Master of Science – I (Computer Science)
Examination: Oct / Nov 2016 Semester – I (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC- 299	Wednesday 16/11/2016	10.30 AM to 01.00 PM	DBMS	HCT-1.1	

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

Total Marks: 70

Q.1 A) Choose correct alternative. 10

1) In a relation schema each tuple is divided in to fields called.
   a) relation
   b) domain
   c) queries
   d) all of the above

2) In an E-R model _____ is described in the database by storing its data.
   a) entity
   b) attribute
   c) relationship
   d) notation

3) DFD stands for _____
   a) Data flow diagram
   b) Data file diagram
   c) Data flow document
   d) none of above

4) _____ command can be used to modify a column in a table.
   a) Update
   b) Alter
   c) Set
   d) Create

5) Which of the following is not the type of data integrity
   a) Key integrity
   b) Domain integrity
   c) Entity
   d) Referential integrity

6) In the architecture of a database system external level is the.
   a) Physical level
   b) Logical level
   c) Conceptual level
   d) view level

7) Which database level is closed to the users
   a) external
   b) internal
   c) physical
   d) conceptual

8) a _____ consist of a sequence of query and / or update statement.
   a) commit
   b) transaction
   c) rollback
   d) flashback

9) SET concept is used in _____
   a) Network model
   b) Hierarchical model
   c) Relational model
   d) None of the above

10) Which normal from is considered adequate for relational database design.
   a) 2NF
   b) 3MF
   c) 4NF
   d) BCNF

B) State true/ false :   **04**
1) It is possible to define a scheme completely using DDL and DML.
2) A B-tree of order m has maximum of m+1 children.
3) Relational algebra is procedural query language.
4) Cross product is a unary operator.

Q.2 A) Write short note on the following: **08**
    a) ACID properties
    b) Data replication.

B) Answer the following: **06**
    a) What is DDL and DML. Give one example each.
    b) Explain different types of database users.

Q.3 Answer the following:
A) Describe various components of DBMS.   **07**
B) Define data model. Explain different types of data model with examples.   **07**

Q.4 Answer the following:
A) What is meant by functional dependencies? Explain in detail 2NF, 3NF   **07**
B) Give symbol used in E-R diagram and draw E-R diagram for library management system.   **07**

Q.5 Answer the following:
A) Explain two phase locking protocol.   **07**
B) What are the advantages of distributed database over a centralized database.   **07**

Q.6 Answer the following:
A) Explain the various ways in which database backup and recovery can be implemented.   **07**
B) Give the steps in query processing?   **07**

Q.7 Answer the following:
A) Define serializability Explain the types of serializability.   **07**
B) Describe nested table and varying arrays.

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 300	Friday 18/11/2016	10.30 AM to 01.00 PM	Data structure	HCT 1.2	

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

Total Marks: 70

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

1) The _____ step count is the maximum number of steps that can be executed for the given parameter.
   a) Best Case   b) Worst Case
   c) Average Case   d) None of the above

2) Theta notation is used to denote _____.
   a) Lower Bounds   b) Upper Bounds
   c) Upper and Lower Bounds   d) None of the above

3) Sorting is done on data which is stored in _____ called as External Sorting.
   a) Main Memory   b) Auxiliary Memory
   c) Register   d) None of the above

4) _____ is a finite ordered set of homogenous elements.
   a) Tree   b) Graph
   c) List   d) Array

5) _____ refers to a set of elements which may be finite or infinite.
   a) Abstract Data Type   b) Data Structure
   c) Data Objects   d) Data Type

6) The function which calls itself is called _____.
   a) Reserve function   b) Recursive function
   c) Return function   d) None of the above

7) A large collection of structured information is called a _____
   a) Data structure   b) Array
   c) Database   d) None of the above

8) Computer memory is _____
   a) Quadratic   b) Linear
   c) Non-linear   d) Cubic

9) A step by step procedure to solve a problem is called as _____
   a) Data structure   b) Problem server
   c) Algorithm   d) Procedural language

10) If non-zero elements are less in count, then such matrix is called _____
   a) Identity Matrix   b) Row Matrix
   c) Triangular Matrix   d) Sparse Matrix

B) True or False   **04**
   1) In the prefix form, the operator precedes the two operands
   2) The stack operates in Last in first out.
   3) Tower of Hanoi is example of recursion
   4) An array is static data structure

Q.2 A) Write a short note   **08**
   1) Linked List
   2) Non – Linear Data Structure

B) Answer the following   **06**
   1) What do you mean by Primitive Data Type?
   2) What is the efficiency of Bubble sort?

Q.3 Answer the following
   1) Define term Singly Linked List? State and explain in detail the various   **07**
      operations on Singly Linked List with suitable example?
   2) Explain with example representation of stack using linked list.   **07**

Q.4 Answer the followings
   1) Define the term Queue? Explain in detail insertion and deletion at Dequeue **07**
      with suitable example?
   2) What do you mean by Binary Tree? Construct a binary tree from given
      series and show the results of pre-order, In-order and Post- order traversing   **07**
      at constructed Binary tree.
                        Series: B F G A C D E

Q.5 Answer the followings
   A) Define the term Sorting? Perform merge Sort and show the result in passes   **07**
      on following series.
            Series : 5, 19, 20, 3, 10, 8, 13, 7, 3, 6, 10, 8, 29, 16, 39

   B) Define Array? Discuss representation and applications of Single and   **07**
      Multidimensional Array with suitable example?

Q.6 Answer the following
   A) Write down Breadth First search algorithm with suitable example?   **07**

   B) Write down the counting sort algorithm? Sort the series 5 8 6 2 1 3 using
      counting sort algorithm   **07**

Q.7 Answer the following
   A) State the algorithm for conversion of Infix into postfix string? Apply the **07**
      same on given infix expression show its conversion into postfix string?
      Infix Expression : ((a + c) – b * (d – e) + g) * (f + h
   B) State the algorithm of Binary Search and Linear Search and also show the   **07**
      results of the both of the search on given series to find the digit 2 in it
            Series : 6, 5, 9, 1, 8, 7, 15, 10, 13, 12, 19, 6.

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 301	Monday 21/11/2016	10:30 AM to 01:00 PM	Object Oriented Programming Using C ++	HCT 1.3	

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

Total Marks: 70

Q.1   Choose the correct alternative: 10

1) In C++, dynamic memory allocation is accomplished with the operator
   a) New
   b) this
   c) Malloc ( )
   d) delete

2) In C++ a function contain in class called as
   a) a method
   b) a member function
   c) a class function
   d) None of the above

3) In C++, operator << operator is called as
   a) an insertion operator
   b) an extraction operator
   c) get from operator
   d) None of the above

4) Identify the operator that is not used with pointers.
   a) →
   b) &
   c) *
   d) >>

5) Runtime polymorphism is achieved by
   a) friend function
   b) Virtual function
   c) Operator overloading
   d) Functions overloading

6) Which of the following operators could be overloaded?
   a) --
   b) +
   c) +=
   d) both a, b & c

7) Which of the following can't be passed to a function?
   a) Reference variable
   b) Arrays
   c) Class objects
   d) Header files

8) Which of the following are not keywords?
   a) NULL
   b) abstract
   c) Protected
   d) both a & b

9) Templates enable us to create a range of related
   a) Classes
   b) Variables
   c) arrays
   d) both a & b

10) Which of the following statements are correct in C++?
   a) Classes cannot have data as public members
   b) Structures cannot have functions as members.
   c) Class members are public by default
   d) None of the above

B) **State whether following statements are True or False:** 04
1) The :: Operator can be overloaded.
2) A class gets executed whenever we create an object of a class.
3) All data members and functions are private by default in a class.
4) In looping for loop is also known as entry controlled loop.

Q.2 A) **Write a short note on following.** 08
1) Destructor
2) Features of object oriented programming.

B) **Explain the following terms.** 06
1) Copy constructor
2) Functions prototyping

Q.3 **Answer the following:**
A) Write a program to in C++ to illustrate the use of arithmetic operators such as 07
condition, subtraction, multiplication and division using a member function,
these are defined out of the scope of class definition.

B) Define inheritance. Explain multiple inheritance with example. 07

Q.4 **Answer the following**
A) Write a program in C++ to illustrate the use of virtual function. 07

B) Explain the concept call by value and call by reference with example. 07

Q.5 **Answer the following:**
A) Write a program to find the sum of two numbers using default argument 07
declaration.

B) Explain in detail this pointer with suitable example. 07

Q.6 **Answer the following:**
A) Write a program in C++ to display a series of Fibonacci numbers using the 07
constructor.

B) Explain in detail the concept of Input / Output Stream Flags. 07

Q.7 **Answer the following:**
A) Write a program in C++ for swapping of two numbers using function 07
overloading.

B) Define Array. Explain the concept of array of class object with example. 07

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 302	Wednesday 23/11/2016	10:30 AM to 01:00 PM	Software Engineering	SCT 1.1	

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

Total Marks: 70

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

1) SDLC stands for
   a) Software design life cycle
   b) Software development life cycle
   c) System design life cycle
   d) System development life cycle

2) Which model is popular for student's small projects?
   a) Spiral model
   b) Waterfall model
   c) Prototyping model
   d) Capability maturity model

3) A computer program can be very satisfactory _____ of a physical system such as road traffic conditions.
   a) Solution
   b) Replacement
   c) Simulation
   d) Model

4) Design phase includes _____
   a) Data, architectural and procedural designs only
   b) Data, architectural, interface and procedural designs only
   c) Data, architectural and interface designs only
   d) Architectural, procedural and interface designs only

5) Data flow diagrams is _____
   a) The modern version of flowchart
   b) Mainly used at the systems specification stage
   c) The primary output of the system design phase.
   d) All of the above

6) Objects have _____ in objet oriented design of software.
   a) Attributes, name and operations
   b) Attributes and name
   c) Operations and name
   d) None of the above

7) The system should provide _____ thing, to avoid error in transcription and transposition, during data entry.
   a) A check digit
   b) A hand totals
   c) Batch totals
   d) All of these

8) Choose and internal software quality from given below.
   a) Scalability
   b) Usability
   c) Reusability
   d) Reliability

9) In which stage of process improvement bottlenecks and weakness are identified?
   a) Process measurement
   b) Process analysis
   c) Process change
   d) None of the mentioned.

10) Statement and branch coverage metrics are part of _____
   a) Analysis model
   b) Testing
   c) Design model
   d) Source code

B) State True or False   04
1) If a software production gets behind schedule, one can add more programmers and catch up.
2) Component based software engineering allows faster delivery.
3) Configuration management is an essential part of system maintenance. It is aided with version controls tools to control versions, semi – versions or patch management.
4) System size is metric of analysis model.

Q.2 A)   Write a short note on the following.   08
1) Product and process
2) Data dictionary

B)   Answer the following :   06
1) What is cyclomatic complexity? Explain in brief.
2) Why software doesn't wear out?

Q.3 Answer the following:
A)   What is software? Discuss the important characteristics of software.   07
B)   How basis path testing is done? Explain.   07

Q.4 Answer the following
A)   Explain in detail RAD model.   07
B)   Explain white box testing in detail with example.   07

Q.5 Answer the following:
A)   Explain the mechanism of structured analysis.   07
B)   What are functional and non functional requirements? Explain in detail. 07

Q.6 Answer the following:
A)   Explain how the object oriented software projects are managed with suitable example.   07
B)   Explain evolutionary software process model with example.   07

Q.7   Answer the following:
A)   What are the communication techniques? Explain   07
B)   Differentiate between user requirements and system requirements.   07

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 303	Wednesday 23/11/2016	10:30 AM to 01:00 PM	Operating System	SCT 1.2	

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

Total Marks: 70

Q.1 A) Choose the correct alternative: 10

1) The operating system manages _____
   a) Memory
   b) Processes
   c) Disks and I/O devices
   d) All of above

2) First-in-First-Out (FIFO) scheduling is _____
   a) Non Preemptive Scheduling
   b) Preemptive Scheduling
   c) Fair Share Scheduling
   d) Deadline Scheduling

3) What is the function of an operating system?
   a) Manages computer's resources very efficiently
   b) Takes care of scheduling jobs for execution
   c) Manages the flow of data and instruction
   d) All of the above

4) Which method is used to recover from deadlock?
   a) Process termination
   b) Resource preemption
   c) Both a an b
   d) None of these

5) Saving the stat of the old process and loading the saved state of the new process is called _____
   a) Context switch
   b) Switch context
   c) Multi programming
   d) All of these

6) Which of the following activity of process management?
   a) Creating and deleting user and system processes
   b) Suspending and resuming processes
   c) Providing mechanisms for process synchronization
   d) All of the above

7) The degree of multi-programming is _____
   a) The number of processes executed per unit time.
   b) The number of processes in the ready queue.
   c) The number of processes in the I/O queue.
   d) The number of processes in memory.

8) Which operating system implementation has to focus on the issue of good response time?
   a) Batch processing
   b) Multiprogramming
   c) Distribute
   d) Time sharing

9) Which of the following is a service not supported by the operating system?
   a) Protection
   b) Accounting
   c) Compilation
   d) I/O operation

10) Moving process from main memory to disk is called _____
   a) Caching
   b) Swapping
   c) Termination
   d) Interruption

B) **State whether following statements are True or False:**   **04**
1) The number of processes completed per unit time is known as response time.
2) Banker's algorithm is used for deadlock prevention.
3) Segmentation memory allocation scheme suffers from external fragmentation.
4) A real time system has well defined and fixed time constraints.

Q.2 A) **Write a short note on the following.**   **08**
1) PCB
2) Direct Memory Access (DMA)

B) **Answer the following :**   **06**
1) What is the use of job queues, ready queues and device queues?
2) Give the advantage of multiprogramming.

