SLR-JG-158

Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Computer Science
Object Oriented Programming Using C ++

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) Which of the following operators could be overloaded?
   a) Size of b) +
   c) += d) : :

2) Which of the following can, not be passed to a function?
   a) Reference variable b) Arrays
   c) Class objects d) Header files

3) In C++ _____ operator is used for dynamic memory allocation.
   a) Scope resolution b) Conditional
   c) New d) Membership access

4) The _____objects have values that can be tested for various error conditions.
   a) Osstream b) Ofstream
   c) stream d) ifstream

5) The member functions of a derived class can directly access only the _____ data.
   a) Private and Protected b) Private and Public
   c) Protected and Public d) Private, Protected and Public

6) _____ binding means that, an object is bound to its function call at compile time.
   a) Late b) Static
   c) Dynamic d) Fixed

7) The pointer to function is known as _____function.
   a) Forward b) Pointer
   c) Callback d) backward

8) The _____ can, not be directly used to access all the members of the derived class.
   a) Void pointers b) Null pointer
   c) this pointer d) base pointer

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

10) Which of the following type of class allows only one object of it to be created?
   a) Virtual class b) Abstract class
   c) Singleton class d) Friend class

11) Which of the following operator is used for input stream?
a) > b) »
c) < d) «

12) How many parameters are there in get line function?
a) 1 b) 2
c) 2 or 3 d) 3

13) Which symbol is used to create multiple inheritance?
a) Dot b) Comma
c) Dollar d) None of the above

14) Which keyword is used to handle the exception?
a) Try b) Throw
c) Catch d) None of these

Q.2 A) Answer of the following questions. (Any Four) **08**
1) What is the application of scope resolution operator in C++?
2) How does a C++ structure differ from a C++ class?
3) Describe the importance of destructor.
4) How Polymorphism is achieved at run time in C++?
5) Explain a pointer to derived class.

B) Write Notes. (Any Two) **06**
1) Friend class
2) Put ( ) and Get ( )
3) Enumerated data types in C++

Q.3 A) Answer of the following questions. (Any Two) **08**
1) What is friend function? What are the merits and demerits of using friend function?
2) Write a program to illustrate how pointers to a derived object are used.
3) Explain this pointer with example.

B) Answer of the following questions. (Any One) **06**
1) What is operator overloading? Why is it necessary to overload an operator?
2) Write a program to demonstrate how a static data is accessed by a static member function.

Q.4 A) Answer of the following questions. (Any Two) **10**
1) What is a virtual base class? Explain with an example.
2) Write a program to show how the binary operator is overloaded using friend function.
3) Explain function template with example.

B) Answer of the following questions. (Any One) **04**
1) How do we invoke a constructor function?
2) What is an exception? How exception is handled in C++.

Q.5 Answer of the following questions. (Any Two) **14**
a) What is Virtual function? Explain rules for virtual functions.
b) What is meant by C++ stream classes? Explain C++ stream classes.
c) Distinguish between overloaded functions and function templates

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Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Computer Science
DATA STRUCTURES

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) What are the disadvantages of arrays?
   a) We must know before hand how many elements will be there in the array
   b) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size
   c) Insertion and deletion becomes tedious
   d) All of the mentioned

2) Which of the following applications may use a stack?
   a) A parentheses balancing program
   b) Tracking of local variables at run time
   c) Compiler Syntax Analyzer
   d) All of the mentioned

3) A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?
   a) Queue b) Circular queue
   c) Dequeue d) Priority queue

4) The concatenation of two list can performed in 0(1) time. Which of the following variation of linked list can be used?
   a) Singly linked list b) Doubly linked list
   c) Circular doubly linked list d) Array implementation of list

5) Which of the following is false about a circular linked list?
   a) Every node has a successor
   b) Time complexity of inserting a new node at the head of the list is O(1)
   c) Time complexity for deleting the last node is O(n)
   d) None of the mentioned

6) If the tree is not a complete binary tree then what changes can be made for easy access of children of a node in the array?
   a) every node stores data saying which of its children exist in the array
   b) no need of any changes continue with 2w and 2w+1, if node is at i
   c) keep a separate table telling children of a node
   d) use another array parallel to the array with tree

7) What are the disadvantages of normal binary tree traversals?
   a) there are many pointers which are null and thus useless
   b) there is no traversal which is efficient
   c) complexity in implementing
   d) improper traversals

8) In the following scenarios, when will you use selection sort?
   a) The input is already sorted
   b) A large file has to be sorted
   c) Large values need to be sorted with small keys
   d) Small values need to be sorted with large keys

9) What is an internal sorting algorithm?
   a) Algorithm that uses tape or disk during the sort
   b) Algorithm that uses main memory during the sort
   c) Algorithm that involves swapping
   d) Algorithm that are considered 'in place'

10) Quicksort can be categorized into which of the following?
   a) Brute Force technique
   b) Divide and conquer
   c) Greedy algorithm
   d) Dynamic programming

11) When is the uniform binary search an optimization over the usual binary search?
   a) A table lookup is generally faster than an addition and a shift
   b) Many searches will be performed on the same array
   c) Many searches will be performed on several arrays of the same length
   d) All of the mentioned

12) In a simple graph, the number of edges is equal to twice the sum of the degrees of the vertices.
   a) True
   b) False

13) Time Complexity of DFS is? (V - number of vertices, E - number of edges)
   a) O(V+E)
   b) O(V)
   c) O(E)
   d) None of the mentioned

14) Which of the following property does not hold for matrix multiplication?
   a) Associative
   b) Distributive
   c) Commutative
   d) None of the mentioned

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

1) Explain linear array.
2) Explain two way linked list.
3) Write polish notation.
4) Write priority queue.
5) Explain graph.

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

1) Explain adjacency matrix.
2) What is data structure? Explain its datatypes.
3) Explain basic data structure operations.

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

1) Write algorithm complexity with linear search complexity.
2) Write an algorithm for traversing linear array.
3) Explain searching method.

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

1) Explain selection sort method.
2) Explain tree traversal algorithm.

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

1) What is linked list? Explain memory representation.
2) Write an algorithm to insert ITEM after a given node in linked list.
3) Write an algorithm to search an ITEM from unsorted linked list.

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

1) Explain linked representation of stack.
2) Explain operations on stack.

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

a) Explain single and multidimensional array with suitable example.
b) Explain Dynamic programming with example.
c) What is searching algorithm? Explain their complexity.

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Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Computer Science
SOFTWARE ENGINEERING

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) Usability can be measured in terms of:
   a) Intellectual skill to learn the system
   b) Time required to become moderately efficient in system usage
   c) Net increase in productivity
   d) All of the mentioned

2) Which tool is use for structured designing?
   a) Program flowchart b) Structure chart
   c) Data-flow diagram d) Module

3) The incremental model is a result of combination of elements of which two models?
   a) Build & FIX Model & waterfall Model
   b) Linear Model & RAD Model
   c) Linear Model & Prototyping Model
   d) Waterfall Model & RAD Model

4) Identify the disadvantage of Spiral Model.
   a) Doesn't work well for smaller projects
   b) High amount of risk analysis
   c) Strong approval and documentation control
   d) Additional functionality can be added at a later date

5) Choose an internal software quality from given below:
   a) scalability b) usability
   c) reusability d) reliability

6) Which model in system modelling depicts the dynamic behavior of the system?
   a) Context Model b) Behavioral Model
   c) Data Model d) Object Model

7) Which perspective in system modelling shows the system or data architecture?
   a) Structural perspective b) Behavioral perspective
   c) External perspective d) All of the mentioned

8) _____ classes are used to create the interface that the user sees and interacts with as the software is used.
   a) Controller b) Entity
   c) Boundary d) Business

9) Which of the following is a mechanism that allows several objects in an class hierarchy to have different methods with the same name?
   a) Aggregation b) Polymorphism
   c) Inheritance d) All of the mentioned

10) Which of the following is a disadvantages of OOD?
   a) Easier maintenance
   b) Objects may be understood as stand-alone entities
   c) Objects are potentially reusable components
   d) None of the mentioned

11) Size and Complexity are a part of _____.
   a) Product Metrics b) Process Metrics
   c) Project Metrics d) All of the mentioned

12) _____ is a measure of the degree of interdependence between modules.
   a) Cohesion b) Coupling
   c) None of the mentioned d) All of the mentioned

13) What is Cyclomatic complexity?
   a) Black box testing b) White box testing
   c) Yellow box testing d) Green box testing

14) Which of the following is/are white box technique?
   a) Statement Testing b) Decision Testing
   c) Condition Coverage d) All of the mentioned

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

1) Explain the metric indicators.
2) Explain Requirement analysis.
3) Write a note on Procedural design.
4) What are software characteristic and components?
5) What is prototyping model?

