sampling and Quantization d) All of these

3) _____procedures partition an image into its constituent parts or objects.
   a) Segmentation b) Classification
   c) Image Enhancement d) Restoration

4) An image of size 1024 x 1024 pixels, in which the intensity of each pixel is an 8-bit quantity, requires _____of storage space if the image is not compressed.
   a) 1Mb b) 1Gb
   c) 1Kb d) 1Byte

5) Thickening is the morphological dual of thinning and is defined by the expression.
   a) $A \odot B = A \supset A \circledcirc B$
   b) $A \odot B = A \cup A \otimes B$
   c) $A \odot B = A \cup A \circledcirc B$
   d) $A \odot B = A \geq A \circledcirc B$

6) The opening if image *f* by structuring element b, denoted as
   a) $fob = (f \ominus b) + b$ b) $f * b = (f \ominus b) \oplus b$
   c) $fob = (f \ominus b) \oplus b$ d) None of these

7) Find the FFT of f(x)={0,1,2,1}
   a) 4,2,0,2 b) 4,0,0,0
   c) 0,1,2,1 d) 4,-2,0,-2

8) If we want to resize a 1024 x 768 image to one that is 600 pixels wide with the same aspect ratio as the original image, what should be the height of the resized image?
   a) 500 x 400 b) 600 x 451
   c) 600 x 768` d) 600 x 541

9) In laplacian images light shaded of gray level is represented by
   a) 0 b) 1
   c) Positive d) Negative

10) Fourier spectrum of noises are constant and usually called
   a) Red noise b) Black noise
   c) White noise d) Green noise

B) State True of False **04**

1) Electromagnetic spectrum is the principal energy source for image.
2) Dilation followed by erosion is called Translation.
3) Two pixels p and q with values from V are 4-adjacent if q is in the set N4 (p).
4) A notch filter rejects frequencies in predefined neighborhood about the centre of the frequency rectangle.

Q2 A) Write a short note on following: **08**

1) Pruning
2) Order statistic filter

B) Answer the following: **06**

1) Local histogram processing
2) What is the digital image processing and application?

Q3 A) Find the Average and max filter of the following image **07**

0	1	2	1
1	2	3	2
2	3	4	3
1	2	3	2

B) What is the use Hough transforms? Explain with suitable example. **07**

Q4 A) Explain the opening and closing morphological operation with suitable example. **07**

B) Consider the same 8 x 8 image that we worked with in region growing. **07**

Let the predicate be threshold <=3. Also draw the quad tree. **07**

5	6	6	6	7	7	6	6
6	7	6	7	5	5	4	7
6	6	4	4	3	2	5	6
5	4	5	4	2	3	4	6
0	3	2	3	3	2	4	7
0	0	0	0	2	2	5	6
1	1	0	1	0	3	4	4
1	0	1	0	2	3	5	4

Q5 **A)** Given below is a 3 x 3 image. What would the value of the centre pixel change to when this image is passed through following filter? **07**

1	7	5
6	2	3
1	4	2

1) Arithmetic mean filter
2) Geometric mean filter
3) Harmonic mean filter

B) Explain High pass Frequency Domain Filter in details. **07**

Q6 **A)** Explain the fundamental image processing steps. **07**

B) Equalize the following histogram. **07**

Gray Level	0	1	2	3	4	5	6	7
Number of pixels	790	1023	850	656	329	25	122	81

Q7 **A)** What is pattern and pattern Class? Explain with suitable example **07**

B) What is descriptor? Explain in details topological descriptor. **07**

SLR-K – 53

Seat No.	

M.C.A.(Science) (Semester – V) (Old) (CGPA) Examination, 2017
PATTERN RECOGNITION / MOBILE COMPUTING

Day & Date: Thursday, 27-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instructions: *1) Q.**1** and Q.**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) _____range covers maximum geographical range of all.
   a) Transmission b) Detection
   c) Interference d) Handover

2) In a FHSS time spent on each channel is _____ time.
   a) Dwell b) Channel c) Hop d) Stay in

3) Dwell time in a GSM handoff depends upon _____.
   a) Propagation b) Interference c) Distance d) All of above

4) Wireless LAN has advantages like _____.
   a) Safety and security b) Restrictions
   c) Quality of Service d) Flexibility

5) Which of the following is a permanent IP address that is assigned to a mobile node?
   a) Foreign Agent b) Home Agent
   c) Both (a) & (b) d) None of these

6) The mechanism used in M-TCP is
   a) Splits TCP connection in to two
   b) Splits TCP connections, choke sender
   c) Snoop data
   d) Snoop data and acknowledgement

7) The approach used to connect setup/ release and data transmission is
   a) Indirect TCP b) Transaction TCP
   c) Snooping TCP d) Mobile TCP

8) In GSM when transmitted as half rate, user data is mapped at same slot but in _____.
   a) Duplicate b) Half c) Alternate d) Double

9) A Bluetooth operates at _____ band.
   a) 2.4 GHz b) 2 GHz c) 620 MHz d) 56 MHz

10) Agent discovery & solicitation terms are associated with__layer.
   a) Mobile network b) Mobile IP
   c) Transport d) All of above

B) State true/ False: **04**

1) A PHY layer of 802.11 consists of PLCP & PMD.
2) Modulation scheme used in GSM is QPSK.
3) The main advantage(s) of infra red technology no license.
4) Low power mode of Bluetooth device is hold mode.

Q.2 A) Write short notes on the following: **08**

i) Signal Propagation
ii) Concept of handoff

B) Answer the following: **06**

i) Why cells are hexagonal?
ii) Explain FHSS transmitter & receiver.

Q.3 Answer the following: **7+7**

A) Explain hidden & exposed terminal effect in wireless network.
B) Explain different Carrier Sense Multiple Access Wireless MAC.

Q.4 Answer the following: **7+7**

A) Explain the functioning of MTSO and BSC.
B) Explain sectorization, micro-cell and pico cell concept in GSM.

Q.5 Answer the following: **7+7**

A) What are different management functions supported by MAC.
B) Describe ad-hoc architecture for WLAN. Explain its advantages & disadvantages with suitable examples.

Q.6 Answer the following: **7+7**

A) With suitable packet format, Explain IP in IP encapsulation.
B) What is DHCP? With suitable diagram explain basic DHCP configuration.

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

A) Explain Mobile TCP and Snooping TCP with advantages and Disadvantages.
B) Explain congestion control and slow start concept related to Traditional TCP.