Q.3 Answer the following:
A) What is system call? Explain different categories of system call.   **07**

B) Define CPU scheduling. Explain priority and round robin scheduling.   **07**

Q.4 Answer the following
A) What is fragmentation? Explain the difference between internal and external fragmentation.   **07**

B) Explain the concept of trashing and why trashing should be avoided in a system?   **07**

Q.5 Answer the following:
A) Describe demand paging and its performance.   **07**

B) Explain inter-process communication in detail.   **07**

Q.6 Answer the following:
A) What is an operating system? What are the functions of the operating system?   **07**

B) What is scheduler? Explain different types of scheduler.   **07**

Q.7 Answer the following:
A) Give the need of page replacement and explain various page replacement algorithm.   **07**

B) Explain different services provided by operating system.   **07**

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC-304	Wednesday 16/11/2016	10.30 AM to 01.00 PM	Object Oriented Programming using C++	I	

Instructions:
1) Question No. 1 and 2 is compulsory.
2) Attempt any three questions from Q. no. 3 to Q. no. 7
3) Figures to right indicate full marks.

Total Marks: 70

Q.1 A) Choose correct alternative. 10

1) Which among following is not a valid visibility mode in c++ program?
   a) Private
   b) Public
   c) Protected
   d) Limited

2) How we can define member function outside the class?
   a) Using scope resolution
   b) Using structure
   c) Using pointers
   d) Using union

3) How we can access data member using objects?
   a) object@datamember
   b) object*datamember
   c) object.datamember
   d) object->datamember

4) What is true about Constructor?
   a) Its name a plural of class name
   b) Its name has * symbol before it.
   c) Its name is same as of class name.
   d) Its name has # symbol before it.

5) Which of the following concepts means wrapping up of data and functions together?
   a) Abstraction
   b) Encapsulation
   c) Inheritance
   d) Polymorphism

6) Which of the following for objector is overloaded for object cout?
   a) >>
   b) <<
   c) +
   d) =

7) Which of the following functions are performed by a constructor?
   a) Construct a new class
   b) Construct a new object
   c) Construct a new function
   d) Initialize objects

8) The step-by-step instruction that solve a problem are called.
   a) an algorithm
   b) a list
   c) a plan
   d) a sequential structure

9) Which value will it take when both uses and default values are given?
   a) User value
   b) Default value
   c) Custom value
   d) none of these

10) Which of the following approach by C++?
   a) Top-down
   b) Bottom-up
   c) Right-left
   d) Left-right

B) State true/ false :

04

1) In C++, a functions contained within a class is called a member function.
2) Constructors that can take arguments are called parameterized constructors.
3) Virtual functions can be static member.
4) A derived class with only one base class is called multiple inheritance

Q.2 A) Attempt the following question: **08**
   a) What are the basic concepts of OOPs? Explain in short.
   b) Define flowchart? Explain the use of different symbols to draw flowchart.

B) Write a short note a following: **06**
   a) Friend function
   b) Function prototyping

Q.3 Attempt the following question:
   A) What is memory management operators? Explain types of memory management   **07**
      operators with suitable example..
   B) What is constructor? Explain multiple constructor with example.   **07**

Q.4 Answer the following:
   A) What is operator overloading? Explain with suitable example.   **07**
   B) Write a C++ program to implement parameterized constructor.   **07**

Q.5 Answer the following:
   A) What is inheritance? Explain multilevel inheritance with syntax and example. **07**
   B) Write a C++ program to implement matrix class. Add number function to   **07**
      transpose to matrix.

Q.6 Answer the following:
   A) What is Exception? Explain exception handing mechanism.   **07**
   B) Write a C++ program to demonstrate function overloading.   **07**

Q.7 Answer the following:
   A) What is manipulator? Explain the use of any three in build manipulators with **07**
      example.
   B) Explain different data types used in C++.   **07**

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SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC 305	Friday 18/11/2016	10:30 AM to 01.00 PM	Numerical Analysis	II	

Instructions:
1) Question no. 1 and 2 are compulsory.
2) Attempt any three questions from Q.no.3 to Q.no.7.
3) Figures to the right indicate full marks.
4) Use of simple or scientific calculator is allowed.

Total Marks: 70

Q.1 A) Select the most correct alternative- 08

1) The order of errors the Simpsons rule for numerical integration with a step size h is
   a) h^2 b) h
   c) h^3 d) h^4

2) We wish to solve $x^2 - 2 = 0$ by Newton Raphson technique. If initial guess is $x_0 = 1.0$, subsequent estimate of $x(i.e.x_1)$ will be
   a) 1.414   b) 1.5
   c) 2.0   d) 1.999

3) Guass-Siedel method used for _____
   a) Integration   b) Root finding
   c) Solution of system of linear equations   d) All of the above

4) The convergence of which of following method is sensitive to starting value?
   a) False position   b) Guass-Siedel method
   c) Newton Raphson Method   d) All of these

5) The convergence in modified Euler's method is _____than that of Euler's method.
   a) slower   b) compatible
   c) faster   d) one time more

6) Errors may occurs in performing numerical computation on the computer due to
   a) Rounding error   b) Power fluctuation
   c) Operator fatigue   d) All of these

7) The form of the function $f(x)$ given by

x	:	2	1	-1
$f(x)$	:	12	16	24

is

a) $4x - 20$ b) $x^2 - 2x + 12$

c) $-4x + 20$ d) $3x^2 - 2x + 4$

8) The system of equations $2x + 4y = 10$, $5x + 10y = 25$ has
   a) No unique solution   b) Only one solution
   c) Only two solutions   d) Infinite solutions

9) If $\begin{pmatrix} 1 & 4 & 3 \\ 2 & 7 & 9 \\ 5 & 8 & a \end{pmatrix} = \begin{pmatrix} l_{11} & 0 & 0 \\ l_{21} & l_{22} & 0 \\ l_{31} & l_{32} & -50 \end{pmatrix} \begin{pmatrix} 1 & u_{12} & u_{13} \\ 0 & 1 & u_{23} \\ 0 & 0 & 1 \end{pmatrix}$ then value of a is

a) 2   b) -1

c) -2   d) 1

10) A differential equation together with the initial condition is called _____
   a) Initial value   b) Initial value problem
   c) Problem   d) Conditional problem

B) Fill in the blanks: 04

1) Degree of precision of trapezoidal rule for numerical integration is _____

2) Global truncation error of Modified Euler's method with small step size h is_

3) As soon as a new value of a variable is found by iteration, it is used immediately in the following equations, this method is called _____

4) Process of estimating the value of dependent variable at an intermediate value is called _____

Q.2 A) Write short notes on: 08

1) Trapezoidal rule
2) Bisection method

B) Answer the following: 06
1) Define the general error formula
2) Establish following identities
$$\nabla \equiv 1 - E^{-1}$$

Q.3 A) State and prove Euler's modified method.   07

B) Apply Lagranges formula to find a cubic polynomial which approximate   **07**
following data.

x	:	-2	-1	1	3
$Y = f(x)$	:	-12	-8	3	5

Q.4 **A)** Explain Newton's backward interpolation method.   **07**

B) With usual notation show that   **07**
1) $(1 + \nabla)(1 - \nabla) = 1$

2) $\Delta\nabla = \Delta - \nabla$

Q.5 **A)** Using regula falsi method find the real root of the equation correct upto two   **07**
decimal places $x^3 - x - 4 = 0$.

B) From the following table of values of x and f(x) find f(0.21) by using Newton's   **07**
forward interpolation formula.

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

Q.6 **A)** Solve following equations by Guass-Elimination method.   **07**
$$x + y + z = 1$$

$3x + y - 3z = 5$

$x - 2y - 5z = 10$

B) Solve following system using LU decomposition method.   **07**
$2x + 3y + z = 9$

$$x + 2y + z = 6$$

$3x + y + 2z = 8$

Q.7 **A)** Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using Simpson's $\frac{3th}{8}$ rule by taking h= 0.5   **07**

B) Use Newton-Raphson method to find the real root near 2 of the equation   **07**
$x^4 - 11x + 8 = 0$ accurate to four decimal places.

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 306	Monday 21/11/2016	10:30 AM to 01:00 PM	Software Engineering	III	

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

Total Marks: 70

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

1) The degree of interactions between two models is known as _____.
   - a) Cohesion
   - b) Coupling
   - c) Strength
   - d) Inheritance

2) Prototyping is appropriate for _____.
   - a) Data – oriented applications
   - b) Applications with emphasis on the user interface
   - c) Applications which are highly interactive
   - d) All of the above

3) _____ is not concern during the management of software project.
   - a) time
   - b) money
   - c) product quality
   - d) project / product information

4) The RAD model is _____
   - a) same as component – based development
   - b) A useful approach when a customer cannot define requirements clearly
   - c) A high – speed adaptation of the linear sequential model
   - d) Same as incremental model.

5) _____ is another name for Block Box Testing.
   - a) Specification – based testing
   - b) Structural testing
   - c) Unit testing
   - d) Stress Testing

6) During software development _____ factor is most crucial.
   - a) People
   - b) Process
   - c) Product
   - d) Project

7) SDLC stands for _____.
   - a) Software design life cycle
   - b) Software development life cycle
   - c) System design life cycle
   - d) System development life cycle

8) For _____ waterfall model is not suitable.
   - a) Small projects
   - b) Complex projects
   - c) Accommodating Projects
   - d) None of the above

9) The objective of testing is _____.
   a) Debugging
   b) To uncover errors
   c) To gain modularity
   d) To analyze system

10) In the system concepts, the term integration _____.
    a) Implies structure and order
    b) Refers to the holism system
    c) Refers to the manner in which each component functions with other components of the system
    d) means that parts of computer system depends on one another

B) **State whether following statements are True or False:** **04**
1) Coupling is a measure of interconnection among modules in a program structure.
2) Reliability of software is dependent on number of errors present in software.
3) Code optimization is responsibility of application programmer.
4) The main objective f designing various modules of a software is to increase the cohesion and to decrease the coupling.

Q.2 **A)** **Write a short note on following.** **08**
1) Data dictionary
2) Independent paths

B) **Attempt the following questions:** **06**
1) Why quality metrics are very important?
2) What are the challenges in software?

Q.3 **Answer the following:**
A) What is Software? Discuss the important characteristics of software. **07**
B) Discuss any two methods that support object oriented analysis. **07**

Q.4 **Answer the following**
A) Explain the different phases involved in waterfall life cycle. **07**
B) Explain all the phases involved in the implementation phase. **07**

Q.5 **Answer the following:**
A) What is a class and object? Give the diagrams and representation of class and object. **07**
B) Explain how waterfall model and prototyping model can be accommodate in the spiral process model. **07**

Q.6 **Answer the following:**
A) What are the different activities in user interface design process? Elaborate these activities. **07**
B) What are the software testing strategies? Explain. **07**

Q.7 **Answer the following:**
A) Explain in detail about white box testing. **07**
B) Explain software metrics in process and the project domain. **07**

Master of Science – I (Computer Science)
Examination: Oct / Nov 2016 Semester – I (Old CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 307	Wednesday 23/11/2016	10:30 AM to 01:00 PM	Data Structure	IV	

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

Total Marks: 70

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

1) Which of the following data structure is not linear data structure?
   a) Arrays
   b) Linked lists
   c) Both of above
   d) None of above

2) Finding the location of the element with a given values is :
   a) Traversal
   b) Search
   c) Sort
   d) None of above

3) Which of the following data structure store the homogeneous data elements?
   a) Arrays
   b) Records
   c) Pointers
   d) None of above

4) When a data are to be deleted from a data structure, but there is an absence of data then this situation is usually called.
   a) Saturated
   b) Overflow
   c) Houseful
   d) Underflow

5) The merge sort uses following strategy to sort the elements-
   a) Divide and law strategy
   b) Divide and multiply strategy
   c) Divide and concave strategy
   d) Divide and concurrent strategy

6) Which of the following name does not relate to stacks?
   a) LIFO list
   b) Push-down lists
   c) FIFO lists
   d) None of above

7) The _____ algorithm is "greedy" in the sense that it always chooses the closest vertex to the source among those whose shortest path is not yet known.
   a) Dynamic programming
   b) Branch and bound
   c) Binary search tree
   d) Dijkstra's shortest path

8) A char is a _____ data type and capable of holding one character in the local character set.
   a) String
   b) Single byte
   c) User defined
   d) Strange

9) The _____ is balanced when all the balancing factors of all the nodes are − 1, 0, +1.
   a) General tree
   b) Binary tree
   c) Forest tree
   d) Spanning tree

10) _____ uses 7 bit character code so characters may be viewed as "digits"
   a) American Standardization Coding for Internet Information
   b) African Standard Code of Information Interchange
   c) Asian Standard Code for Information Exchange
   d) American Standard Code for Information Interchange

B) State true or false   **04**
1) Data and space measures for the efficiency of an algorithm.
2) Queue data structure has variant that can be used for the purpose of expression conversion.
3) A dynamic programming is a name that comes from control theory and is nothing but filling-in of a table of sub problems to get a solution to a given problem and
4) Circular Lined list can be represented by using the first field of each cell to point to the left child and the second field to point to the right child.

Q.2 A) Write a short note on   **08**
1) Data structure
2) Priority queue

B) Answer the following :   **06**
1) What do you mean by Sparse Matrix?
2) Briefly explain doubly Linked List?