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

1) Black box testing
2) Transform and transaction mappings
3) Design and testing

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

1) Explain Evolving role of software.
2) Explain behavioral modeling.
3) Write a note on Design methods-Data design.

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

1) Explain the linear sequential model.
2) What is software quality assurance? Explain in detail.

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

1) Explain the mechanics of structured analysis.
2) Write a note on Design post processing.
3) Explain Software testing strategies.

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

1) Write a note on Management of object-oriented software projects.
2) Explain data dictionary.

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

a) Explain the Architectural design optimization.

b) Write a note on Software Design and Software Engineering design process?

c) Explain metrics for software quality.

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Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Computer Science
OPERATING SYSTEM

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) The _____ is a program that manages a computer's hardware.
   a) User b) Operation system
   c) Memory d) None of these

2) Multiprogramming increases CPU utilization by organizing code and data so that the CPU always has one to _____.
   a) Wait b) Terminate
   c) Suspend d) Execute

3) A word-processing program being _____ by an individual user on a PC is a process.
   a) Coded b) Run
   c) Filed d) Inactive

4) Write Ones Read Many can be abbreviated as _____.
   a) WARM b) WORM
   c) WOMR d) OWMR

5) A byte is _____ bits, and on most computers it is the smallest convenient chunk of storage.
   a) 6 b) 8
   c) 4 d) 2

6) General – purpose computers run most of their programs from rewritable memory called _____ memory also called random access memory, or RAM.
   a) Secondary b) Auxiliary
   c) Non d) Main

7) Protection is any mechanism for controlling the access of processes or users to the _____ defined by a computer system.
   a) Malware b) User control
   c) Virus d) Resources

8) Firewall is designed to protect their _____ from security breaches.
   a) Process control block b) Virus
   c) Monitor d) Networks

9) _____ systems allow users to share resources on geographically dispersed hosts connected via a computer network.
   a) Embedded b) Parallel
   c) Real time d) Distributed

10) The value of a counting _____ can range over an unrestricted domain.
a) Monitor b) Semaphore
c) Mutex d) number

11) By switching the _____ among processes, the operating system can make the computer more productive.
a) Program b) File
c) Disk d) CPU

12) CPU-bound program might have a few long CPU _____.
a) Bursts b) Boosts
c) Worst d) Warms

13) A directed edge $Rj \rightarrow Pi$ called an _____ edge.
a) Assignment edge b) Request edge
c) Process edge d) Resource edge

14) The _____ directory should contain most of the files that are of current interest to the process.
a) Parallel b) Relative
c) Current d) Special

Q.2 A) Answer the following question.(Any Four) **08**
1) Define term system calls.
2) What do you understand from the term 'Process'?
3) What is turnaround time in CPU scheduling?
4) Define the meaning of mutual exclusion.
5) What do you mean by operating system?

B) Write Notes on. (Any Two) **06**
1) Shortest Job First
2) Swapping
3) Critical section problem

Q.3 A) Answer the following question. (Any Two) **08**
1) What do you mean by contiguous allocation?
2) What is use of access matrix in security and protection?
3) What do you mean by deadlock?

B) Answer the following question. (Any One) **06**
1) Explain in detail characteristics and functions of Operating System.
2) How processes in system used to do Inter Process Communication?

Q.4 A) Answer the following question.(Any Two) **10**
1) Discuss different types of schedulers and their task in CPU Scheduling.
2) Calculate the total number of page fault using Least Recently Used (LRU) page replacement on following reference string having maximum 03 frames-
0, 3,0,4,2,2,1,2,0,1,7,0,7,0,1,2,3,0,3,1,
3) Explain in detail forms of accidental and malicious security violations and various security measures to protect the system against it.

B) Answer the following question. (Any One) **04**
1) Discuss different directory structure of file system organization?
2) Explain Process Control Block in brief?

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

a) Explain in detail steps involved in handling a page fault.

b) Explain working of First Come First Serve Scheduling algorithm with suitable example.

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

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

Head starts at 48

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Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Computer Science
DBMS

Day & Date: Saturday, 09-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) Which of the following is a valid SQL type?
   a) CHARACTER b) NUMERIC
   c) FLOAT d) All of these

2) Relational calculus is _____.
   a) Procedural language b) Non-procedural language
   c) High-level language d) All of the above

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

4) A primary key for an entity is _____.
   a) Candidate key b) Any attribute
   c) A unique attribute d) Super key

5) Multivalued dependency among attribute is checked at which level?
   a) 2NF b) 5NF
   c) 4NF d) 3NF

6) _____ Command can be used to modify a column in a table.
   a) Alter b) Update
   c) Insert d) Create

7) The concept of locking can be used to solve the problem of _____.
   a) Deadlock b) Lost update
   c) Inconsistent data d) All of the above

8) In an E-R model _____ is described in the database by storing its data.
   a) Entity b) Attribute
   c) Relationship d) Notation

9) In a relational schema each tuple is divided into fields called _____.
   a) Relation b) Domain
   c) Queries d) All of the above

10) Which of the following is not the type of data integrity?
   a) Key integrity b) Domain integrity
   c) Entity d) None of these

11) In an E-R diagram entity set is represented by _____.
   a) Ellipse b) Rectangle
   c) Diamond box d) Circle

12) Generalization is _____ process.
   a) Top-up
   b) Bottom-up
   c) Top-down
   d) All of the above

13) A schema describes _____.
   a) Data elements
   b) Records and files
   c) Record relationship
   d) All of these

14) 'AS' clause is used in SQL for_____.
   a) Selection operation
   b) Rename operation
   c) Join operation
   d) Projection operation

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

1) Explain users of DBMS.
2) Define atomicity of transaction.
3) Why is B+ tree efficient than B tree?
4) Give an example for foreign key.
5) What is multilevel indexing?

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

1) Abstract data types
2) Acid properties
3) Fragmentation

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

1) Explain different components of data model.
2) Where do we need nesting of queries? Give an example.
3) What is database trigger? Give an example of trigger definition.

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

1) Explain briefly about 3NF, 4NF and BCNF with examples.
2) Discuss the various concurrency control protocols.

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

1) Explain the method of implanting of join queries.
2) Explain the concept of log based recovery in detail.
3) What is shadow paging? Explain in detail.

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

1) What are advantages of distributed database over a centralized database?
2) Explain the basic steps involved in query processing.

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

a) What is meant by views in SQL? Explain how we can create views in SQL.
b) Briefly discuss about various lock based mechanism used in concurrency control.
c) Explain about domain constraints and referential integrity with examples.

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Seat No.	

Set P

M.Sc.(Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
JAVA PROGRAMMING

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Choose the correct alternative & rewrite the sentences. **14**

1) Does a subclass inherit both member variables and methods?
   a) No - only member variables are inherited
   b) No - only methods are inherited
   c) Yes - both are inherited - but not those are declared as private
   d) Yes - only the member/ methods with protected are inherited

2) Can an object subclass another object?
   a) Yes - as long as single inheritance is followed
   b) No - inheritance is only between classes
   c) Only when one has been defined in terms of the other
   d) Yes - when one object is used in the constructor of another

3) Which of the following access specifiers can be used for a class so that its members can be assessed by a different class in the same package?
   a) public b) protected
   c) private d) default

4) Which of the following cannot be used for a variable name in Java?
   a) identifier b) final
   c) malloc d) calloc

5) Choose the wrong statement.
   a) Applets can read from or write to a file in the local computers
   b) Applets cannot communicate with other servers in the networks
   c) Applets can run any java program
   d) Applets can be viewed by Java enabled browser

6) If a derived class object is created, which constructor is called first?
   a) Base class constructor is called first and then the derived class constructor
   b) Derived class constructor is called first and then the base class constructor
   c) Only derived class constructor is called
   d) Only base class constructor is called

7) When does an exception occur?
   a) During the time of compilation of a Java program
   b) During the time of execution of a Java program
   c) Anytime, that is, during compilation and execution of a program
   d) At the end of execution of a Java program, if there is an exception

8) Which of the following is TRUE?
   a) The multiple catch blocks should be listed in the order from general exception classes to more specialized ones
   b) If there is no exception, the finally block will not be executed.
   c) If there are multiple catch blocks, only the first one matching the exceptions will be executed.
   d) If there are multiple catch blocks, all blocks that match the exceptions will be executed

9) Consider the following object declaration statement
   Scanner inp = new Scanner(System.in);
   What is System.in in this declaration?
   a) Any file storing data
   b) Reference to standard input device, that is, keyboard
   c) Reference to a scanner as an input device
   d) It is a mouse as an input device

10) Which of the following statements is /are incorrect?
   a) Two or more methods with the same name can be differentiated on the basis of their parameters data type
   b) Two or more method having the same name can be differentiated on the basis of their number of parameters
   c) Any already defined method in Java library can be defined again in the program with different data type of parameters
   d) No method can call another method without creating an object of the class to which it is defined.

11) How can a protected member be accessed?
   a) Accessible only within the class
   b) Accessible only within package
   c) Accessible within the package as well as outside the package but through inheritance only
   d) Accessible to everywhere

12) Which of the following access specifier must be used for class so that a sub class can inherit it?
   a) public
   b) private
   c) protected
   d) default

13) Which inheritance in Java programming is not supported?
   a) Multiple inheritance using classes
   b) Multiple inheritance using interfaces
   c) Multilevel inheritance
   d) Single inheritance

14) The exception class is defined in which of the following Java package?
   a) java.awt
   b) java.io
   c) java.lang
   d) java.util

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

1) Define Class?
2) What the use of this keyword?
3) What is encapsulation?
4) How to create the user defined exception?
5) Write a code to create final variable.

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

1) Interfaces
2) Event Classes
3) Database connectivity in Java

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

1) What is static? How to create static method?
2) Define Package. List the steps to create Package.
3) Differentiate while and do while loop.

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

1) Write a code to create the multiple inheritance.
2) Explain the Event Delegation Model.

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

1) Write a program to display two stings with two threads and use thread Priorities for second thread.
2) Write a program to take input from console.
3) What is exception? Explain the types of exceptions.

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

1) Write a program to demonstrate switch statement.
2) Demonstrate the try - catch block for Exception.

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

a) Write a java program to read text from a file and display it on output device.
b) What are the basic features of Java programming? Explain.
c) Write a program for database connectivity and perform select and delete operation.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
COMPUTER COMMUNICATION NETWORK

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) The QoS stands for ____.
   a) Quality of Service b) Quality of Set
   c) Quantity of Service d) Quantity of Set

2) The term ATM used in computer network is stands for _____.
   a) Any Time Machine b) Any Time Money
   c) Asynchronous transfer mode d) Asynchronous Traffic Machine

3) Data Link layer takes the _____ from network layer, and encapsulates them into _____.
   a) Packets and bits b) Frames and packets
   c) Bits and packets d) Packets and frames

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

5) Error detection at the data link layer is achieved by _____.
   a) Cyclic redundancy codes b) Bit stuffing
   c) Hamming codes d) Equalization

6) URL stands for _____.
   a) Unique reference label b) Uniform reference label
   c) Uniform resource locator d) Unique resource locator

7) Which one of the following is a transport layer protocol used in networking?
   a) TCP b) UDP
   c) Both TCP and UDP d) None of the above

8) Which one of the following is the multiple access protocol for channel access control?
   a) CSMA/CD b) CSMA/CA
   c) Both CSMA/CD & CSMA/CA d) None of these

9) The variation (i.e., standard deviation) in the packet arrival times is called _____.
   a) Timelessness b) Accuracy
   c) Jitter d) Transmission medium

10) _____ is one of the framing method.
   a) Byte count b) Acknowledgement
   c) CRC d) RPC

11) CRC method is based on _____ code.
a) Framing b) class
c) Polynomial d) Jitter

12) IEEE standards for wireless network is _____.
a) 902.11 b) 802.11
c) 802.16 d) None of the above

13) _____covers large geographical area, often a country or continent.
a) MAN b) LAN
c) WAN d) PAN

14) The message 1101 would be sent as _____using Hamming codes.
a) 1100110 b) 0011001
c) 1110011 d) 1010110

Q.2 A) Answer the following (Any Four) **08**
1) Define HTTP.
2) Define multiplexing.
3) What is WAN?
4) What do you mean by protocol?
5) Define ARPANET.

B) Write short notes (Any Two) **06**
1) Fragmentation
2) Flooding
3) Crash Recovery

Q.3 A) Answer the following (Any Two) **08**
1) Give comparison of virtual circuits and datagram subnets.
2) What is remote procedure call?
3) Explain simplex stop and wait protocol in detail.

B) Answer the following (Any One) **06**
1) Explain the architecture and services of e-mail.
2) How many ways error controlled in data link layer? Explain one method with example.

Q.4 A) Answer the following (Any Two) **10**
1) What is computer network? Discuss its applications.
2) Describe a simple protocol for a Noisy Channel.
3) What is tunnelling? How it is done? Explain.

B) Answer the following (Any One) **04**
1) How connection is done using TCP? Explain.
2) Discuss internet control protocols.

Q.5 Answer the following (Any Two) **14**
a) With the help of Web Model, explain how the Web appears to the user's and how it works inside.
b) What are the techniques for achieving good quality service? Explain any two with a suitable example.
c) Explain the concept of sliding window protocol. Describe the protocol using selective repeat in data link layer.

SLR-JG-165

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
UML

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) Public attributes can be accessed and public methods can be invoked by any other method in any other class.
   a) True b) False

2) A class responsibility is implemented by the creation of one or more methods that may have to collaborate with other classes and methods.
   a) True b) False

3) Sequence diagrams show us in great detail how the objects interact with each other in time sequence.
   a) True b) False

4) The process of using object-oriented techniques for designing a new system is referred to as.
   a) object oriented design b) class/object design
   c) reverse engineering d) database design

5) _____is a group of objects packaged together into one unit. An example is a dynamic link library (DLL) or executable file.
   a) Scenario b) Module
   c) Subprogram d) Component

6) _____ diagrams show us in great detail how the objects interact with each other over time.
   a) Use case b) Class
   c) Sequence d) Deployment

7) A query operation on a object _____.
   a) has side effect b) has no side effects
   c) changes the state of an object d) is not allowed

8) When a subclass is created using inheritance the resulting class.
   a) may have only attributes of parent class
   b) may have only operations of parent class
   c) may have new operations only in addition to those in parent class
   d) may have new attributes and new operations in addition to those of parent class

9) We build models so that we can better _____the system we are developing.
   a) misunderstand b) Understand
   c) guide d) Misguide

10) A _____relationship is rendered as a solid line with a hollow arrow head pointing to the parent.
a) Dependency b) Aggregation
c) Generalization d) Realization

11) Components are things that participate in the execution of a system; _____ are things that execute components.
a) Notes b) Nodes
c) Class d) Interface

12) A _____may have one incoming transition and two or more outgoing transitions each of which represents an independent flow of control.
a) Join b) Fork
c) Transition d) none of these

13) A _____represents a functional requirement of system as a whole.
a) use case b) Component
c) Package d) Note

14) In sequence diagram ____is represented by a vertical dashed line.
a) focus of control b) Object
c) object lifeline d) Time

Q.2 A) Answer the following questions.(Any Four) **08**
1) What should use case diagram illustrate?
2) What is transition?
3) What is mean by swim lanes?
4) What is life line in sequence diagram?
5) What is state?

B) Write Notes on (Any Two) **06**
1) Template classes
2) Grouping things
3) Time and change events

Q.3 A) Answer the following questions.(Any Two) **08**
1) Explain the steps involved in modeling the vocabulary of a system.
2) What is an attribute? Explain its syntax in UML.
3) What is a package? Explain importing and exporting in packages.

B) Answer the following questions.(Any One) **06**
1) Explain about the architecture of the UML.
2) Draw the class diagram for the School Management System.

Q.4 A) Answer the following questions.(Any Two) **10**
1) What is event? Discuss about different events.
2) How many different kinds of relationships exist in UML? Explain each with example.
3) Explain structural things in UML.

B) Answer the following questions.(Any One) **04**
1) Differentiate activity state and action state. Which symbol is used to represent both.
2) What is use case? What are the elements of use case diagram?

Q.5 Answer the following questions.(Any Two) **14**
a) What is classifier? Define different types of classifiers in UML. Represent their graphical notations.
b) Write about deployment diagrams. How to model a fully distributed system?
c) Explain various phases of Software development Life cycle.

SLR-JG-166

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
SOFTWARE TESTING

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

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

1) The _____phase produces a representation that will be used by the following phase, the development phase.
   a) Planning b) Design
   c) Coding d) Testing

2) _____is Defect-prevention oriented.
   a) Quality b) Quality control
   c) Quality Assurance d) All of the above

3) _____ takes care of a set of activities to address the question "Are we building the right product?"
   a) Validation b) Verification
   c) Testing d) Both (a) and (b)

4) The _____model follows a process in which the requirements gathering, design, coding, and testing are performed iteratively till all requirements are met.
   a) Waterfall b) Spiral
   c) V d) All of above

5) The main focus of acceptance testing is.
   a) Finding faults in the system.
   b) Ensuring that the system is acceptable to all users.
   c) Testing the system with other system
   d) Testing for business perspective

6) Which of the following statements is NOT true.
   a) Inspection is the most review process
   b) Inspections should be led by a trained leader
   c) Managers can perform inspections on management documents
   d) Inspection is appropriate even when there are no written documents

7) A typical commercial test execution tool would be able to perform all of the following EXCEPT.
   a) Generating expected outputs.
   b) Replying inputs according to programmed script
   c) Recording test inputs
   d) Reading test values from data file

8) Test mangers should not.
   a) Report on derivations from the project plan
   b) Sign the system off for release
   c) Re-allocate resource to meet original plans
   d) Raise incidents on faults that they have found.