Q.3 Answer the following:
A) Define the term sorting. State and perform Bubble sort algorithm to sort following numbers in ascending order –   **07**
49, 65, 99, 23, 105, 13, 78, 55, 28, 100, 66, 35, 86, 19, 60, 25

B) Define the term tree. Discuss the Depth First Search algorithm for tree traversing with suitable example.   **07**

Q.4 Answer the following
A) Define the term singly Linked List. Explain in detail atom insertion and deletion operation in the Circular Linked List with suitable example.   **07**

B) Define the term stack. Illustrate a Tower of Hanoi Problem and its solution having three disks and three pegs.   **07**

Q.5 Answer the following:
A) State the meaning of Data type? Discuss in detail Primitive and Composite data type.   **07**

B) Illustrate and discuss the algorithm for the conversation of infix arithmetic expression into postfix expression using stack on given expression   **07**
K* (L – R) + (D / A – Z) + E * M

Q.6 Answer the following:
A) Discuss in detail the differentiation between Queue and Dequeue with suitable example.   **07**

B) Define the term Backtracking. Explain in detail the mechanism of Backtracking with suitable example?   **07**

Q.7 Answer the following:

A) State and discuss in detail Arrays as a structure with suitable example. **07**

B) Define the term Binary tree. Illustrate the process of Pre-order, In-order and **07**
Post- order traversing
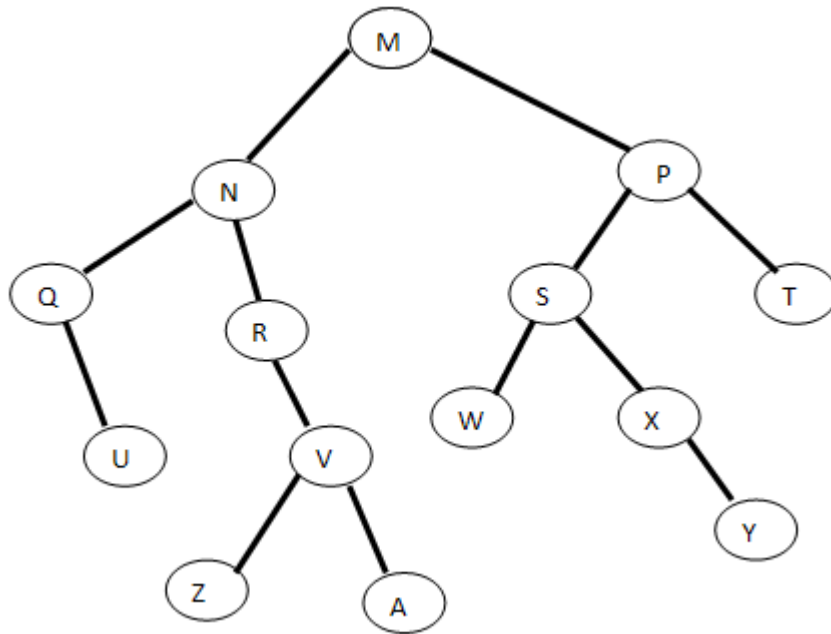
SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 308	Thursday 17/11/2016	10:30 AM to 01:00 PM	Java Programming	V	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Marks: 70

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

A) Select correct alternatives:
1) Which is a reserved word in the Java programming language?
   a) method
   b) native
   c) subclasses
   d) reference

2) Which is a valid declarations of a String?
   a) String s1 = null;
   b) String s2 = 'null';
   c) String s3 = (String) 'abc';
   d) String s4 = (String) '\ufeed';

3) What is the most restrictive access modifier that will allow members of one class to have access to members of another class in the same packages?
   a) public
   b) abstract
   c) protected
   d) default access

4) Which cause a compiler error?
   a) int [ ] scores={3,5,7};
   b) int[ ] [ ] scores = {2,7,6},{9,3,45};
   c) String cats [ ] = {"Fluffy", "Spot", "Zeus"}
   d) Boolean results [ ]= new Boolean [] {true, false, true};

5) 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

6) Which three are valid method signatures in an interface?
   1.   private int get area ();
   2.   public float getVol(float x);
   3.   public void main (String [] args);
   4.   public static void main(String [] args);
   5.   boolean setFlag (Boolean [] test);
   a) 1 and 2
   b) 2, 3 and 5
   c) 3, 4 and 5
   d) 2 and 4

7) What will be the output of the program?

```
Public class X
{
Public static void main (String [] args)
{
   try
   {
     bad Method ();
     System.out. print ("A");
   }
   Catch (Exception ex)
   {
       System. Out. Print ("B");
   }
   finally
   {
       System.out.print ("C");
   }
   System.out.print ("D");
 }
  public static void bad Method ()
   {
       throw new Error ();
   }
 }
```
a) ABCD
b) Compilation fails
c) BC is printed before exiting with an error message.
d) C is printed before exiting with an error message.

8) Which two are valid constructors for Thread?
   1.   Thread (Runnable r, String name)
   2.   Thread ()
   3.   Thread (int priority)
   4.   Thread (Runnable r, Thread Group g)
   5.   Thread (Runnable r, int priority)

a) 1 and 3   b) 2 and 4
c) 1 and 2   d) 2 and 5

9) Which three are methods of the Object class?
   1.   notify ();
   2.   notify all ();
   3.   islnterrupted ();
   4.   synchronized ();
   5.   interrupt ();
   6.   wait (long msecs);
   7.   sleep (long msecs);
   8.   yield( );
a) 1, 2, 4   b) 2, 4, 5
c) 1, 2, 6   d) 2, 3, 4

10) Which of these events will be notified if scroll bar is manipulated?
    a) ActionEvent
    b) ComponentEvent
    c) AdjustmentEvent
    d) WindowEvent

B) State True or false: **04**
1) Can we compare int variable with a Boolean variable?
2) The method to Lower Case () changes all lowercase letters to uppercase and all uppercase letters to lowercase.
3) The method indexOf (",") will allow you to search for the location of a comma.
4) All variables 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 user and check it is Prime or not. If given number is negative or zero then throw exception and give message "Enter number greater than zero".

Q.4 Answer the following:
    a) Explain how to draw following shape in applet   **09**
        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 extends exception.   **07**

    b) State the features 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 MouseMotionsListener methods with example and how to check **07**
    which mouse button is pressed by using MouseEvent class.

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

Master of Science – I (Computer Science.)
Examination: Oct / Nov 2016 Semester – II (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 309	Saturday 19/11/2016	10:30 AM to 01.00 PM	Computer Communication Network	VI	

Instructions:
1) **Question 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.**

Total Marks: 70

Q.1 A) Select the most correct alternative-   **10**

1) A network consists of _____
   a) Hosts
   b) Transmission lines
   c) Switching elements
   d) All of these

2) Network organized into Layers or Levels to _____
   a) reduce design complexity
   b) form more bigger network
   c) increase utilization of resources
   d) none of these

3) _____part of datalink layer controls the way various devices share the same medium.
   a) Logical Link Control
   b) Medium Access Control
   c) Shared Link Control
   d) Medium Shared Control

4) _____is technique to check, transmitting entity does not flood with the receiving entity.
   a) Error Control
   b) Flow Control
   c) Flooding
   d) De-Flooding

5) _____is way to choose a route between given pair of routers, such that it will be the shortest one.
   a) Optimality Principle
   b) Shortest Path Routing
   c) Static Routing
   d) Dynamic Routing

6) _____is a processor that keeps track of all mobile hosts visiting to that area.
   a) Foreign Agent
   b) Home Agent
   c) Visiting Agent
   d) Local Agent

7) _____primitive in Berkeley Sockets creates a new end point and allocates table space for it within transport entity.
   a) SOCKET
   b) CREATE
   c) END
   d) CONNECT

8) In TCP service model, port numbers below 1024 are called _____
   a) Well-known Ports
   b) Unknown Ports
   c) Remote Ports
   d) Gigabyte Ports

9) Which of the following is not SMTP command?
   a) HELO
   b) RCPT
   c) HELP
   d) None of these

10) Which of the following is/are part of URL?
   a) Protocol name
   b) DNS name
   c) File name
   d) All of these

B) State True or False: 04

1) Gateways are used for necessary translation in interconnection of networks.
2) The transport entity can be located in the operating system kernel.
3) Main function of network layer is framing.
4) Domain names are case sensitive.

Q.2 A) Write short notes on: 08

1) ARPANET
2) Store and Forward Packet Switching

B) Answer the following: 06
1) Explain services provided by data link layer to network layer.
2) Explain the optimality principle for routing.

Q.3 A) Explain connection oriented and connectionless services with their service primitives. 07

B) Explain architecture of internet in detail. 07

Q.4 A) What is one-bit sliding window protocol? Explain its working in normal case and abnormal case. 07

B) Explain simplex stop and wait protocol in detail. 07

Q.5 A) Give the comparison of virtual circuit subnet and datagram subnet in detail. 07

B) Explain hierarchical routing with the example. 07

Q.6 A) Discuss about wireless TCP and UDP protocols in brief. 07

B) Explain the concept of remote procedure call in detail. 07

Q.7 A) Explain the architecture and services of e-mail. 07

B) Explain about HTTP protocol in detail. 07

Master of Science – I (Computer Science)
Examination: Oct/Nov 2016 Semester – II (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR –SC – 310	Tuesday 22/11/2016	10.30 AM To 01.00 PM	UML	VII	

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

Total Marks: 70

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

1) What does a simple name in UML class and object consist of ?
   a) Letters
   b) Digits
   c) Punctuation characters
   d) All of the above

2) What does a composite name consists of in a UML class and object diagram?
   a) Delimiter
   b) Simple name
   c) Digits
   d) All of the above

3) A class consists of which of these abstractions?
   a) Set of the objects
   b) Operations
   c) Attributes
   d) All of the above

4) A class is divided into which of these compartments?
   a) Name compartment
   b) Attribute compartment
   c) Operation compartment
   d) All of the above

5) An attribute is data item held by which of following?
   a) Class
   b) Object
   c) All of the above
   d) None of the above

6) What should be mentioned as attributes for conceptual modeling?
   a) Initial values
   b) Names
   c) All of the above
   d) None of the above

7) An operation can be described as?
   a) Object behavior
   b) Class behavior
   c) Functions
   d) Both (a) and (b)

8) Which of these are parts of class operation specification format?
   a) Name
   b) Parameter list
   c) Return type list
   d) All of the above

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) An objects symbol is divided into what parts
    a) Top compartment
    b) Bottom compartment
    c) All of the above
    d) None of the above

B) State true or false   **04**
1) Associations may also correspond to relation between instances of three or more classes.
2) Association lines may be unlabeled or they may show association name.
3) Use case diagram is a dynamic model of interaction between product and actors in a use case.
4) Use cases can last for more than one session.

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

1) State chart diagrams
2) Package in structural modeling

B) Answer the following   **06**
1) What is the importance of using UML?
2) Association

Q.3 Answer the following
A) Explain building blocks of UML   **07**
B) Describe various steps in constructing object model   **07**

Q.4 Answer the followings
A) Draw the activity diagram for online railways reservation system.   **07**
B) Explain the difference between collaboration diagram and sequence diagram   **07**

Q.5 Answer the followings
A) Explain UML software development life cycle.   **07**
B) What are the modeling techniques for component diagram?   **07**

Q.6 Answer the following
A) Draw the use case diagram for online digital library system.   **07**
B) What is a collaboration diagram? Explain the various elements supported by collaboration diagram.   **07**

Q.7 Answer the following
A) What are the benefits of sequence diagram? Explain sequence diagram for making a hotel reservation?   **07**
B) What are the parts of deployment diagram?   **07**

Master of Science – II (Computer Science)
Examination: Oct/Nov 2016 Semester – III (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 311	Thursday 24/11/2016	10:00 A.M to 01:30 P.M	DBMS	VIII	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Marks:70

Q.1 A) Select correct alternatives: 10

1) The ---------- refers to the way data is organized in and accessible from DBMS.
   a) Database hierarchy   b) Data organization
   c) Data sharing   d) Data model

2) ---------- are the different events in Triggers.
   a) Define, Create   b) Drop, Comment
   c) Insert, Update, Delete   d) Select, commit

3) ---------- language is the subset of SQL commands used to manipulate Oracle Database structures, including tables.
   a) Data Definition   b) Data Manipulation
   c) Data Described   d) Data Retrieval

4) A set of possible data values is called ------------.
   a) Attribute   b) Degree
   c) Tuple   d) Domain

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

6) A ------------ is a set of column that identifies every row in a table.
   a) Composite key   b) Candidate key
   c) Foreign key   d) Super key

7) ----------- is critical in formulating database design.
   a) row column order   b) number of tables
   c) functional dependency   d) normalizing

8) Privileges once given can be denied to a user using ---------- command.
   a) GRANT   b) PERMIT
   c) COMMIT   d) REVOKE

9) A -------- allows the storing of repeating attributes of a record in a single row.
   a) Varying array
   b) Object
   c) Abstract method
   d) All

10) ---------- character function can be used to return a specified portion of a character string.
    a) INSTR
    b) SUBSTRING
    c) SUBSTR
    d) POS

B) **State True or false:**   **04**
1) The data dictionary is a tool used exclusively by the database administrator.
2) It is necessary to create physical tables at each level of abstraction.
3) System variable date$ can be assigned to any field only during design time.
4) Nested table is a table within a table.

Q.2 A) **Write short notes on the following:**   **08**
i) Advantages of DBMS.
ii) Functional Dependency

b) **Answer the following:**   **06**
i) Write the advantages of Optimisation.
ii) What is Replication?

Q.3 Answer the following: **14**
a) Explain components of DBMS.
b) What is Exception? Explain user defined Exception in detail.

Q.4 Answer the following: **14**
a) What is Recovery? Why Recovery is necessary?
b) Draw E-R diagrams for College Admission system.

Q.5 Answer the following: **14**
a) Explain ACID properties of transaction.
b) Explain steps in Query processing.

Q.6 Answer the following: **14**
a) Write PL SQL block to determine to 5 highest paid employees from the employee table using Cursor.
b) Explain Indexing in detail.

Q.7 Answer the following: **14**
a) Show two phase locking ensures conflict serializability.
b) Explain concept of Distributed databases.

Master of Science – I (Computer Science) Examination: Oct / Nov 2016 Semester – II (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 312	Thursday 17/11/2016	10:30 AM to 01:00 PM	Java Programming	V	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Total Marks: 70

Q.1   A)   Select correct alternatives: **10**

1) Which of the operators have the lowest precedence in Java Operators?
   a) Parentheses i.e.[ ], ( )   b) Conditional i.e. ?:
   c) Unary operators i.e. +, -, ++, --   d) Assignment Operator i.e. =

2) ------------ is used for input of multiline text.
   a) Scrollbar   b) Text Field
   c) Label   d) Text Area

3) Each object of the class has its own copy of-----------.
   a) Static variable   b) Instance variables
   c) Class variables   d) Local variables

4) What is the output of the following program?

   public class test {

   public static void main (String arg [ ]) {
   int i=5, j=1;
   for (i=0;i<=5;i=i+2)
   j++;
   j=i++ +1;
   System.out.print(j);
   }

   }
   a) 6   b) 8
   c) 7   d) 13

5) An applet is said to be dead when it is removed from memory. This occurs automatically by invoking the ---------- method.
   a) stop ( )   b) destroy ( )
   c) init ( )   d) paint ( )

6) What is the output when you compile and run the following code?

```
public class test
{
    public static void main (string[ ]args)
    {
        boolean b=5>5;
        int a=(int) b;
        System.out println (a);
    }
}
```

a)	0	b)	1
c)	NaN	d)	Compiler error

7) A package is a collection of ------------.
   a) keyword
   b) classes and interfaces
   c) editing tools
   d) views

8) An exception is an ---------- condition that arises in a code.
   a) abnormal
   b) casual
   c) unfortunate
   d) opposite

9) Java programs perform I/O through -----------
   a) i/o methods
   b) i/o package
   c) streams
   d) compiler

10) ----------- is the mechanism that binds together the code and the data.
   a) Polymorphism
   b) Encapsulation
   c) Inheritance
   d) Together

B) State True or false: 04
1) A compound statement is a statement involving only *if* and *else*.
2) Every method of a final class is implicitly final
3) The static keyword denotes that a member variable or method can be accessed, without requiring an instantiation of the class to which it belongs.
4) Different constructors can be created for a single class.

Q.2 A) Write short notes on the following: 08
   i)   Class FileWriter
   ii)   ResultSet class

b) Answer the following: 06
   i)   How you can force the garbage collection?
   ii)   What's the difference between constructors and normal methods?

Q.3 Answer the following:

a) Write the syntax and purpose of any five methods of String class.   **07**

b) Write a program to print out all Armstrong numbers between 1 and 500. If   **07**
sum of cubes of each digit of the number is equal to the number itself, then
the number is called an Armstrong number. For example,
$153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)$

Q.4 Answer the following:

a) What is package? State the salient features of packages.   **08**

b) What is automatic or implicit type conversion? What is widening primitive   **06**
conversion and narrowing primitive conversion?

Q.5 Answer the following:

a) State various types of iteration statements in Java.   **07**

b) Describe exception handling in Java.   **07**

Q.6 Answer the following:

a) What is the use of combo-box? Explain how combo-boxes behave during   **07**
run-time. Describe how combo-box is put on a frame. Explain how an event
generated by a combo-box is handled.

b) Explain various kinds of Streams.   **07**

Q.7 Answer the following:

a) State the purpose of the following JDBC classes and interfaces-   **06**

   i) Driver manager   ii) Connection   iii) Statement

b) Explain how to create a new thread using the class Thread with suitable   **08**
example.

Master of Science – I (Computer Science)
Examination: Oct / Nov 2016 Semester – II (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 313	Saturday 19/11/2016	10:30 AM to 01.00 PM	Computer Communication Network	VI	

Instructions:
1) Question 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.

Total Marks: 70

Q.1 A) Select the most correct alternative- 10

1) Bluetooth is an example of _____
   a) personal area network
   b) local area network
   c) virtual private network
   d) none of the mentioned

2) A _____is a device that forwards packets between networks by processing the routing information included in the packet.
   a) bridge
   b) firewall
   c) router
   d) all of the mentioned

3) The first Network _____
   a) CNNET
   b) NSFNET
   c) ASAPNET
   d) ARPANET

4) OSI stands for _____
   a) Open System Interconnection
   b) Operating System Interface
   c) Optical Service Implementation
   d) None of the mentioned

5) ADSL is the abbreviation of _____
   a) Asymmetric Dual Subscriber Line
   b) Asymmetric Digital System Line
   c) Asymmetric Dual System Line
   d) Asymmetric Digital Subscriber Line

6) What is the use of bridge in network?
   a) to connect LANs
   b) to separate LANs
   c) to control Network speed
   d) All of these

7) DNS is the abbreviation of _____
   e) Dynamic Name System
   f) Dynamic Network System
   g) Domain Name System
   h) Domain Network Services

8) IPV4 address is _____
   a) 8 bit
   b) 16 bit
   c) 32 bit
   d) 64 bit

9) How many layers does OSI reference model have?
   a) 4   b) 5
   c) 6   d) 7

10) What is the default subnet mask for a class C network?
    a) 127.0.0.1   b) 255.0.0.0
    c) 255.255.0.0   d) 255.255.255.0

B) State True or False: **04**
   1) The IPV4 addresses are unique and universal.
   2) NAT is abbreviation of Network Address Translation.
   3) ARP is abbreviation of Address Resource Protocol.
   4) DHCP provides static and dynamic address allocation that can be manual
      or automatic.

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

   1) DNS
   2) HDLC

B) Answer the following: **06**
   1) What are the uses of computer network?
   2) What is network hardware?

Q.3 A) Explain error detection and error correction codes.   **07**

B) What is routing? Explain different routing techniques in details. **07**

Q.4 A) Discuss various remote procedure calls for transport layer.   **07**

B) Explain the architecture & services of application layer.   **07**

Q.5 A) Explain the connection oriented and connectionless services. **07**

B) Explain congestion prevention policies.   **07**

Q.6 A) Explain sliding window protocol in brief.   **07**

B) Difference between datagram and virtual circuits.   **07**

Q.7 A) Explain the following protocol: 1) IPV4   2) ARP   **08**

B) What is internet routing? Explain it.   **06**

Master of Science – I (Computer Science)
Examination: Oct / Nov 2016 Semester – II (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR –SC – 314	Tuesday 22/11/2016	10.30 AM To 01.00 PM	UML	VII	

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

Total Marks: 70

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

1) An object symbol is divided into what parts?
   a) Top compartment
   b) Bottom compartment
   c) All of the above
   d) None of the above

2) Which of the following states about concurrent region?
   a) It is concurrent composite state contain two or more concurrent state diagrams separated by dashed lines.
   b) The concurrent state diagrams specify finite automata that execute in parallel.
   c) All of the above
   d) None of the above

3) 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

4) An operation can be described as?
   a) Object behavior
   b) Class behavior
   c) Functions
   d) Both a and b

5) What does a deployment diagram consists of?
   a) Computational resource
   b) Communication path between resources.
   c) Artifacts that execute resource.
   d) All of the above

6) Which of these are parts of class operation specification format?
   a) Name
   b) Parameter list
   c) Return type list
   d) All of the above

7) What should be mentioned as attributes for conceptual modeling?
   a) Initial values
   b) Names
   c) All of the above
   d) None of the above

8) Which among these are the common notations for deployment diagrams?
   a) Artifacts and nodes
   b) Stereotypes
   c) Components
   d) All of the above

9) An attributes is a data item held by which of following?
   a) Class   b) Object
   c) All of the above   d) None of the above

10) 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

B) State true or false   **04**
1) Use case diagram is a dynamic model of interaction between product and actors in a use case.
2) A dependency relation holds between two entities D and I where change in I does not affect D.
3) Association lines may be unlabeled or they may show association name,
4) Low-level design is the activity of filling in small detail at the lowest levels of abstraction.

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

1) Time and space.
2) Deployment diagram.

B) Explain the following terms.   **06**
1) Synchronization in processes
2) Principle of modeling

Q.3 Answer the following
A) What is UML? Explain in detail sequential diagram by giving suitable example.   **07**
B) Explain the importance of object oriented design modeling.   **07**

Q.4 Answer the followings
A) Describe various mechanism used in constructing object model.   **07**
B) Explain generalization and specialization in detail by giving suitable example.   **07**

Q.5 Answer the followings
A) Explain how encapsulation and information hiding is important in UML.   **07**
B) Give the difference between collaboration diagram and sequence diagram.   **07**

Q.6 Answer the following
A) What is collaboration diagram? Explain the various elements supported by collaboration diagram.   **07**
B) Draw the use case diagram for digital library system.   **07**

Q.7 Answer the following
A) Explain the building blocks of UML. And also explain importance of modeling.   **07**
B) What are the modeling techniques for component diagram?   **07**

Master of Science – II (Computer Science)
Examination: Oct/Nov 2016 Semester – II (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 315	Thursday 24/11/2016	10:00 A.M to 01:30 P.M	DBMS	VIII	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Marks:70

Q.1 A) Select correct alternatives: 10

1) Data independence means
   a) Data is defined separately and not included in programs.
   b) Programs are not dependent on the physical attributes of data.
   c) Programs are not dependent on the logical attributes of data.
   d) Both (b) and (c).

2) If a relation is in 2NF, then
   a) Every candidate key is a primary key.
   b) Every non-prime attribute is fully functionally dependent or each relation key.
   c) Every attribute is functionally independent.
   d) Every relation key is a primary key.

3) E-R model uses this symbol to represent weak entity set.
   a) Dotted rectangle   b) Diamond
   c) Doubly outlined rectangle   d) None of these

4) Which data management language component enabled the DBA to define the schema components?
   a) DML   b) Subschema DLL
   c) Subschema DLL   d) All of the above

5) A function that has no partial functional dependencies are in ----------- form.
   a) 3NF   b) 2NF
   c) 4NF   d) BCNF

6) It is possible to define a schema completely by using ---------.
   a) VDL and DDL   b) DDL and DML
   c) SDL and DDL   d) VDL and DML

7) In SQL, which command is used to select data in rows and column from one or more tables?
   a) Choose   b) Select
   c) List   d) Browse

8) A database management system -----------.
   a) Allows simultaneous access to multiple files.
   b) Can do more than a record management system.
   c) Is a collection of programs for managing data in a single file.
   d) Both (a) and (b)

9) The hierarchical database is implemented as
   a) Table   b) Array
   c) List   d) Tree

10) The ---------- defines the way of connecting a relating two or more entities together.
   a) Relationship   b) Connectivity
   c) Robustness   d) None of these

B) **State True or false:**   **04**
1) In a distributed database storage devices are not all attached to a common CPU.
2) A concurrency control algorithm ensures that transactions execute atomically.
3) An entity is said to be weak entity when its existence is dependent on other entity.
4) The physical storage determines how the data is appeared to the user.

Q.2 A) **Write short notes on the following:**   **08**
   i) Indexes in SQL
   ii) Serialization

b) **Answer the following:**   **06**
   i) Explain in brief the structure of relational database.
   ii) Explain the use of primary key and foreign key in brief.

Q.3 Answer the following:
   a) What is meant by data model? Explain object based logical model.   **07**
   b) Explain in brief the concept of distributed database.   **07**

Q.4 Answer the following:
   a) Explain the various techniques used for database recovery.   **07**
   b) Explain the steps involved in Query processing with suitable diagrams.   **07**

Q.5 Answer the following:
   a) Define relational calculus? Explain tuple and domain relational calculus.   **07**
   b) Explain Aggregate functions and character functions used in SQL.   **07**

Q.6 Answer the following:
   a) Define DBMS. Explain various types of users of DBMS.   **07**
   b) Explain the concept of specialization and generalization used in database modeling.   **07**

Q.7 Answer the following:
   a) Explain Concurrency control techniques with suitable example.   **07**
   b) Explain the concept of data replication & Fragmentation with example.   **07**

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester – III (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 316	Wednesday 16/11/2016	02:30 P.M to 05:00 P.M	Web Design Techniques	IX	

Instructions:
1) Question No. 1 and 2 is compulsory.
2) Attempt any three questions from Q. no. 3 to Q. no. 7
3) Figures to right indicate full marks.

Total Marks: 70

Q.1 A) Choose correct alternative. 10

1) _____ tag is used to make the beginning of paragraph.
   a) <td>   b)
   c) <p>   d) <tr>

2) _____ is attribute of form tag.
   a) action   b) method
   c) both a&b   d) none of these

3) What is the correct jQuery code to set the background color of all p elements to red?
   a) $("p").style("background-color","red");
   b) $("p").manipulate("background-color","red");
   c) $("p").css("background-color","red");
   d) $("p").layout("background-color","red");

4) By using _____ tag we can create number list.
   a) <UL>   b) <OL>
   c) <OT>   d) <list>

5) Consider the following script:
   ```
   <html>
       <head><title>JavaScript</title></head>
       <body>
       <script language= "JavaScript">
       document.write((125/5)%12);
       </script>
       </body>
       </html>
   ```
   What would be the output of the script?
   a) 0
   b) 1
   c) 3
   d) 125/5

6) _____ is considered to be extensible because of its unlimited and self-defining markup symbols.
   a) HTML   b) XHTML
   c) XML   d) W3C

7) What does the URL need to access document?
   a) Path name
   b) Host name
   c) DNS
   d) Retrieval method
   e) Server port number
      i.   I, II, III
      ii. I, III, IV
      iii. I, II, IV
      iv. III, IV, V

8) While working on a JavaScript project, in your JavaScript application, which function would you use to send message to users requesting for text input?
   a) Display ()   b) Prompt()
   c) Alert ()   d) Conform ()

9) Which of the following statement is true?
   a) An XML document can have one root element
   b) An XML document can have one root element
   c) XML elements have to be in lower case
   d) All of the above

10) Consider the following syntax:
    <MAP NAME= "World Map">
    <Area Coords="0,0, 100, 200" HREF= "homepage.html">
    </MAP>
    When would you use the above syntax?
       a) When defining an image map
       b) When referring back to homepage.html
       c) When referring to World Map
       d) When embedding a graphic in JavaScript

B) State true/ false :   **04**
   1) HSPACE: Indicates the amount of space to the left and right of the image.
   2) HTML is used to transport data, while XML is used to format and display the data.
   3) Using the Document Object Model (DOM) JavaScript enabled browsers identify the collection of web page objects that have to be dealt with while rendering an HTML based, web page in the browser window.
   4) An internal style sheet should be used when a single document has a unique style.