9) Unreachable code would best be found using.
   a) Code reviews
   b) Code inspections
   c) A coverage tool
   d) A static analysis tool

10) Which of the following is NOT part of the system tesing?
   a) Business process-based testing
   b) Performance, load and stress testing
   c) Usability testing
   d) Top-down integration testing

11) Error guessing is best used.
   a) As the first approach to deriving test cases
   b) After more formal techniques have been applied
   c) By inexperienced testers
   d) Only by end users

12) Which of the following is NOT part of the performance testing?
   a) Measuring response time
   b) Measuring transaction rates
   c) Recovering testing
   d) Generating many transactions

13) Which of the following is NOT included in the Test Plan document of the Test Documentation Stanard?
   a) Test items (i.e. software versions)
   b) What is not to be tested
   c) Test environments
   d) Quality plans

14) The cost of fixing a fault.
   a) Is not important
   b) Increases as we move the product towards live use
   c) Decreases as we move the product towards live use
   d) Can never be determined

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

1) What are the fundamental principles of testing?
2) What are the Life Cycle Models?
3) Where Waterfall Model is applicable?
4) What are the disadvantages of Desk Checking?
5) Give the various techniques used in Black box Testing.

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

1) What are the Acceptance Criteria in Acceptance Testing?
2) How requirements for performance testing can be derived?
3) Give the classification of White box Testing.

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

1) How to improve the interoperability?
2) What are the tools available for internationalization?
3) What are the accessibility futures that enhance usability?

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

1) Explain Beta Testing in detail.
2) How to do Regression Testing?

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

1) Why is System Testing done?
2) Explain Process Model to represent different phases.
3) Explain the types of Coverage Testing.

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

1) What are the types of Metrics in testing? Explain any two.
2) Explain Spiral Model.

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

a) What are the Skills Needed for Automation?
b) Explain Test Phases for Intemationalization Testing.
c) Explain Testing, Verification and Validation with example.

SLR-JG-167

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
DIGITAL IMAGE PROCESSING

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) Thresholding can be performed on _____.
   i) Binary image
   ii) Grayscale image
   iii) Color image
   a) (ii) b) (iii)
   c) (ii) and (iii) d) (i), (ii) and (iii)

2) Suppose a one dimensional square wave has total pixels $M = 128$, wave heigh $A = 32$ pixels and half of amplitude is $K = 64$ pixels, the central frequency of its Fourier transform is _____ pixels.
   a) 256 b) 64
   c) 32 d) 16

3) A square with each side 5 cm is eroded using a circle with 2 cm radius. What is the area (in Sq. cm) of resulting image?
   a) 1 b) 7.5
   c) 09 d) 25

4) A filter in which the filtering is applied separately for illumination and reflectance component is _____ filtering.
   a) Frequency domain b) Spatial domain
   c) Homomorphic d) Lowpass

5) In an image containing uniform noise the noise starts at intensity 50 and ends at intensity 60. What is the variance of given PDF?
   a) 5 b) 8.33
   c) 9.17 d) 10

6) Fisher in 1936 proposed _____ problem.
   a) Pattern recognition b) Pattern identification
   c) Pattern classification d) Pattern description

7) An 8 bit grayscale image after normalization will have intensity values in the range of _____.
   a) [-1,1] b) [0,1]
   c) [0,255] d) [1,256]

8) In medical imaging ultrasound image is generated by the waves reflected from the boundary between _____.
   a) Fluid and soft tissue b) Soft tissue and bone
   c) Other side of boundary d) All the above

9) The following filter is implementation of _____ operator.

-1	0
0	1

a) Laplacian
b) Canny
c) Sobel
d) Roberts cross gradient

10) An 8 bit RGB color image having size 16X64 needs _____ kBytes of storage.
a) 3
b) 24
c) 1024
d) 3072

11) E-13B font character set has _____ characters.
a) 10
b) 13
c) 14
d) 15

12) One of the applications of contrast enhancement radiography is _____.
a) Angiography
b) Tomography
c) Spectrography
d) Lithography

13) A shape had 5 edges, 2 faces, 4 vertices and 3 holes. How many holes are there in this shape?
a) 1
b) 2
c) 3
d) 4

14) Which of the following is/are not image zooming/shrinking technique
i) Nearest neighbor interpretation
ii) Pixel reflection
a) (i)
b) (ii)
c) (i) and (ii)
d) none

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

1) Given the parameter $a = 16$, write is probability distribution function for exponential noise and calculate it's mean and variance.
2) Write expression for reflection and translation.
3) Define pattern class. Give an example for pattern class.
4) List basic gray level transformations.
5) Compute value of following pixel when log transformations are applied: intensity $= 200$, $c = 1.5$ and $gamma = 0.5$.

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

1) How 2D Fourier transformation function is expressed in polar coordinates? Also give expression for its magnitude and phase angle.
2) List the steps involved in entire image processing in proper sequence.
3) List any three differences between basic and adaptive thresholding.

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

1) Discuss the mean filters.
2) What are the different types of regional descriptors? Explain any one type of regional descriptor.
3) Describe the image formation model.

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

1) Two classes of objects denoted as ω_1 , $\omega_2$have the sample mean vector $m_1 = (1, 5, 2)^T$ and $m_2 = (15, 4, 8)^T$ respectively. Compute the equation for the boundary which bisects these two classes. Find out the class for feature vector $(7, 4, 4)^T$

2) Perform histogram stretching to 0-7 intensity range for the below image information.

Intensity	0	1	2	3	4	5	6	7
No. of pixels	0	0	0	200	140	230	80	0

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

1) Describe the filtering using Laplacian derivative.
2) Derive expression for principle component transform.
3) Derive Homomorphic filtering expressions.

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

1) For the following 3X3 image information compute geometric and harmonic mean.

1	8	2
9	3	6
7	4	5

2) Following are the pixel intensities and their populations, find probability density function for Gaussian noise.

Intensity	0	1	2	3	4	5	6	7
Population	7	11	31	55	50	41	20	3

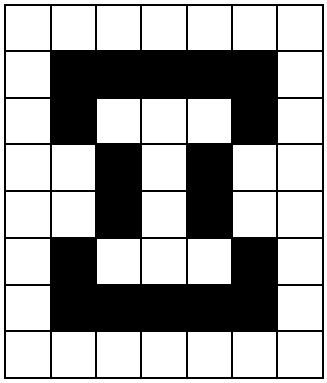
Q.5 Attempt any two of the following question. **14**

a) Perform opening of a square with sides 6 cm using the structuring elements.
i) Equilateral triangle with each side 3 cm.
ii) Circle with radius 2 cm.

b) Threshold the following image using Global Thresholding algorithm. The initial threshold may be selected using the mean filter on entire image and the algorithm iteration must stop when difference of Thresholding is less than 0.1.

12	33	46	51
29	45	62	30
39	12	7	16
25	26	14	11

c) Fill the following regions using cross structuring elements



SLR-JG-168

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
MOBILE COMPUTING

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) DHCP clients send a request to a server _____ to which the server responds.
   a) DHCPHOST b) DHCPDISCOVER
   c) DHCPRECIVE d) DHCPPOST

2) Which of the following is a function of MAC management protocol in IEEE 802.11 Wireless LAN standard?
   a) Roaming b) Synchronization
   c) Power Management d) All of these

3) _____ is useful to receive broadcast messages from the System.
   a) Broadcast receivers b) Activity
   c) Content providers d) Services

4) Infra-red technology uses diffuse light reflected at walls, furniture etc. or directed light if _____ exists between sender and receiver.
   a) Shielding b) Line-of-Sight (LOS)
   c) Synchronization d) Infrared Data Association (IrDA)

5) PSTN stands for _____.
   a) Public Station Telephone Network
   b) Public Switch Telephone Network
   c) Public Socket Telephone Network
   d) Public Switch Transport Network

6) MAC is _____.
   a) Medium Access Control b) Modem Access Control
   c) Modem Advice Control d) Medium Advice Control

7) SDK stands for _____.
   a) Software development kit b) Source development kit
   c) Software division kit d) Source division kit

8) In mobile IP, a tunnel usually ends at _____.
   a) Foreign Agent b) Internet
   c) Home agent d) Router

9) The _____ defines the current location of the MN from an IP point of view.
   a) Agents b) Router
   c) COA d) Internet

10) In _____ each station transmits its data in its assigned time slot.
   a) TDMA b) FDMA
   c) CDMA d) SDMA

11) SQLite is essential for _____ in android.
a) Database b) API
c) Internet d) Layout

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

13) If mounted on the roof of a car, the length of _____ is efficient. This is also known as Marconi antenna.
a) $\lambda/4$ b) $\lambda / 2$
c) $\lambda / 6$ d) $\lambda / 5$

14) DHCP is based on a _____ model.
a) Client/sender b) Client/receiver
c) Client/server d) Sender/receiver

Q.2 A) Attempt any four of the following question. **08**
1) Define digital modulation.
2) What is antenna?
3) What is FDD?
4) Define mobile computing.
5) Define CDMA?