Q.2 A) Write short note on: **08**
   a) Getters & Setters
   b) CSS

B) Answer the following: **06**
   a) What is XML namespace?
   b) State the use of resize() function in jQuery?

Q.3   Answer the following:

A) Write a javascript to display the denomination of the moment deposited in the bank in terms of 100's, 50's, 20', 10', 5's, 1's. (Eg: If deposited amount is Rs.163, the output should be 1-100's, 1-50's, 1-10's, 1-2's & 1's).   **07**

B) Write a JavaScript that scroll a text message in the status bar of the browser window.   **07**

Q.4   Answer the following:

A) Write a basic code for add jquery library to pages.   **07**

B) Desing a web page for USER LOGIN DETAILS with proper validations.   **07**

Q.5   Answer the following:

A) Write a HTML source to display following table.   **07**

Sr.No.	Item Name	Qty.	Rate	Amount
1	Mouse	5	200	1000
2	Keyboard	5	500	2500
3	LCD	3	4000	12000
			Total =	15500

B) Explain in detail the XML schema, built in and uses defined data type in detail.   **07**

Q.6   Answer the following:

A) What I Apache? Write steps to installing Apache server on window.   **07**

B) Explain about the object that help AJAX reload parts of a web page without reloading the whole page.   **07**

Q.7   Answer the following:

A) Explain the following HTML tags with all attributes.   **07**
   1) <a>
   2) <body>
   3) <img>
   4) <p>

B) Explain javscript objects: window, documents.   **07**

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC 317	Friday 18/11/2016	02:30 PM to 05.00 PM	Artificial Intelligence	X	

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

Total Marks: 70

Q.1 A) Choose the correct alternatives 10

1) The _____ give suggestions to a chip designer, who can accept or reject the advice.

   a) Prospector   b) Mycin
   c) Knowledge Engineer   d) Design advisor

2) Spot an Identical Entities as a part of Discourse and Pragmatic processing form a text -
   a) Suresh opened the book for reading. The title page was torn.
   b) Mohsin have a blue pen. Manish wanted it.
   c) There was a heavy rainfall yesterday. The colleges were closed today.
   d) Heena wanted a new bike. She decided to get a job.

3) The _____ is a theory that considers sets of proposition and assigns to each of them an interval in which the degree of belief must lie.
   a) Theory of Artificial Intelligence
   b) Newell, Shaw and Simon Theory
   c) Dempster Shafer Theory
   d) Bayes' Theorem

4) A _____ that specifies the order in which the rules will be compared to the database and a way of resolving the conflicts that arise when several rules match at once.
   a) Many- Many Match strategy   b) Goal state

   c) Control Strategy   d) Predicate Logic

5) The _____ principle provides a way of finding contradictions by trying a minimum number of substitutions.
   a) Resolution   b) Propositional logic
   c) Computable functions   d) Fuzzy Logic

6) A technique known as _____ allows us to use a mixed strategy that would make possible to solve the major parts of a problem first and then go back and solve the small problems that arise in gluing the big pieces together
   a) Property Inheritance   b) Certainty factor
   c) Means Ends Analysis   d) Formal Task

7) A direction in which to conduct the search can be a search _____ through the state space from the start state to a goal state.
   a) Bidirectional
   b) Backward
   c) Round and Reserve
   d) Forward

8) A _____ allows us to represent set of membership as possibility distribution.
   a) Set Theory
   b) MiniMax Search Procedure
   c) Fuzzy Set Theory
   d) Conceptual Dependency

9) A_____ system out of collections of _____that are connected to each other by virtue of the fact that the value of a attribute of one _____ may be another _____.
   a) Semantic network
   b) Frame
   c) Conceptual Dependency
   d) None of these

10) An algorithm called _____ combines the best aspects of depth – first and breadth-first search
   a) First-Order Iterative Deepening (FOID)
   b) Control-first Iterative Deepening (CFID)
   c) Depth-First Iterative Deepening (DFID)
   d) Second-Order Iterative Deepening (SOID)

B) **State True or False**   04
   1) Top-Down parsing begins with the sentence to be parsed and apply the grammar rules backward until a single tree whose terminals are the words of the sentence and whose top is the start symbol.
   2) An ATRANS as set of primitive actions stands for movement of body parts by its owner.
   3) The inferential adequacy is the ability to manipulate the representational structures in such a way as to drive new structures corresponding to new knowledge inferred from old.
   4) A plateau is a state that is better than all its neighbors but is not better than some other states farther away.

Q.2   A) Write a short note: 08
   1) Bayes' Theorem
   2) AI Technique

B) Answer the following: 06
   1) State in brief an algorithm of Generate-and-Test
   2) What are the Formal Task domains of Artificial Intelligence?

Q.3   Answer the following:
A) Enlist the various Problem Characteristics. Explain in detail the Production   07
   System and its component.

B) Define the term Constraint Satisfaction. Discuss the Crypt arithmetic problem   07
   as part of Constraints Satisfaction with suitable example.

Q.4 **Answer the followings**

A) What are the Expert tasks? Discuss in detail process of knowledge acquisition to design and develop the Expert Systems. **07**

B) What do you mean by Certainty Factor? Discuss Certainty factor and rule based system with suitable example. **07**

Q.5 **Answer the followings:**

A) What do you mean by Predicate Logic? Explain in detail use of Computable Functions and Predicates for information deduction with suitable example. **07**

B) Define the term Game playing. Explain in detail MiniMax Search Procedure with suitable example. **07**

Q.6 **Answer the following:**

A) What do you mean by Reasoning? State and Explain in detail four factor influence to decide a better way of Reasoning. **07**

B) Discuss in detail Conceptual and Script as a strong slot and Filler Structures. **07**

Q.7 **Answer the following:**

A) What do you mean by Natural Language Understanding? State and explain in detail various steps of Natural Language processing. **07**

B) What do you mean by Artificial Intelligence? Illustrate the solutions for Water-Jug Problem with suitable example. **07**

Master of Science – II (Computer Science) Examination: Oct / Nov 2016 Semester – III (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 318	Monday 21/11/2016	02:30 PM to 05:00 PM	Mobile Computing	XI	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Total Marks: 70

Q.1 Objective Questions. 10

A) Select correct alternatives:

1) Assigning different time slots for uplink and downlink using the same frequency is called.
   - a) Time Division Duplex
   - b) Frequency Division Duplex
   - c) Phase Division Duplex
   - d) Code Division Duplex

2) For ----------- systems, the transmitter changes the frequency several times during the transmission of a single bit.
   - a) Fast Hopping
   - b) Slow Hopping
   - c) Chipping Sequenced
   - d) Bit transmission

3) BSS in GSM stands for -----------.
   - a) Basic Services Set
   - b) Base Station Sub-system
   - c) Base Station Service
   - d) Basic Service Sub-system

4) Which of the following is not function of MAC management protocol in IEEE 802.11 Wireless LAN standard?
   - a) Synchronization
   - b) Roaming
   - c) Power Management
   - d) None of these
   - e)

5) In mobile network layer, ----------- protocol is used to send registration request.
   - a) Internet Control Message Protocol
   - b) User Datagram Protocol
   - c) Transmission Control Protocol
   - d) Internet Protocol

6) Whenever traditional TCP detects the congestion, then it will take ------------- as next immediate action.
   - a) Fast Retransmit
   - b) Time-out Freezing
   - c) Slow Start
   - d) Splits the connection

7) Which of the following process in android has highest priority?
   - a) Visible Process
   - b) Started Services Process
   - c) Active Process
   - d) Empty Process

8) The meaning term 'bonding' in case of Bluetooth is ----------.
   - a) Coupling
   - b) Sharing
   - c) Connection
   - d) Pairing

9) Which of the following is not an advantage of using small cells in cellular system?
   a) Higher Capacity
   b) Less transmission power
   c) Frequency planning
   d) Local interference only

10) Where one station is to be heard by all others, ----------schemes can be applied.
   a) Polling
   b) Fixed Time Division Multiplexing
   c) Reservation Time Division Multiple Access
   d) Directional Communication Propagation

B) **State True or false:** 04
1) Slotted ALOHA protocol solves the collision problem correctly.
2) Roaming is not possible in IEEE 802.11 Wireless LAN in infrastructure mode.
3) Android application development uses MVC architecture.
4) CDMA is most secure type of multiplexing if code is encrypted.

Q.2 A) **Write short notes on the following:** 08
   i)   Signal Propagation
   ii) Simple Bluetooth Piconet

b) **Answer the following:** 06
   i)   Explain slow start in traditional TCP.
   ii) Describe android GUI architecture.

Q.3 Answer the following:
a) What is Antenna? Explain different types of it. 07
b) Discuss about indirect TCP and snooping TCP in detail. 07

Q.4 Answer the following:
a) Describe packet delivery mechanism using Mobile IP. 07
b) Discuss about indirect TCP and snooping TCP in detail. 07

Q.5 Answer the following:
a) Explain the synchronization mechanism for IEEE 802.11 in infrastructure mode and in ad-hoc mode. 07
b) Explain the protocol architecture of GSM system in detail. 07

Q.6 Answer the following:
a) Discuss android application life cycle with application priorities and process states. 07
b) Explain discovery and bonding of Bluetooth devices. 07

Q.7 Answer the following:
a) Explain the direct sequence spread spectrum technique and role of transmitter and receiver in it. 07
b) Discuss mobile terminated call scheme in GSM. 07

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 319	Wednesday 23/11/2016	2:30 P.M to 5:00 P.M	Operations Research	XII	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Total Marks: 70

Q.1 A) Select correct alternatives:

1) A constraint in an linear programming problem represents?
   a) Limitations
   b) Requirements
   c) Balancing limitations and requirements
   d) All of the above

2) A feasible solution to an linear programming problem.
   a) Must satisfy all of the problem's constraints simultaneously.
   b) Need not satisfy all of the problem's constraints, only some of them.
   c) Must be a corner point of the feasible region.
   d) Must optimize the value of the objectives function.

3) A variable which does not appear in the basic variable column of simplex table is
   a) Never equal to zero
   b) Always equal to zero
   c) Called a basic variable
   d) None of the above.

4) The number of basic solutions to linear programming problem with n variables and m(<n) constraints are
   a) m + n
   b) ^nC_m
   c) m − n
   d) None of the above

5) An alternative optimal solution to a minimization transportation problem exist whenever opportunity cost corresponding to unused route of transportation is
   a) Positive and greater than zero
   b) Positive with at least one equal to zero
   c) Negative with at last one equal to zero.
   d) None of the above

6) Which finding dual of any primal form, all constraints must be in ------------ form.
   a) $\geq$
   b) $\leq$
   c) $=$
   d) Any of these

7) Generally project technique deals with the project of?
   a) Repetitive nature
   b) Non-repetitive nature
   c) Deterministic nature
   d) None of the above

8) In time cost-trade of function analysis
   a) Cost decreases linearly as time increases.
   b) Cost at normal time is zero.
   c) Const increases linearly as time increase.
   d) None of the above

9) Optimistic, most likely and pessimistic times of an activity are 26, 40 and 33 respectively, then the expected time and variance activity are
   a) 43 and 5.43 respectively
   b) 33and 5.43 respectively
   c) 35 and 5.43 respectively
   d) 40 and 26 respectively

10) A $st - cut$ (cut) is a partition (A,B) of the vertices with ----------------
   a) $s \in A$
   b) $s \in A$ and $t \in B$
   c) $t \in B$
   d) None of the above

B) **State True or false:**   04
   1) MODI algorithm is used to solve assignment problem.

   2) Every standard cost minimizing transportation problem has a feasible solution..

   3) If a least one of the constraint is parallel to objective function in LPP then there exist infinite solutions.

   4) PERT is a probabilistic model

Q.2 A) **Define**   04
   i)   Basic solution to a linear programming problem.
   ii) Basic feasible solution to a linear programming problem.

   b) **Answer the following:**   10
   i)   State the formula for finding the outgoing and incoming vector in dual simplex method.
   ii) Compare CPM and PERT explaining similarities and mentioning where they mainly differ.