B) Write Notes. (Any Two) **06**
1) Roaming
2) Registration
3) Bluetooth

Q.3 A) Attempt any two of the following question. **08**
1) What are main benefits of spread spectrum system?
2) Explain in detail mobile TCP.
3) Define the terms mobile node and correspondent node.

B) Attempt any one of the following question. **06**
1) Explain android application priority and process states.
2) Explain the protocol architecture of GSM system in detail.

Q.4 A) Attempt any two of the following question. **10**
1) What is multiplexing? Explain SDM and CDM.
2) Explain agent discovery with its two methods.
3) What are the advantages of Wireless LANs? Explain.

B) Attempt any one of the following question. **04**
1) Explain the indirect TCP.
2) What are the major components of an Android? Discuss.

Q.5 Attempt any two of the following question. **14**
a) What is congestion control? Describe the mechanism slow start and fast recovery.
b) Describe authentication and encryption scheme used in GSM security.
c) Explain the functional architecture of IEEE 802.11 with suitable figure.

SLR-JG-169

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
ARTIFICIAL INTELLIGENCE

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) A 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 reverse d) Forward

2) 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

3) AI focused on the sort of problem solving that we do every day when we decide how to get to work in morning often called _____.
   a) Scientific Analysis b) Theorem Proving
   c) Commonsense reasoning d) Depth First Search

4) A _____ was guaranteed to find the shortest solution path but required inordinate amounts of space because all leaf nodes had to be kept in memory.
   a) Random Search b) Breadth First Search
   c) Depth first Search d) Shortest path search

5) Both *isa* and *instance* relations have _____, which can be call *subclasses and all instances.*
   a) Inverse attributes b) Pure attributes
   c) Simple attributes d) Reverse attributes

6) _____ produces proof by refutation.
   a) Formal Logic b) Computable functions
   c) Resolution d) Proposition Logic

7) A _____ is a strategy for finding both the structure and the meaning of a sentence in one step.
   a) Case Grammar b) Montague Semantics
   c) Syntactic processing d) Conceptual Parsing

8) The primitive act _____ stands for transfer of the abstract relationship.
   a) PTRANS b) MTRANS
   c) MBUILD d) ATRANS

9) The _____, which encode knowledge about how to respond to certain input configurations.
   a) Matching b) Declarative knowledge
   c) Inferential knowledge d) Forward rules

10) A most useful form of inference is _____, in which elements of specific classes inherit attributes and values from more general classes in which they are included.
a) Inferential efficiency b) Property inheritance
c) Procedural inheritance d) None of these

11) Local maxima are particularly frustrating because they often occur almost within sight of a solution. In this case, they are called _____.
a) Plateau b) Ridge
c) Foothills d) Local maximum

12) _____ and Theorem proving share the property, people who do them well are considered to be displaying intelligence.
a) Mathematical Algebra b) Game Playing
c) Natural Language d) Breadth First Search

13) A fuzzy set theory allows us to represent _____ as a possibility distribution.
a) Set of Connectedness b) Set of Understanding
c) Set of Membership d) Set of Assertiveness

14) _____ provides a way of solving problems for which no more direct approach is available as well as a framework into which any direct techniques that are available can be embedded.
a) Generalization b) Specialization
c) Abstraction d) Search

Q.2 A) Answer the following questions. (Any Four) **08**
1) What do you mean by Artificial Intelligence?
2) What do you mean by natural Language Processing?
3) Define expert system.
4) What do you mean by Game Playing?
5) What do you mean by Predicate Logic?

B) Write notes. (Any Two) **06**
1) Semantic Net
2) Heuristic Search Technique
3) Reasoning

Q.3 A) Answer the following questions. (Any Two) **08**
1) State and explain Conceptual dependency as strong slot and filler structure?
2) State and differentiate between procedural versus Declarative knowledge?
3) Write the Minimax Search procedure with suitable example?

B) Answer the following questions. (Any One) **06**
1) Explain in detail concept Semantic analysis with suitable example?
2) Explain in detail concept of probability and Bayes Theorem?

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain concept of Constraint Satisfaction with suitable example?
2) State and Explain Dempster Shafer Theory?
3) Explain Script as strong slot and filler structure?

B) Answer the following questions. (Any One) **04**
1) What do you mean by Computable function and predicates?
2) Write the procedure of Generate and Test.

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

a) Discuss water jug problem with suitable examples?

b) Explain in detail Certainty factors and rule based system?

c) Explain in detail different steps in Natural Language Processing?

SLR-JG-170

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
OPERATIONS RESEARCH

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) Given a system of m simultaneous linear equations in n unknown (m < n), the number of basic variable will be _____.
   a) n b) n-m
   c) n+m d) m

2) If two constraints are not intersecting in the positive quadrant of the graph then _____.
   a) One of the constraint is redundant
   b) The solution is unbounded
   c) The solution is infeasible
   d) None of these

3) A simplex in one dimension is _____.
   a) Line b) Triangle
   c) Point d) None of these

4) If the primal problem has unbounded solution, then the dual problem will have _____.
   a) Finite solution b) feasible solution
   c) optimal solution d) no feasible solution

5) Optimal solution in LPP is which _____.
   a) Maximize or minimize the objective function
   b) Maximize the objective function
   c) Minimize the objective function
   d) Satisfies the non negative restrictions

6) In graphical solution the feasible region is where _____.
   a) Only the first constraint is satisfy
   b) All the constraints are satieties simultaneously
   c) Any one constraint is satisfy
   d) All of these

7) In critical path analysis, the word CPM stands for _____.
   a) Critical path method b) Crash project method
   c) Critical project method d) None of these

8) In assignment problem if number of rows is greater than number of columns then _____.
   a) Dummy column is added b) Dummy row is added
   c) Any row is deleted d) All of these

9) In North-West corner rule, the allocation is done in _____.
   a) Cell with lowest cost b) Upper right corner
   c) Middle cell d) Upper left corner

10) Transportation problem is a special case of _____.
   a) Assignment problem b) LPP
   c) both a) and b) d) None of these

11) Unbounded solution in a LPP always _____.
   a) The objective function decrease indefinitely
   b) The objective function can be increased or decreased indefinitely
   c) Maximize the objective function
   d) None of these

12) Which of the following is not assumption of LPP?
   a) Additive b) Uncertainty
   c) Proportionality d) Divisibility

13) Simplex method is iterative method to solve _____.
   a) Linear programming problem
   b) Quadratic programming problem
   c) Non linear programming problem
   d) None of these

14) Artificial variable techniques not used in the _____.
   a) Big-M method b) Phase II method
   c) Simplex method d) None of these

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

1) Define a basic feasible solution and degenerate solution.
2) Define slack variable.
3) What is Unbalanced transportation problem?
4) What is balanced assignment problem?
5) State Max flow Min cut theorem.

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

1) Mathematical form Of Transportation problem
2) i) Critical path
   ii) Critical Activity
3) i) Standard Form of LPP
   ii) Canonical Form of LPP

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

1) Construct the Kuhn-tucker conditions for solving quadratic programming problem.
2) Find the IBFS to the following Transportation problem by North-West corner method.

		I	II	III	Available
From	A	**2**	**7**	**4**	**5**
	B	**3**	**3**	**1**	**8**
	C	**5**	**4**	**7**	**7**
	D	**1**	**6**	**2**	**14**
	Demand	**7**	**9**	**18**	

3) Solve the following LLP by graphical method.
   $Min\ Z = 8x_1 + 4x_2$
   Subject to the constraints

$$x_1 + 2x_2 \geq 2$$
$$3x_1 + x_2 \geq 3$$
$$x_{1,}x_2 \geq 0$$

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

1) Give algorithm for Hungarian method in assignment problem.
2) Explain Phase II of the simplex method.

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

1) Solve the following assignment problem and find optimum assignment schedule.

		Job				
		1	2	3	4	5
Person	A	8	4	2	6	1
	B	0	9	5	5	4
	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

2) Give Algorithms of dual simplex method.
3) Define Matroid with an example.

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

1) Write a note on
   i) Basic solution
   ii) Basic feasible solution
   iii) Optimum solution
   iv) Solution
2) The following assignment problem shows the costs of assigning four jobs to four machines Determine the optimum assignment schedule.

		Machines			
		1	2	3	4
Jobs	A	80	40	20	60
	B	0	90	50	50
	C	30	80	90	20
	D	40	30	10	0

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

a) Solve the following LPP by phase II method.

$Min\ Z = 10x_1 + 6x_2 + 2x_3$

Subject to the constraints

$-x_1 + x_2 + x_3 \geq 1$

$3x_1 + x_2 - x_3 \geq 2$

$x_1, x_2, x_3 \geq 0$

b) Solve the following by Hungarian method

	Operator ↓					
		1	2	3	4	5
Job →	1	9	11	14	11	7
	2	6	15	13	13	10
	3	12	3	6	8	8
	4	11	9	10	12	9
	5	7	12	14	10	14

c) Solve the following LPP by simplex method.

$Max\ P = 5x_1 + 4x_2$

Subject to the constraints

$3x_1 + 5x_2 \leq 78, 4x_1 + x_2 \leq 36$

and $x_1, x_2 \geq 0$

SLR-JG-171

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
FINITE AUTOMATA

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) The main difference between Mealy and Moore machine is about _____.
   a) Output Variations b) Input Variations
   c) Both A and B d) No Difference

2) A Language for which no DFA exist is a _____.
   a) Regular Language b) Non Regular Language
   c) May be Regular Language d) None of these

3) The relation between DFA and NFA on the basis of computational power is _____.
   a) DFA<NFA b) DFA>NFA
   c) DFA=NFA d) None of these

4) Which of the following statement is true about Turing machine?
   a) The tape of Turing machine is infinite
   b) The tape of Turing machine is finite
   c) The tape of Turing machine is infinite when the language is regular
   d) The tape of Turing machine is finite when the language is nonregular

5) The regular expression for following language is _____.
   Language $L = \{x\epsilon\{0,1\}|$ length of x is 4 or less$\}$
   a) $(01)^4$ b) $(0+1)^4$
   c) $(0+1+\epsilon)^4$ d) $(0+1+0+1+0+1+0+1)$

6) A push down automata is said to be _____ if it has atmost one transition around all Configurations.
   a) Finite b) Deterministic
   c) Non-deterministic d) Non regular

7) If the PDA does not stop on an accepting state and the stack is not empty, the string is _____.
   a) Rejected b) Accepted
   c) goes into loop forever d) None of these

8) Let for $\sum = \{0,1\}$ R= $(\sum\sum\sum)$ *, the language of R would be _____.
   a) {w | w is a string of length multiple of 3}
   b) {w | w is a string of length 3}
   c) {w | w is a string of odd length}
   d) All of these

9) _____ technique is useful for checking a language to be non regular.
   a) MyphillNerode b) Pumping Lemma
   c) NPDA d) None of these

10) If grammar G is unambiguous, the grammar G' produced after the removal of Unit production will be _____.
a) Unambiguous b) ambiguous
c) Finit d) cannot be said

11) _____ number of productions to be removed immediately as Unit productions from following grammar
S->aA
A->a | A
B->B
a) 0 b) 1
c) 2 d) 3

12) A Turing machine does not consist of _____.
a) Input tape b) Finial State
c) State register d) Head

13) Regular expressions are closed under _____.
a) Intersection b) Union
c) Kleen star d) All of these

14) DFA is useful to recognize a palindrome number.
a) True b) False

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

1) Design RE for language containing all strings starting with "a" and ends with "bb" over {a,b}.
2) What is ε-closer? Explain with example.
3) Define Context Free Grammar.
4) Let L1=(a+b)*a and L2=b(a+b)*b find L=L1∩L2. ------b(a+b)*a
5) What are types of Push Down Automata?

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

1) Prove (P+Q)*=(P*+Q*)*=(P*Q*)* where P and Q are RE.
2) Explain need of Push Dow Automata.
3) Design DFA over {a,b} accepting string having only 2 "a"'s.

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

1) What is formal definition of Regular Expression? Explain formal language with example.
2) Find grammar to generate string over {0,1} ending with "0".
3) Explain different elements of PDA.

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

1) Convert following NFA to its equivalent DFA.
M={{q0,q1,q2,q3},{a,b},δ,q0,{q2,q3}}
Where δ is as

Q/∑	a	b
q0	{q0,q1}	q0
q1	q2	q1
q2	q3	q3
q3	ϕ	q2

2) Design Turing machine that accepts all palindrome string over {a,b}.

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

1) Prove that
   - **i.** (a*.b*)*=(a+b)*
   - **ii.** (a*+b)*=(a+b*)*

2) Construct PDA for given language.
   $L=\{a^n b^n | n \geq 0\}$
   Simulate string "aaaabbbb" and "aabbaabb"

3) Explain formal definition of Turing machine. Explain Transition table and Transition diagram of Turing machine.

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

1) Design Moore machine for 1's complement of binary number.
2) Explain Type-I and Type-2 Grammar in detail.

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

a) Prove that the language $L=\{\alpha^i b^j \mid i \neq j\}$ is not regular.

b) Explain undecidable problems and Post's Correspondence problem in detail.

c) Convert following grammar into CNF.
S->ABA
A->aA | ε
B->bB | ε

SLR-JG-172

Seat No.	

Set P

M.Sc.(Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science
NET TECHNOLOGY

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) What does the following C#.NET code snippet will print?

```
int i = 0, j = 0,
label:
        i++;
        j+=i;
if (i<10)
{
        Console.Write (i+ "  ");
        goto label;
}
```

a) Prints 1 to 9 b) Prints 0 to 8
c) Prints 2 to 8 d) Prints 2 to 9

2) Which of the following is the correct output for the C#.NET program given below?

```
int i = 20;
for(; ;)
{
        Console.Write(i + " ");
        if (i > = -10)
        i - = 4;
        else
          break;
}
```

a) 20 16 12 84 0 -4 -8 b) 20 16 12 8 4 0
c) 20 16 12 8 4 0 -4 -8 -12 d) 16 12 8 4 0

3) A function returns a value, whereas a subroutine cannot return a value.
a) True b) False
c) Both of (A) and (B) d) None of these

4) Which of the following CANNOT occur multiple number of times in a program?
a) namespace b) Entrypoint
c) Class d) Function

5) An Employee class has a property called age and emp is reference to a Employee object and we want the statement Console. Write Line (emp.age) to fail. Which of the following options will ensure this functionality?
   a) Declare age property with only get accessor
   b) Declare age property with only set accessor
   c) Declare age property with both get and set accessors
   d) Declare age property with get, set and normal accessors

6) Which of the following statements is correct about an Exception?
   a) It occurs during compilation
   b) It occurs during linking
   c) It occurs at run-time
   d) It occurs during Just-In-Time compilation

7) In C#.NET if we do not catch the exception thrown at runtime then which of the following will catch it?
   a) Compiler
   b) CLR
   c) Linker
   d) Loader

8) Which of the following is NOT an Exception?
   a) StackOverflow
   b) Division By Zero
   c) Insufficient Memory
   d) Incorrect Arithmetic Expression

9) Which of the following statements is correct about an interface used in C#.NET?
   a) One class can implement only one interface
   b) In a program if one class implements an interface then no other class in the same program can implement this interface
   c) From two base interfaces a new interface cannot be inherited
   d) Properties can be declared inside an interface

10) Which of the following statements are correct about delegates?
   a) Delegates cannot be used to call a static method of a class.
   b) Delegates cannot be used to call procedures that receive variable number of arguments.
   c) If signatures of two methods are same they can be called through the same delegate object.
   d) Delegates cannot be used to call instance function. Delegates cannot be used to call an instance subroutine.

11) Which of the following statement is valid about advantages of generics?
   a) Generics shift the burden of type safety to the programmer rather than compiler
   b) Generics require use of explicit type casting.
   c) Generics provide type safety without the overhead of multiple implementations.
   d) Generics eliminate the possibility of run-time errors.

12) Choose the correct option about DataReader object.
   a) DataReader object is a forward-only object
   b) It provides connection oriented environment
   c) DataReader is read only object
   d) All of the above

13) What are the three main objects when working with a DataSet?
   a) DataTable, DataColumn, and type
   b) DataTable, DataRelation, and DataAdapter
   c) DataTable, DataColumn, and DataRelation
   d) DataReader, DataAdapter, and Command

14) Which validation control in ASP.NET can be used to determine if the data is entered into a TextBox control is of type Currency?
   a) ValidationSummary b) CompareValidator
   c) RequiredFieldValidator d) None of the above

Q.2 A) Answer the following questions. (Any Four) **08**
1) Definition of Event and Delegate.
2) Declaration of Class.
3) Declaration of Array in C#.
4) Data types of C#.
5) Web Page in ASP.NET

B) Write Notes on. (Any Two) **06**
1) TextBox Control
2) Namespace
3) Attributes

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain Custom validation with example.
2) Explain DataReader with example.
3) Explain Com interoperability with example.