Q.3 **Answer the following:**
   a) Solve the following LP problem and state what your solution indicates.   08
      Min $Z = 4x_1 - 2x_2$
         Subject to
$$x_1 + x_2 \leq 14$$
$$3x_1 + 2x_2 \geq 36$$
$$2x_1 + x_2 \leq 24$$
      And
$$x_1, x_2 \geq 0$$

   b) What conditions must exist in a simplex table to establish the existence of an alternative solution? No feasible solution? Unbounded solution?   06

Q.4 **Answer the following:**
   a) Give the algorithm of Dual Simplex method.   07

b) Determine an intial basic feasible solution to the following transportation problem by using Vogel's Approximation Method.   07

Source	Destination				Supply
	D1	D2	D3	D4	
S1	21	16	15	3	11
S2	17	18	14	23	13
S3	32	27	18	41	19
Demand	6	10	12	15	

Q.5 **Answer the following:**

a) What is meant by critical path in Network Analysis?   02

b) A project has the following activities and other characteristics: 12

Activity	Preceding Activity	Time Estimations (weeks)		
		Optimistic	Most likely	Pessimistic
A		4	7	16
B		1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E,F	1	4	7
I	G	4	19	28

    a) Draw the PERT network diagram.
    b) Identify the critical path.
    c) Prepare the activity schedule for the project.
    d) Determine the mean project completion time.
    e) Find the probability that the project is completed in 36 weeks.
    f) If the project manager wishes to be 99% sure that the project is completed on june 30, 1991, when should he start the project work?

Q.6 **Answer the following:**

a) Give the difference between PERT and CPM.   06

b) Solve the following non-linear programming problem by Kuhn-Tucker conditions.   08
Min $Z = 2x_1 + 3x_2$
Subject to
$$x_1 x_2 \leq 8$$
$$x_1^2 + x_2^2 \leq 20$$
And $x_1, x_2 \geq 0$

Q.7 **Answer the following:**

a) ExplainFord-Fulkerson Algorithm of network flow problem.   09

b) Define Matroid with an example.   05

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester – III (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC-320	Wednesday 16/11/2016	02:30 PM to 05.00 PM	Web Design Techniques	IX	

Instructions:
1) Question No. 1 and 2 is compulsory.
2) Attempt any three questions from Q. no. 3 to Q. no. 7
3) Figures to right indicate full marks.

Total Marks: 70

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

1) $('#masterList').find ('li').width (500).addClass('selected');
   This phenomenon in the above code is called as _____.
   a) Animation   b) Channing
   c) Event Bubbling   d) AJAX

2) _____ type of CSS uses style attribute?
   a) Inline   b) Embedded
   c) External   d) CSSStyle

3) The _____ property specifies the boldness of text.
   a) Font-Indent   b) Font-width
   c) Font-text   d) Font-weight

4) The _____ attribute of radio button is used to identify whether radio button is selected or not.
   a) Selected   b) Checked
   c) Name   d) Id

5) SGML stands for _____.
   a) Standard Generalized Markup language.
   b) Standard Graphics Mapping Language.
   c) Standard General Markup Language.
   d) Standard General Markup Link.

6) _____ code is used to select first < li > element of every < ul >.
   a) $("ul li:first")   b) $("ul li:first-child")
   c) $("ul li:first-all")   d) $("ul liall-child")

7) _____ element of XSLT is used to select each node of selected element.
   a) xsl:template   b) xsl:for
   c) xsl:for-each   d) Xsl:when

8) An XML file is said to be _____ if it does not reference an external DTD.
   a) Valid   b) Disable
   c) Standalone   d) Enable

9) _____ method of Array object of JavaScript combines all elements and returns in string.
   a) Join()   b) Combine()
   c) Concat ()   d) Meager()

10) document.write (parseInt("How are you")) will display _____ in JavaScript.
   a) How are you   b) NaN
   c) Not Integer   d) Show Error

B) State true/ false: **04**
   1) Optional speed parameter for slow method takes value in seconds.
   2) Empty () function removes contents of all elements.
   3) navigator.appName returns name of browser.
   4) DTDs is written as like XML file.

Q.2 A) Write short note on the following: **08**
   a) Explain with example frameset and frame tag.
   b) Explain any 8 Data object methods.

B) Answer the following: **06**
   a) Explain Location and History object with example.
   b) What is <div> and <span> tags? Explain how to attach CSS class to these tags? Give example.

Q.3 Answer the following:
   A) Write JavaScript to validate email id and mobile number.   **07**
   B) What is JQuery plugins? How to create plugins? Explain with example.   **07**

Q.4 Answer the following:
   A) Write is web server? Explain how to configure Apache web server.   **07**
   B) What is use of XSLT? Explain different elements used in XSLT.   **07**

Q.5 Answer the following:
   A) Explain different list used in html. Give example of each list.   **07**
   B) What are advantages of JavScript? Explain documents object with is methods.   **07**

Q.6 Answer the following:
   A) Explain Border and color properties in CSS with example.   **07**
   B) How to create hyperlink? Explain internal and external links with example.   **07**

Q.7 Answer the following: **14**
   A) Design XML file for staff information and display staff records having experience more than 10 years in tabular form.
   B) What is DOM Manipulation in JQuery? Explain different functions used for DOM manipulation with example.

Master of Science – II (Computer Science)
Examination: Oct/Nov 2016 Semester – III (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC 321	Friday 18/11/2016	02:30 PM to 05.00 PM	Artificial Intelligence	X	

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

Total Marks: 70

Q.1   A) Choose the correct alternatives 10

1) Game playing and Theorem proving share the property; people who do well are considered to be displaying _____
   a) Scientific Analysis   b) Commonsense
   c) Intelligence   d) Fault finding

2) _____provides a way of separating important features and variations from the many unimportant ones
   a) Abstraction   b) Search
   c) Mundane task   d) Predicate Logic

3) The problem can be solved by using rules, in combination with an appropriate control strategy, to move through the _____
   a) Solution space   b) Problem space
   c) Desired space   d) Rule based space

4) A good general purpose heuristic that is useful for variety combinatorial problem is nearest neighbor heuristics, which work by selecting the _____ superior alternative at each step.
   a) Globally   b) Universal
   c) Locally   d) Common

5) In order to describe an algorithm for searching _____, there is need to exploit a value that would be called as FUTILITY
   a) X-OR graph   b) AND-OR graph
   c) OR graph   d) AND graph

6) The sentence "All citizen were either faithful to Ruler or hated him" would be represented using predicate logic as -
   a) citizen(x) → ¬faithfulto(x, Ruler) ∨ hate(x, Ruler)
   b) $\forall_x$: citizen(x) → faithfulto(x, Ruler) ∨ hate(x, Ruler)
   c) citizen(x) ∨ ¬faithfulto(x, Ruler) ∨ → hate(x, Ruler)
   d) $\forall_x$: citizen(x) → faithfulto(x, Ruler) ∨ ¬hate(x, Ruler)

7) Alpha represent a lower bound on the value that a _____ node may ultimately be assigned.
   a) Minimizing   b) Maximizing
   c) Leaf   d) Root

8) _____ rules encode knowledge about how to respond to certain input configurations and _____ rules encode knowledge about how to achieve particular goals
   a) Backward and Forward
   b) Forward and Backward
   c) Forward and Sequential
   d) None of these

9) If a particular _____ is known to be appropriate in a given situation, then it can be very useful in predicting the occurrence of events that were not explicitly mentioned.
   a) Conceptual dependency
   b) Semantic Net
   c) Script
   d) Frame

10) The _____ gives advice to a chip designer, who can accept or reject the advice.
   a) MYCIN
   b) PROSPECTOR
   c) DENDRAL
   d) None of these

B) State True or False   **04**

1) The formula would be easier to work with if the quantifiers were separated from the rest of the formula so that they did not need to be considered.
2) Other than classification, an example of a generic strategy is *propose* and *refine.*
3) The requirement conceptual dependency is that it should causes motion in the problem space.
4) An inherited symbol system has necessary and sufficient means for general intelligent action.

Q.2 A) Write a short note: **08**
   1) Issues in the design of search programs
   2) Frames

B) Answer the following: **06**
   1) What do you mean by AI technique?
   2) Briefly state concept of Fuzzy logic?

Q.3 Answer the following:
   A) Discuss in detail concept of conversion to Clause Form with suitable example.   **07**

   B) Describe the overview of Game Playing. Discuss MinMax Search Procedure with suitable example?   **07**

Q.4   **Answer the followings:**

A) Define the term Heuristic search. State and describe problems by which Hill   **07**
climbing may get to find solution.

B) Discuss in detail the various proposals and approaches for matching.   **07**

Q.5   **Answer the followings:**

A) State and discuss different approaches of representing knowledge representation   **07**
with suitable example?

B) Discuss concept of Certainty factor and Rule based system as a part of Statistical   **07**
reasoning in detail.

Q.6   **Answer the following:**

A) State the meaning of Semantic Net. Explain in detail the concept of Semantic net   **07**
as weak slot and filler structure.

B) Define the meaning of Natural Language Processing. Discuss steps of Natural   **07**
Language Processing with suitable example.

Q.7   **Answer the following:**

A) Define the term Artificial Intelligence. Explain the concept of Constraints   **07**
Satisfaction used to solve below crypt-arithmetic problem.

$$
\begin{array}{r}
S\ E\ N\ D \\
+\ M\ O\ R\ E \\
\hline
M\ O\ N\ E\ Y
\end{array}
$$

B) State the meaning of term Expert System. Explain in detail solution of water jug   **07**
problem with suitable example.

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC - 322	Monday 21/11/2016	02:30 PM to 05:00 PM	Mobile Computing	XI	

Instructions: 1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) All questions carry equal marks.

Total Marks: 70

Q.1 Objective Questions. 10
A) Select correct alternatives:
1) DSSS meaning ------------.
   a) Direct sequence spread spectrum
   b) Direct sequence space spectrum
   c) Direct sequence space signals
   d) Direct sources space spectrum
2) Meaning of FHSS is -----------.
   a) Frequency hot spread spectrum
   b) Frequency hopping spread spectrum
   e) Frequency hopping space spectrum
   c) Fast hopping spread spectrum
3) A dynamic channel allocation (DCA) scheme has been implemented in -----.
   a) DSSS   b) FSSS
   c) DECT   d) None of these

4) If uplink the uplink frequency is $f_u = 890 MHZ + n.0.2\ MHZ$, the downlink frequency is $f_d = f_u + 45\ MHZ$ that is
   a) $f_d = 935 MHZ + n.0.2\ MHZ$
   b) $f_d = 890 MHZ + n.0.2\ MHZ$
   c) Both (a) and (b)
   d) None of these

5) Difference between android API and google API?
   a) The google API includes Google Maps and other Google-specific libraries. The android one only includes core android libraries.
   b) The google API one only includes core android libraries. The android includes Google maps and other Google-specific libraries.
   c) Both (a) and (b)
   d) None of these
6) ----------- techniques involve spreading the bandwidth needed to transmit data which does not make sense at first sight.
   a) Spread Spectrum   b) Signal Propagation
   c) Line of cipher   d) None of these
7) Algorithm A3 is used for ------------.
   a) Authentication   b) Encryption
   c) Generation of cipher   d) None of these

8) Changing VLRs with uninterrupted availability of all services is also called ----------.
   a) Switching   b) Handover
   c) Roaming   d) GSM

9) The Operation and maintenance Center (OMC) moniters and controls all other network entities via the ----------- interface.
   a) B
   b) I
   c) O
   d) C

10) EMS means -----------
   a) Electrical message service
   b) Erosion mobile service
   c) Enhanced Message Service
   d) Enhanced Message Server

B) State True or false: **04**
   1) Cellular phone networks not required base stations, infrastructure networks.
   2) Physical layer is responsible for routing packets through a network or establishing a connection between two entities over many other intermediate systems.
   3) The received power Pr is proportional to $1/d2$ with d being the distance between sender and receiver is known as inverse square law.
   4) Space Division Multiple Access is used for allocating a separated space to users in wired networks.

Q.2 A) Write short notes on the following:
   i)   What is the A3 security algorithm? **04**
   ii) Android Layout **04**

b) Answer the following:
   i)   Roaming **03**
   ii) IPv6 **03**
                                                                            0

Q.3 Answer the following:
   a) What is signal propagation? Explain in details multi-path propagation. **07**
   b) What is spread spectrum? Explain in details frequency hoping spread spectrum. **07**

Q.4 Answer the following:
   a) What is the handover? Explain its different scenarios. **07**
   b) Explain procedure of Mobile terminated call (MTC). **07**

Q.5 Answer the following:
   a) What is Pico-net? Explain its architecture. **07**
   b) Write a note on GSM. **07**

Q.6 Answer the following
   a) What is snooping TCP, Explain its advantages. **07**
   b) Explain in details Dynamic host configuration protocol. **07**

Q.7 Answer the following:
   a) Explain Android system architecture. **07**
   b) Explain Android activity life cycle. **07**

Master of Science – II (Computer Science)
Examination:Oct / Nov 2016 Semester – III (New CBCS)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR –SC-323	Wednesday 23/11/2016	02:30 PM to 05:00 PM	Digital Image Processing	–	

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

Total Marks: 70

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

1) Which of the following are correct alternative names for pixel?
   a) Pel
   b) Pil
   c) Px1
   d) Pix

2) Digitizing the amplitude values is called _____ and digitizing the coordinate values is called _____ respectively
   a) Sampling, quantization
   b) Sampling, quantification
   c) Sample, quantization
   d) Quantization, sampling

3) The storage space required for storing an image of size 128×64 with 128 gray level is _____ bytes
   a) 56
   b) 896
   c) 7
   d) 128

4) By setting value of constant and gamma to a constant 1 the power law transform becomes _____ transform
   a) Unity
   b) Identity
   c) Constant
   d) n^{th} root with n =1

5) which of the following statement (s) is/are correct regarding Butterworth filter?
   i. Butterworth filter with lower order has more ringing effect
   ii. BLPF transfer function does not he a harp di contitity that establishes a clear cutoff between passed and filtered frequencies.
   a) (i)
   b) (ii)
   c) Both (i) and (ii)
   d) None

6) Which of the following noise can be reduced using frequencies domain filtering?
   a) Impulse noise
   b) Periodic noise
   c) Uniform noise
   d) Rayleigh noise

7) Hit or miss transform is climinates_____
   a) Missing shapes
   b) Larger and smaller shapes
   c) Matching shapes
   d) Larger and smaller shapes in either height or width

8) Adaptive thresholidng is used when image has_____
   a) Low illumination
   b) High illumination
   c) Uniform illumination
   d) Non uniform illumination

9) A region contains 2 connected components, 3 faces, 7 holes and 9 edges how many vertices are there?
   a) 1   b) 3
   c) 5   d) 7

10) Suppose $T = \begin{bmatrix} color \\ Major\ Axis \\ Minor\ Axis \end{bmatrix}$ is used to classify fruits. Then T is _____
   a) Pattern class   b) Pattern features
   c) Pattern vector   d) Pattern column

B) Fill in the blanks   04
   1) Euclidean distance between pixels at coordinates (4,9) and (8,6) is _____
   2) The Fourier transforms can be expressed in polar coordinate system as

   _____
   3) In expression $h(x,y) * f(x,y) + \eta(x,y), \eta(x,y)$ is _____
   4) Eccentricity of the is ratio of _____ and _____

Q.2 A) Write a short notes on the following: 08
   1) Coordinates that a transformation function must satisfy for histogram equalization
   2) Gray level slicing

B) Answer the following: 06
   1) Edge linking and boundary detection using local processing.
   2) Give the threshold T as 200, check whether a horizontal line passé though following image:

38	76	44
84	65	122
100	22	16

Q.3 Answer the following: 14
   A) What is contrast stretching? What are its types? Discuss
   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 that 0.2

4	14	8
0	6	2
1	3	9

Q.4 Answer the followings: 14
   A) Derive one dimensional Fourier transform and its inverse in both discrete and continuous domain.
   B) Dilate a triangle with each side 6 cm using a circle having 2 cm radius.