B) Answer the following questions. (Any One) **06**
1) LinkButton with properties.
2) What is the use of Session State in ASP.NET? Explain with example?

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe the delegate with example.
2) What are properties in DOT NET? Explain with example.
3) Life cycle of web page.

B) Answer the following questions. (Any One) **04**
1) Why we use IsPostBack event in ASP.NET web page development?
2) How to use RangeValidater in ASP.NET?

Q.5 Answer the following questions. (Any Two) **14**
a) Explain the architecture of ASP.NET.
b) What is ADO.NET? Explain the components of ADO.NET.
c) What is master page? How to select dynamically master page in ASP.NET application?

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science
SOFT COMPUTING

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) The nonlinear function used to generate output of a neuron is _____.
   a) Splash function b) Transfer function
   c) Activity function d) (a) and (b)

2) Recurrent network will have _____.
   a) single layer feedforward only network
   b) multi layer feedforward only network
   c) a recurrent layer
   d) feedback loop

3) Other than input and output layers, the number of layer(s) present in a single layer feedback neural network is/are _____.
   a) 0 b) 1
   c) 2 d) 3

4) Which of the following statements are true regarding learning rate?
   i) For best results the learning rate coefficient must be constant
   ii) Learning rate does not have any influence on the convergence of algorithm
   iii) Smaller learning rate requires more time of convergence of algorithm
   a) (i) and (ii) b) (i) and (iii)
   c) (ii) and (iii) d) All

5) Membership grade of any member in a fuzzy set is within _____.
   a) [0, 1] b) <0, 1>
   c) {0,l} d) (0, 1)

6) If for a given member of a set we are able to identify the lower and upper bound of membership grade, then such set is known as _____.
   a) Fuzzy set b) Bounded fuzzy set
   c) Interval valued fuzzy set d) Fuzzy set of type 2

7) For $x_1\ x_2 \epsilon\ R$ and $\lambda = [0, 1]$, a fuzzy set A is convex iff _____.
   a) $A(\lambda x_1 + (l - \lambda)x_2) \geqslant min[A(x_1), A(x_2)]$
   b) $A(\lambda x_1 + (l - \lambda)x_2) \geqslant max[A(x_1), A(x_2)]$
   c) $A(\lambda x_1 + (l - \lambda)x_2) \leqslant min[A(x_1), A(x_2)]$
   d) $A(\lambda x_1 + (l - \lambda)x_2) \leqslant max[A(x_1), A(x_2)]$

8) The bounded difference of i(0.4, 0.7) is _____.
   a) 0 b) 0.1
   c) 0.28 d) 0.4

9) A fuzzy complement will have _____ equilibrium.
   a) At least one b) Exactly one
   c) At most one d) zero or more

10) *Intelligent than* is _____.
   a) Reflexive b) Transitive
   c) Symmetric d) All the above

11) A transitive closure of a crisp relation $R(X,X)$ _____.
   i) contains $R(X,X)$
   ii) is transitive
   iii) has fewest possible members
   a) (i) and (ii) b) (i) and (iii)
   c) (ii) and (iii) d) (i), (ii) and (iii)

12) Mutation means element of _____ modified.
   a) Chromosome b) Genome
   c) DNA d) Genotype

13) _____ is the degree to which the better individual is selected.
   a) Selective pressure b) Selection rank
   c) Popularity diversity d) Offspring

14) Which of the following are the problems in fitness proportional selection according to Whitley?
   i) Premature convergence of search space
   ii) Probabilistic elimination of inferior points
   iii) Stagnation of search
   a) (i) and (ii) b) (ii) and (iii)
   c) (i) and (iii) d) All

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

1) Define Sugeno class of fuzzy complements.
2) What is an open interval? What are its types?
3) Define Hebbian learning.
4) List the non traditional search and optimisation techniques.
5) Define standard fuzzy operations.

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

1) For any A in $\mathcal{F}(X)$ prove that
$$^{\alpha}A = \bigcup_{\beta<\alpha} {}^{\beta}A = \bigcup_{\beta<\alpha} {}^{\beta+}A$$
2) Assume for the variable $X_i, X_i^L = 11$ and $X_i^U = 74$. What the value of 5 bit string $X_i = (110011)$ would represent?
3) What are the physical properties of human brain?

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

1) Find alpha cuts and draw graph and partition for the following fuzzy relation $R(X,X)$ defined over X:
$$R(X,X) = \begin{bmatrix} 1 & .4 & 0 & .6 & 0 & .5 \\ .4 & 1 & .9 & 0 & .5 & 0 \\ 0 & .9 & 1 & .2 & 0 & .6 \\ .6 & 0 & .2 & 1 & .9 & 0 \\ 0 & .5 & 0 & .9 & 1 & 0 \\ .5 & 0 & .6 & 0 & 0 & 1 \end{bmatrix}$$
2) Solve the XNOR nonseparable problem by combining perceptrons.

3) Let *A* be a fuzzy set with following properties:
   i) $A_i(2) = 1$ and $A_i(x) < 1$ for all $x <> 2$
   ii) A_1 is symmetric with respect to $x = 2$
   iii) A_1 is decreasing monotonically from 1 to 0 with the increasing difference $|2 - x|$ Write the fuzzy membership function and draw graph.

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

1) Given the population as 10 bit binary string, compute fitness as sum of string divided by 10. Perform crossover of string 1 and 3 with CS1 = 3 and CS2 = 7 and perform mutation of 11th and 35th bits. Compute intermediate and final fitness value.

Population
10000 10110
10110 11001
00100 00110
01100 01010
10111 10111

2) Compute the scalar cordiality, degree of subsethood and Hamming distance between fuzzy sets defined by the following functions:
$$A(x) = sin(x)^{2,}\ B(x) = \big(cos(x)\big), for\ x\ \epsilon\ \{0^0, 30^0, 45^0, 60^0, 90^0\} = X$$

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

1) What are the different *t-norms* and *t-conorms* used to represent intersection and union? Discuss with suitable examples.
2) Differentiate between symetric and assymetric composite laminates. Discuss use of GA in design of composite laminates.
3) What are the typical nonlinear activation operators? Provide expression and their functional form.

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

1) Define levelset. Illustrate it with an example
2) With suitable example explain fuzzy sets of type 2.

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

a) For the fuzzy sets $a(x) = \frac{1}{1+10(x-2)^2}$ and $b(x) = \frac{1}{x^2+2}$, $x\ \epsilon\ \{0,1,2,3, \ldots.,10\}$ compute α cuts and strong α cuts for $\alpha = 0.2, 0.5, 0.7$ and 1.

b) The fuzzy binary relation R is defined on set $X = \{n \mid 10 < n \leq 20\}$ and $Y =$ {Even numbers between 11 and 21} represents the relation "x is smaller than y". It is defined by the membership function
$$R(x,x) = \begin{cases} 1 - \dfrac{x}{y} & for\ x \leqslant y \\ 0 & otherwise \end{cases}, where\ \ x\epsilon\ X, y\epsilon\ Y.$$
Find domain, range, height and complement of R

c) Find transitive max-min closure R_T for the following fuzzy relations $R(X,X)$ defined by the membership matrix:
$$\begin{bmatrix} 0.1 & 0.7 & 0.0 \\ 0.0 & 0.0 & 0.3 \\ 0.0 & 0.3 & 0.4 \end{bmatrix}$$

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science
DATA MINING AND WAREHOUSE

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) An ____ system manages current data.
   a) OLAP b) OLTP
   c) OLEP d) None of these

2) An _____ typically adopts either a star or a snowflake model.
   a) OLAP b) OLEP
   c) OLTP d) None of these

3) _____ schema can be viewed as a collection of stars.
   a) Star b) Snowflake
   c) Fact Constellation d) Hybrid

4) The Roll-up operation is also called _____.
   a) Drill-up b) Drill-down
   c) drill-rotate d) Rule-up

5) _____ it navigates from less detailed data to more detailed data.
   a) Roll-up b) Drill-down
   c) Drill-rotate d) Rule-up

6) _____ is a visualization operation that rotates the data axes in view to provide an alternative data presentation.
   a) Slice b) Drill-down
   c) Pivot (rotate) d) Dice

7) A _____ contains a subset of corporate-wide data that is of value to a specific group of users.
   a) Enterprise warehouse b) Data Mart
   c) Virtual warehouse d) Refresh

8) ____, which converts data from legacy or host format to warehouse format.
   a) Refresh Data b) Data Transformation
   c) Data Cleaning d) Data Extraction

9) _____, which sorts, summarizes, consolidates, computes views, checks integrity, and builds indices and partitions.
   a) Refresh Data b) Load
   c) Data Cleaning d) Data Extraction

10) The deeper the abstraction level, the smaller the corresponding threshold _____.
   a) Reduced Support b) Same support
   c) Uniform support d) Minimum support

11) Multidimensional association rules with repeated predicates are called _____.
   a) Interdimensional association rules
   b) Multidimensional Association rules
   c) Hybrid-dimensional Association rules
   d) None of these

12) A divisive hierarchical clustering method employs a _____ strategy.
   a) Top-down b) Bottom-up
   c) Random d) None of these

13) AGNES stands for _____.
   a) AGlomerative Next Searching b) AGglomerative NESting
   c) Advanced Group NESting d) None of these

14) Concept hierarchy is a powerful form of _____.
   a) Task Relevant data b) Kinds of Knowledge
   c) Background Knowledge d) Interestingness measure

Q.2 A) Answer the following questions. (Any Four) 08
1) Explain density based clustering method with example.
2) What is virtual warehouse? Explain in short.
3) Explain in short Metadata Repository in data warehouse.
4) What is data Transformation? Explain in short.
5) Explain in short Information gain.