Q.5   **Answer the followings:**   **14**
  A) What are the different band reject filters? Discuss them.
  B) Fill following region using cross structuring element.
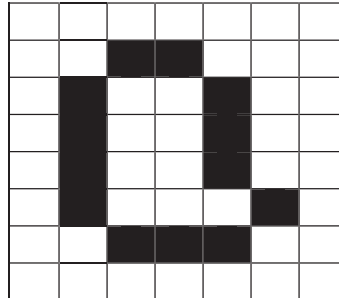
Q.6   **Answer the following:**   **14**
  A) What are basic formulation of region growing? Briefly discuss their use in
     region growing.
  B) Find mean and covariance matrix of the vectors $x_1 = (1, 0, 1, 0)^T$,
     $x_2 = (1, 1, 1, 0)^T$, $x_3 = (1, 0, 0, 1)^T$ and $x_4 = (0, 1, 0, 0)^T$,

Q.7   **Answer the following:**   **14**
  A) Discuss minimum distance classifier algorithm.
  B) Compute median for the following matrix using 3×3 filter. Only consider
     values within boundary for computation

82	44	11
63	12	14
72	09	38

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester – IV (New CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC-324	Thursday 17/11/2016	02.30 PM to 05.00 PM	Distributed Operating System	XIII	

Instructions:
1) Question No. 1 and 2 is compulsory.
2) Attempt any three questions from Q. no. 3 to Q. no. 7
3) Figures to right indicate full marks.

Total Marks: 70

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

1) To differentiate the many network services a system supports _____ are used.
   a) variables
   b) sockets
   c) ports
   d) None of the above.

2) Which one the following is not a valid state of thread.
   a) Running
   b) parsing
   c) ready
   d) blocked

3) In distribution systems link and site failure are detected by _____
   a) polling
   b) handshaking
   c) token passing
   d) All of the above

4) Which of the following is the deadlock avoidance algorithm
   a) Bankers algorithm
   b) Elevator algorithm
   c) Karn's algorithm
   d) Round robin

5) Internet provides _____ for remote login.
   a) HTTP
   b) TELNET
   c) FTP
   d) RPC

6) Process on the remote system are identified by _____
   a) Host ID
   b) Host name and identifier
   c) Identifier
   d) None of above

7) Network operating system runs on
   a) server
   b) every system in the network
   c) both a and b
   d) none of above

8) In a uniprocessor system mutual exclusion can be guaranteed by
   a) Overlapping process
   b) Interleaving process
   c) Disabling interrupts
   d) All of above

9) In distributed system a logical clock is associated with _____
   a) Each instruction
   b) Each process
   c) Each register
   d) None of above

10) In synchronization involving message passing, the sender of a message can be
    a) Either blocking or non blocking
    b) Only blocking
    c) Only non blocking
    d) All of the above

B) State true/ false : **04**
1) The problem of concurrency control is more complex in a distributed database.
2) Virtual memory is commonly implemented by demand paging.
3) Domain name system resolvers use Paxos and invalidation messages to maintain the consistency of cached records.
4) The purpose of time stamping is to avoid the use of locks.

Q.2 A) Write short note on the following: **08**
    a) File Replication
    b) Message switching

B) Answer the following: **06**
    a) Explain domain name system.
    b) What is stub? Explain method for stub generation.

Q.3 Answer the following:
A) What is deadlock? How it can be handled in distributed system. Explain. **07**
B) Discuss the communication protocol used in PRC. **07**

Q.4 Answer the following:
A) What is distributed operating system? Explain features of distributed operating system. **07**
B) Explain clock synchronization in detail. **07**

Q.5 Answer the following:
A) What are the steps involved in process migration. Discuss the desirable features of good process migration **07**
B) Why do we use election algorithm. Explain Bully algorithm. **07**

Q.6 Answer the following:
A) Describe distributed approach for implementing mutual exclusion in distributed system. **07**
B) Explain in atomic transaction. **07**

Q.7 Answer the following:
A) What are the main difference between a network and distributed operating system? **07**
B) Explain resource sharing in distributed environment. **07**

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester –IV (New CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 325	Saturday 19/11/2016	2:30 P.M to 5:00 P.M	Data Mining and Warehouse	XIV	

Instructions:
1) Q.No.1 and 2 are compulsory.
2) Answer any three questions from Q.No.3 to Q.No.7.
3) Figures to the right indicates full marks.

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

1) The data Warehouse is _____.
   a) read only
   b) write only
   c) read write only
   d) none

2) The star schema is composed of _____ fact table.
   a) Three
   b) two
   c) one
   d) four

3) _____ data are noisy and have many missing attribute values.
   a) Preprocessed
   b) Cleaned
   c) Transformed
   d) Real – world.

4) Data mining is _____
   a) The actual discovery phase of a knowledge discovery process.
   b) The stage of selecting the right data for KDD process.
   c) A subject – oriented, integrated, time – variant, nonvolatile collection of data in support of management decisions.
   d) None of these.

5) OLAP is _____ oriented.
   a) Business
   b) market
   c) Management
   d) Customer

6) The 0 – D cuboid, which holds the highest level of summarization is called _____.
   a) Apex cuboid
   b) Base cuboid
   c) 3 – D cuboid
   d) 2 – D cuboid

7) The roll-up operation is also called the _____
   a) Slicing
   b) drilling
   c) drill-down
   d) drill-up

8) _____ this refers to the ability to construct the classifier or predictor efficiently given large amount of data.
   a) Interpretability
   b) Scalability
   c) Robustness
   d) None of these

9) _____ where encoding mechanism are used to reduce the data set size.
   a) Dimensionality reduction
   b) Attribute subset selection
   c) Data cube aggregation
   d) Numerosity reduction

10) Cluster is _____.
    a) Group of similar objects that significantly from other objects
    b) Operations of databases to transform or simplify data in order to prepare it for a machine learning algorithm.
    c) symbolic representation of facts or ideas from which information can potentially be extracted.
    d) None of these

B)   State whether following statements are True or False:
1) An OLTP system mainly focuses on the historical data.
2) Hierarchical method can be classified as being either agglomerative or divisive.
3) The Slice operation performs a selection on multiple dimensions.
4) Data cleaning which detects errors in the data and rectifies them when possible.

Q.2 A)   Write a short note on following.   **08**
1) Data Reduction
2) Visual and Audio Data Mining

B)   Attempt the following questions: **06**
1) Explain in short Data Warehouse Back-End Tools and utilities.
2) Explain Enterprise Warehouse.

Q.3 Answer the following: **14**
A)   Explain various OLAP operations with example.
B)   What is data cube? Explain Star schema and Fact constellation schema with diagram.

Q.4 Answer the following   **14**
A)   Explain the decision tree induction algorithm.
B)   Explain Rule – Based classification.

Q.5 Answer the following: **14**
A)   What is Association Rule? Explain Apriori Algorithm with example.
B)   Explain four major types of concept hierarchies.

Q.6 Answer the following: **14**
A)   Explain the procedure of K – means Algorithm.
B)   How Market basket analysis is useful in day to day life? Discuss in detail.

Q.7 Answer the following: **14**
A)   What is Cluster Analysis? Explain Agglomerative and Divisive hierarchical clustering.
B)   Explain various data mining applications in detail.

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR –SC – 326	Tuesday 22/11/2016	02.30 PM to 05.00 PM	Digital Image Processing	XV	

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

Total Marks: 70

Q.1 A) Choose correct alternatives 10

1) In which the following imaging processing methodologies input and output are images only?
   a) Compression, Image enhancement
   b) Image restoration, Segmentation
   c) Image enhancement, Color image processing
   d) Multi resolution processing, Image restoration

2) An image of size 10 x 10 pixels formed with 64 gray levels need _____ bytes of storage space
   a) 75
   b) 80
   c) 800
   d) 6400

3) In a law contrast image the intensities of pixels are _____
   a) Concentrated in the lower side of histogram
   b) Concentrated in the higher side of histogram
   c) Concentrated in a narrow band of histogram
   d) Spread across entire histogram

4) The mean and variance of the PDF of Rayleigh noise model are _____ and _____ respectively?
   a) $\mu = a - \sqrt{\pi b/4}, \sigma^2 = \frac{b(4+\pi)}{4}$
   b) $\mu = a - \sqrt{\pi b/4}, \sigma^2 = \frac{b(4-\pi)}{4}$
   c) $\mu = a + \sqrt{\pi b/4}, \sigma^2 = \frac{b(4+\pi)}{4}$
   d) $\mu = a + \sqrt{\pi b/4}, \sigma^2 = \frac{b(4-\pi)}{4}$

5) Second order derivative generates stronger for input with _____
   a) Constant gray levels
   b) Ramp like gray levels
   c) Isolate points
   d) Both constant and ramp gray levels

6) Hit transform use _____
   a) Complementation
   b) Erosion operation
   c) Erosion, subtraction, complementation operations
   d) Erosion, subtraction complementation, insertion operations.

7) The outer boundary of an object A using a structuring element B can be obtained using operation _____
   a) A – (A θ B)
   b) (A θ B) – A
   c) A– (A ⊕ B)
   d) (A ⊕ B) – A

8) A shape has 5 faces, 7 connected components, 10 holes and 11 vertices. There are _____ edges
   a) 6   b) 8
   c) 9   d) 12

9) Techniques for assigning patterns to their respective classes automatically using machines and with as little human intervention as possible is known as_____
   a) Pattern recognition   b) Class identification
   c) Classification   d) Object recognition

10) Pattern matching is of the recognition techniques base on _____ apporoach.
   a) Object matching   b) Structural
   c) Object recognition   d) Decision theoretic

B) Fill in the blanks   04
1) An image whose intensity range from start to end in its histogram is called as _____ image .
2) In the frequency domain filtering the input image is multiplied by _____ to center the transform before applying the fourier transformation.
3) The _____ is defined as, $\hat{B} = \{w/w = -b, \ for \ b \ \epsilon \ B\}$
4) The expression y = A(x-m$_x$) is called as _____

Q.2   A) write a short notes of the following   08
1) Imaging in radio band
2) Mean filters.

B) Answer the following   06
1) Find the shortest digital path between P and Q using m – adjacency.

0	0	1	1	1	Q
0	1	0	1	1	1
1	0	1	1	0	1
0	1	1	1	1	0
1	1	0	1	0	1
1	0	1	0	1	0
P	1	0	0	0	1

2) A row of pixels in an image have following intensity values. Compute their second derivatives
4, 7, 7, 7, 6, 5, 4, 0, 1, 2

Q.3   Answer the following   14
A) Discuss the dimensional Fourier transform and its inverse
B) What is the result of applying 3 × 3 median filter on the following image segment?

6	4	1	2	13
11	8	0	9	14
7	13	1	0	8
15	9	0	5	11
11	6	3	10	12

Q.4 **Answer the followings** 14
   A) What are the band reject filters? Discuss.
   B) Perform dilation of following structure using a circle of 1 cm radius :
   C)
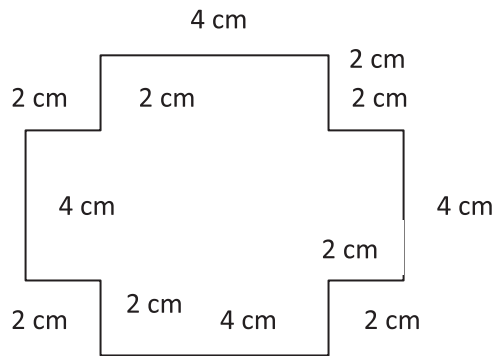
Q.5 **Answer the followings** 14
   A) Derive different filters for sharpening using first order derivatives
   B) Fill the following region using morphological region filling algorithm.
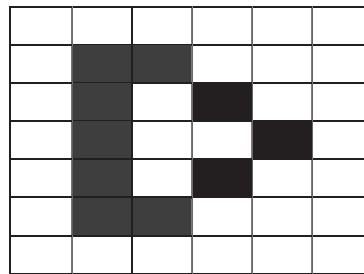
Q.6 **Answer the following** 14
   A) Describe basic global thresholding algorithm.
   B) The two classes of objects denoted by ω_1, and ω_2 have sample mean vectors $m_1 = (16, 9, 7)$, and $m_2 = (7, 5, 12)$ respectively. Compute decision boundary between these two objects. Find the class of object with features vector $(8, 7, 10)$

Q.7 **Answer the following** 14
   A) How to find distance between shapes based on machining shape numbers? Explain with an example.
   B) Compute the covariance matrix for the following vectors :
      $(1,0,1,0)^T, (0,0,1,0)^T, (1,1,1,1)^T,$ and , $(1,0,0,1)^T,$

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 327	Thursday 24/11/2016	2:30 P.M to 5:00 P.M	.Net Technology	XVI	

Instructions:
1) **Q. 1 and 2 is compulsory.**
2) **Attempt any three from Q. 3 to Q.7**
3) **Figures to the right indicates full marks.**

Total Marks:70

Q.1 A) **Rewrite the sentences after choosing correct answer from the given alternatives.**   **10**

1) The process of redefining a virtual method inside a derived class is called as method overloading.
   a) True   b) False

2) Which of the following is the disadvantage of cookies?
   a) Browser dependent   b) Not secure
   c) Store small amount of data   d) All of these

3) The .Net provides multiple language support because of _____.
   a) CLS   b) MSIL
   c) JIT   d) CTS

4) _____ property of each validation control on the Web page to check whether or not the validation test is successful.
   e) Valid   f) IsCheck
   g) IsValid   h) Check

5) Delegates are useful for _____.
   a) Event handling   b) Binding methods at runtime
   c) Multithreading   d) All of these

6) _____ control is used to select multiple items at a time.
   a) TextBox   b) ListBox
   c) ComboBox   d) ListItemBox

7) Which objects used to manage states in asp.net application?
   a) Session   b) Application
   c) ViewState   d) All of these

8) The _____ is the core of the .Net framework and is responsible for loading and running programs.
   a) CTS   b) CLS
   c) CLR   d) MSIL

9) Which namespace is used when application connect to the SQL Server.
   a) System.Data.Sql   b) System.Data.SqlClent
   c) System.Data.SqlTypes   d) System.Data.SqlServer

10) _____ language controlled the program according to the user actions.
a) Procedure oriented b) Object oriented
c) Event-driven d) None of the these

B) **State whether True or False:** 04
1. DataReader is a bridge between DataSet and database.
2. The ValidationSummary control display all validation messages in one control.
3. The Session object encapsulates the state of the client and browser.
4. Parameters are passed by reference by using the ref and out keywords.

Q.2 A) **Write short note on:** 08
1. Reflection
2. Common properties of validation server controls.

B) **Answer the following:** 06
1. Differentiate between value types and reference types.
2. Differentiate client-side and server-side validations.

Q.3 Answer the following:
A) What is namespace? Create your own namespace and it's the advantages. 07
B) What is session object? Give its advantages and disadvantages. 07

Q.4 Answer the following:
A) Write a program to copy one file into another file. 07
B) What are the various types of validation controls provided by ASP.NET? Explain. 07

Q.5 Answer the following:
A) Explain sequence of events executed in master pages. 07
B) What is an event? Explain event with suitable example. 07

Q.6 Answer the following:
A) Create a web application which can be used to do operation insert and update on employee table. 07
B) Write a program to implement multicast delegate. 07

Q.7 Answer the following.
A) Explain the ASP.Net page life cycle. 07
B) What is .net framework? Explain the concept of CTS and metadata. 07

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester – IV (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC-329	Saturday 19/11/2016	2:30 P.M to 5:00 P.M	Data mining And Warehouse	XIV	

Instructions:
1) **Questions 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 given in the bracket.** **10**

1) ----------- is a subject-oriented, integrated, time-variant, nonvolatile collection of data in support of management decision.
   a) Data mining
   b) Data Warehousing
   c) Web mining
   d) Text mining

2) ------------ supports basic OLAP operations, including slice and dice, drill-down, roll-up and pivoting.
   a) Information processing
   b) Data mining
   c) Analytical processing
   d) Transaction processing

3) The --------- schema is a variant of the star schema model, where some dimensions are normalized, thereby further splitting the data into a additional tables.
   a) Star schema
   b) Snowflake
   c) Fact constellation
   d) None of these

4) The cuboid that holds the lowest level of summarization is called the --------- cuboid.
   a) Base
   b) Apex
   c) Lowest
   d) None of these

5) Classification rules are extracted from -----------
   a) Root node
   b) Sibling
   c) Branches
   d) Decision tree

6) A ----------- feed forward neural network consists of an input layer, one or more hidden layers, and an output layer.
   a) Multilayer
   b) Single layer
   c) One layer
   d) None of these

7) The ---------- , also called the bottom up approach.
   a) Density based
   b) Divisive approach
   c) Agglomerative approach
   d) None of these

8) The ------------ operation performs a selection on one dimension of the given cube, resulting in a subcube.
   a) Drill-down
   b) Drill-up
   c) Dicing
   d) Slicing

9) Discovery of cross-sales opportunities is called ------------
   a) Visualization   b) Association
   c) Correction   d) Segmentation

10) ----------- means that a DM system will use some facilities of a DB or DW system, fetching data from a data repository managed by this system.
   a) Loose coupling   b) Semi-tight coupling
   c) Tight coupling   d) No-coupling

B) State either True/ False   **04**
1) A data mining query is defined in terms of data mining task primitives.
2) A binning method smooth a random data value by consulting its "neighborhood", that is the values around it.
3) The term soil ---------- refers to the size of soil particles and their arrangement, that is, the values around it.
4) An OLAP system usually adopts an Entity relationship (ER) data model.
5) A fact constellation schema allows dimension tables o shared between fact tables.

Q.2 a) Write a short notes on the following: **08**
1) Data warehouse Back-End Tools and Utilities.
2) Task relevant data

b) Answer the following questions: **06**
1) Explain the terms support and confidence in interestingness primitive.
2) Explain the importance of data mining query language.

Q.3 Answer the following: **14**
a) What is data cube? Explain various types of data cube representation form with example.

b) What are different kinds of data mining primitives? Explain each with example.

Q.4 Answer the following: **14**
a) How association rules are generated from large databases? Explain it.

b) Describe issues regarding preprocessing the data for classification and prediction.

Q.5 Answer the following: **14**
a) Explain the basic algorithm for decision tree induction method with example.

b) What is Cluster Analysis? Explain basic requirements of clustering in data mining.

Q.6 Answer the following: **14**
a) Explain the steps in K-means algorithm

b) Describe three tier Data warehouse architecture with well labeled diagram.

Q.7 Answer the following: **14**
a) Explain recent trends in data mining.

b) How data mining is useful for Telecommunication Industries.

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR –SC – 330	Tuesday 22/11/2016	02.30 PM To 05.00 PM	Digital Image Processing	XV	

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

Total Marks: 70

Q.1 A) Choose the correct alternatives 　　　　　　　　　　　　　　　　10

1) Spatial domain process can be denoted by the expression
   a) $S=T(r)$
   b) $S=c \log(1+r)$
   c) $g(x,y)=T[f(x,y)]$
   d) $g(x,y)= f(x,y)+c[\Delta 2f(x,y)]$

2) What is the image processing technique used to improve the quality of image for human viewing?　　　　　　　　　　　　　　　　　　　　　　0
   a) Compression
   b) Enhancement
   c) Restoration
   d) Analysis

3) What is the total amount of energy that flows from the light source & it is usually measured in watts?
   a) Radiance
   b) Luminance
   c) Speed of light
   d) Frequency

4) Segmentation is to _____ an image into its constituent regions of objects.
   a) Subdivide
   b) Add
   c) Both a & b
   d) None of above

5) When the Fourier spectrum of noise is constant, the noise usually is called
   a) Black noise
   b) White noise
   c) Dot noise
   d) None of above

6) Opening generally _____ the contour of an object, breaks narrow isthmuses and eliminates this protrusions.
   a) Smoothes
   b) Sharps
   c) Cuts
   d) Breaks

7) Divide the original image into sub- images and then utilize a different threshold to segment each sub- image is called?
   a) Single threshold
   b) Adaptive threshold
   c) Zero threshold
   d) No threshold

8) How many cons located primarily in the central portion of the retina.
   a) 5-10 million
   b) 12-15 million
   c) 14-18 million
   d) 6-7 million

9) The spacing of discrete values in the domain of a signals is called
   a) Sampling
   b) Quantization
   c) Waber ratio
   d) None of above

10) The name feature is used often in the pattern recognition literature to denote a descriptor.
    a) Pattern recognition
    b) Pattern observation
    c) Both a & b
    d) None of above

B) State true or false   04

1) _____ is a procedure that groups pixels or sub-regions into larger regions based on predefined criteria.
2) Chain codes are used to represent a boundary by a connected sequence of straight-line segments of specified length and _____
3) _____ also called feature selection.
4) A _____ is an arrangement of descriptors.

Q.2   Answer the following

1) List the fundamentals steps in General purpose Digital Image processing system and explain in brief   08
2) What is frequency domain enhancement? Describe the lowpass filtering techniques.   06

Q.3   Answer the following   14

A) Consider the following image segment

	3	1	2	1	(q)
	2	2	0	2	
	1	2	1	1	
(p)	1	0	1	2	

Then compute the length of the shortest 4-, 8- and m-path between pixels p and q when   a) $v = \{0, 1\}$ b) $v = \{1,2\}$

B) Explain basic spatial filtering using Average filter of size 3 3 mask?

Q.4   Answer the followings   14

A) Consider the two image subsets s1 an s2 shown in the following figure. For $V=\{1\}$ determine whether these two subsets are (a) 4 adjacent, (b) 8-adjacent or (c) m-adjacent.

		S₁						S₂		
0	0	0	0	0	0	0	1	1	0
1	0	0	1	0	0	1	0	0	1
1	0	0	1	1	1	1	0	0	0
0	0	1	1	1	0	0	0	0	0
0	0	1	1	1	0	0	1	1	1

B) How the morphological Hit or Miss transform is useful for shape detection? Illustrate with an example

Q.5   Answer the followings   14

A) Explain the restoration model of image processing with example.
B) Give the criteria for point, line and edge detection with example.

Q.6   Answer the following   14

A) State and illustrate boundary (Border) following algorithms following along with its merits and demerits.
B) Describe use of principal components in object Descriptor.

Q.7   Answer the following   14

A) Define mathematical Morphological opening and closing operation with example.
B) What is object recognition? Discuss various methods used for object recognition.

Master of Science – II (Computer Science)
Examination: Oct / Nov 2016 Semester – IV (Old CGPA)

SLR No.	Day & Date	Time	Subject Name	Paper No.	Seat No.
SLR – SC – 331	Thursday 24/11/2016	2:30 P.M to 5:00 P.M	.Net	XVI	

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

Total Marks:70

Q.1 A) **Rewrite the sentences after choosing correct answer from the given alternatives.** **10**

1) In event-driven programming an event is generated by _____.
   a) The system
   b) User's action
   c) Both a and b
   d) None of these

2) Which TextBox property should always be changed first?
   a) BorderStyle
   b) Font
   c) Name
   d) Text

3) Which of the following is not the validation control?
   a) CompareErrorValidator
   b) Compare Validator
   c) Range Validator
   d) RequiredFieldValidator

4) _____ is the first method that is fired during the paging load.
   a) PreRedner()
   b) Load()
   c) UnLoad()
   d) Init()

5) Which server-side technique is available in ASP.NET?
   a) Application States
   b) Session states
   c) Both a and b
   d) None of these

6) Namespaces contains _____.
   a) Classes
   b) Interfaces
   c) Both a and b
   d) None of these

7) Which set of symbol are used to signify the presence of ASP.NET code?
   a) <@
   b) <?
   c) <&
   d) <%

8) A multicast delegate object maintains a _____.
   a) List of properties
   b) List of classes
   c) List of interfaces
   d) List of methods.

9) The .Net provides multiple language support because of _____.
   a) CTS
   b) CLS
   c) MSIL
   d) IL

10) A postback occurs when _____.
   a) A browser posts a form to the server
   b) A user's action activates the handling of a server event.
   c) Both a and b
   d) None of these

B)   State whether True or False: **04**
   1. Reference type variable are directly stores its data.
   2. All of the ADO.Net objects are implemented by the classes in the system.
      Windows.Data namespace.
   3. Cache object is server-side state management technique.
   4. Every process has at least one thread.

Q.2 A)   Write short note on: **08**
   1. Master page events
   2. CTS

B)   Answer the following: **06**
   1. Explain boxing and unboxing with example.
   2. What is dataset? Give its advantages.

Q.3 Answer the following:
   A) Explain the differences between ASP and ASP.Net applications.   **07**
   B) What is master page? How to create nested master page? Give one example. **07**

Q.4 Answer the following:
   A) What is preprocessor? Describe different preprocessors in C#.   **07**
   B) What is multicast delegate? Explain with suitable example.   **07**

Q.5 Answer the following:
   A) What are the basic ADO.NET objects? Explain in detail.   **07**
   B) Explain client-side and server-side validation.   **07**

Q.6 Answer the following
   A) What is indexer? Explain with suitable example.   **07**
   B) Explain client side state management in detail.   **07**

Q.7 Answer the following.
   A) Design a windows application which insert and search a record using stored **07**
           procedure.
   B) Explain ASP.Net page life cycle.   **07**