B) Write Notes. (Any Two) 06
1) schema hierarchies
2) Data Reduction
3) Frequent Pattern Tree (FP-Tree)

Q.3 A) Answer the following questions. (Any Two) 08
1) What is data mining? Explain 'Kind of knowledge to be mined' with example.
2) What is Association Rule? Explain 'mining in multidimensional associations'.
3) Explain various data mining applications.

B) Answer the following questions. (Any One) 06
1) Describe Data warehouse architecture with well labelled diagram.
2) Explain k-medoid algorithm with suitable example.

Q.4 A) Answer the following questions. (Any Two) 10
1) What is classification? Explain the procedure of Rule based classification.
2) Explain Video and Audio data mining.
3) Explain how data mining is useful for the Telecommunication Industry.

B) Answer the following questions. (Any One) 04
1) What is data cube? Explain snowflake schema.
2) Explain typical requirements of clustering in data mining.

Q.5 Answer the following questions. (Any Two) 14
a) Explain decision tree induction method with suitable example.
b) Explain different types of hierarchical clustering methods.
c) What is Data Cube? Explain the different schemas for multidimensional model.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science
DISTRIBUTED OPERATING SYSTEM

Day & Date: Monday, 11-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) When a packet is sent to one of these addresses, it is automatically delivered to all machines listening to the address then such technique is _____ called addressing.
   a) Multicasting b) Broadcasting
   c) Unicasting d) Showcasting

2) If send is _____ it returns control to the caller immediately, before the message is sent.
   a) blocking b) non-blocking
   c) reliable d) Unreliable

3) _____ must provide a means for specifying the controls to be imposed together with a means of enforcement.
   a) Boolean Law b) Protection
   c) Processor d) File

4) A _____ model to construct server can be characterized with parallelism and having blocking system calls.
   a) Single thread b) Multi thread
   c) Operator Overloading d) Polymorphism

5) If the workstations are diskless, the file system must be implemented by one or more _____ file servers.
   a) Remote b) Block Cache
   c) Local d) Temporary

6) In _____, a process can be moved even if it has already started execution.
   a) Non-migratory allocation b) Replication allocation
   c) Migratory allocation d) Flexibility allocation

7) A _____ is a situation in which a resource can be released only voluntarily by process holding it, after that process has completed its task.
   a) Hold and wait b) No preemption
   c) Resource sharing d) Process Election

8) Using _____, larger amounts of data can be moved between machines at rates of 10 to 100 million bits/sec and sometimes more.
   a) Infrastructure Public Networks b) Wide Area Networks
   c) Metropolitan Area Networks d) Local Area Networks

9) Packing parameters into a message is called _____.
   a) Parameter Passing b) Message Packing
   c) Parameter Marshalling d) Message Formatting

10) Each user has a kind of ticket called a _____, for each object to which it has access.
   a) Data server b) Capability
   c) Access control list d) Upload model

11) A _____ is a situation in which at least one resource must be held in a non-sharable mode; that is, only one process at a time can use the resource.
   a) Resource Sharing b) Mutual exclusion
   c) Clock synchronization d) Process Election

12) A _____threads package can be implemented on an operating system that does not support threads.
   a) Kernel b) Scheduler activation
   c) Spin lock d) User

13) When a packet arrives and the receiver is unable to accept, the _____ occurs and the incoming packet is lost.
   a) Overwrite error b) Compile time error
   c) Execution time error d) Overrun error

14) The _____ is one that is prepared to communicate with any other system by using standard rules that govern the format, contents and meaning of the messages sent and received.
   a) Closed System b) Open System
   c) Distributed File System d) Device management system

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

1) What do you mean by Peer and Hierarchical group?
2) What do you mean by Clock Synchronization?
3) What do you mean by File Server?
4) What do you mean by Remote Procedure Call?
5) Define term virtual memory?

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

1) Data Link Layer
2) Cristian's Algorithm
3) Deadlock

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

1) Discuss in detail Processor scheduling in Distributed System?
2) Differentiate between MS-windows NT and Novel Netware?
3) What do you mean by group communication?

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

1) Discuss Token Ring algorithm for Mutual Exclusion?
2) Describe in detail the Remote Access model and Upload/Download model.

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

1) What do you mean by Clients and Servers? Discuss in detail Lamport's Algorithm for clock correction.
2) What do you mean by False Deadlock? Discuss Distributed Deadlock Prevention algorithm in detail?
3) Discuss in detail acts involved for sending calls and messages as Remote Procedure call.

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

1) What is ACID property?
2) State the software concepts of distributed systems.

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

a) Enlist the System Models. Discuss in detail Workstation Model using Idle Workstation wit suitable example?

b) What do you mean by Election Algorithm? Explain in detail Bully Election Algorithm?

c) Define the term Distributed Operating Systems. Discuss in detail its advantages and disadvantages.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science
NETWORK SECURITY

Day & Date: Monday, 11-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM s

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

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

1) A combination of an encryption algorithm and a decryption algorithm is called _____.
   a) Cipher b) Secret
   c) Key d) None of these

2) _____ is the message digest algorithm.
   a) DES b) IDEA
   c) MD5 d) RSA

3) SET uses the concept of _____.
   a) Double signature b) Dual signature
   c) Multiple signature d) Single signature

4) _____ is software that is intentionally included or inserted in a system for harmful purpose.
   a) Virus b) Worm
   c) Malicious software d) None of these

5) TLS stands for _____.
   a) Telecommunication Layer Serial
   b) Transaction Layer Service
   c) Transport Lower Standard
   c) Transport Layer Security

6) A _____ is the scramble message produced as output.
   a) Passive attack b) Encryption algorithm
   c) Plain text d) Cipher text

7) The _____ prevents or inhibits the normal use or management of communications facilities.
   a) Masquerade b) Replay
   c) Modification of message d) Denial of service

8) Pretty Good Privacy (PGP) is used in ___.
   a) Browser security b) E-mail security
   c) FTP security d) None of these

9) _____ attacks are very difficult to detect because they do not involve any alteration of data.
   a) Active attack b) Passive attack
   c) Null attack d) None of these

10) _____ is the ability to limit and control the access to host systems and applications via communications links.
a) Authentication b) Access control
c) Confidentiality d) Data integrity

11) SSL stands for _____.
a) Secure Serial Layer b) Socket Serial Layer
c) Secure Serial Leased d) Secure Socket Layer

12) A hash function guarantees integrity of a message. It guarantees that message has not be _____.
a) Replaced b) Over view
c) Changed d) Left

13) ____ is a form of virus explicitly designed to hide itself from detection by antivirus software.
a) Parasitic virus b) Memory-resident
c) Boot sector virus d) Stealth virus

14) _____ operates in the transport mode or the tunnel mode.
a) IPSec b) SSL
c) PGP d) None of these

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define non-repudiation with secret keys.
2) What is active attack? What are the types of active attack?
3) What is the purpose of X.509 standard?
4) What are the different objectives of network security?
5) What is meant by one-way property in hash function?

B) Write Notes on (Any Two) **06**
1) Firewall applications
2) Digital signature
3) IPsec

Q.3 A) Answer the following questions. (Any Two) **08**
1) What is Access Matrix? Explain Access Control List (ACL) and its capabilities.
2) What is Encryption algorithm? Explain in short.
3) Explain Masquerader, Misfeasor and clandestine user.

B) Answer the following questions. (Any One) **06**
1) Define the term plain text, secret key and cipher text with example.
2) What is key management? Also explain the functions of key management.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain the intrusion detection and prevention system in detail.
2) What are the different modes of operation in DES?
3) Explain Kerberos with its uses.

B) Answer the following questions. (Any One) **04**
1) What is data confidentiality? Explain with example.
2) Explain IP Encapsulating Security Protocol.

Q.5 Answer the following questions. (Any Two) **14**
a) What is El Gamal cryptosystem? Explain its encryption and decryption processes.
b) Discuss primitive operations and key expansion procedure in IDEA.
c) Explain Chinese wall model in Detail.