Seat No.	

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M.Sc. (Semester - I) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Object Oriented Programming Using C ++ (MSC18101)

Day & Date: Wednesday, 19-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
       2) Attempt any three questions from Q. No. 3 to Q. No. 7
       3) Figure to right indicate full marks.

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

1) Who invented C++?
   a) Dennis Ritchie   b) Ken Thompson
   c) Brian Kernighan   d) Bjarne Stroustrup

2) What is C++?
   a) C++ is an object oriented programming language
   b) C++ is a procedural programming language
   c) C++ supports both procedural and object oriented programming language
   d) C++ is a functional programming language

3) Which of the following is the correct syntax of including a user defined header files in C++?
   a) #include [userdefined]
   b) #include "userdefined"
   c) #include <userdefined.h>
   d) #include <userdefined>

4) Which of the following is used for comments in C++?
   a) /* comment */
   b) // comment */
   c) // comment
   d) both // comment or /* comment */

5) Which of the following user-defined header file extension used in C++?
   a) hg   b) cpp
   c) h   d) hf

6) Which of the following is a correct identifier in C++?
   a) VAR_1234   b) $var_name
   c) 7VARNAME   d) 7var_name

7) Which of the following is not a type of Constructor in C++?
   a) Default constructor   b) Parameterized constructor
   c) Copy constructor   d) Friend constructor

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

9) What is virtual inheritance in C++?
   a) C++ technique to enhance multiple inheritance
   b) C++ technique to ensure that a private member of the base class can be accessed somehow
   c) C++ technique to avoid multiple inheritances of classes
   d) C++ technique to avoid multiple copies of the base class into children/derived class

10) What happens if the following C++ statement is compiled and executed?
    int *ptr = NULL;
    delete ptr;
    a) The program is not semantically correct
    b) The program is compiled and executed successfully
    c) The program gives a compile-time error
    d) The program compiled successfully but throws an error during run-time

B) Write true/false. 06
1) Sub classes may also be called Child classes/Derived classes.
   a) True   b) False
2) It is not possible to achieve inheritance of structures in C++?
   a) True   b) False
3) Super classes are also called Parent classes/Base classes.
   a) True   b) False
4) There are only two possible values for the bool data type.
   a) True   b) False
5) It is not possible to achieve inheritance of structures in C++?
   a) True   b) False
6) It is best to use very short identifiers.
   a) True   b) False

Q.2 Answer the following. 16
a) What do you mean by a token?
b) What are the different features of C++?
c) Differentiate between keyword and identifier.
d) What are the different features of C++?

Q.3 Answer the following. 16
a) Write a program to add two complex numbers using object as arguments.
b) State any four points of differentiation between function overloading and function overriding.

Q.4 Answer the following. 16
a) State the use of scope resolution operator and its use in C++.
b) Write a C++ program to calculate root of quadratic equations by initializing the object using default constructor.

Q.5 Answer the following. 16
a) Demonstrate hybrid inheritance with the help of suitable example.
b) Write down the syntax and example to create a class.

Q.6 **Answer the following.** **16**
    a) What are the different forms of inheritance supported by C++? Explain with examples.
    b) What are command line arguments? Give example of the same.

Q.7 **Answer the following.** **16**
    a) What is the difference between default arguments and constant arguments? Explain with the help of examples.
    b) Write a C++ program to calculate root of quadratic equations by initializing the object using default constructor.

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M.Sc. (Semester - I) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Advanced DBMS (MSC18102)

Day & Date: Thursday, 20-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) In RDBMS Table is also called as _____.
   a) Tuple   b) Domain
   c) Relation   d) None

2) Which of the following statements contains an error?
   a) Select * from emp where empid = 103;
   b) Select empid from emp where empid = 126;
   c) Select empid from emp;
   d) Select empid where empid = 1009 and lastname = 'kadam';

3) Which of the following option is use to retrieval of data?
   a) Stack   b) Data Structure
   c) Query   d) Linked list

4) In DBMS FD stands for _____
   a) Facilitate data   b) Functional data
   c) Facilitate dependency   d) Functional dependency

5) A primary key is combined with a foreign key creates _____.
   a) Many to many relationships between the tables that connect them
   b) Parent-Child relationship between the tables that connect them
   c) Network model between the tables that connect them
   d) None of the mentioned

6) In 2NF _____.
   a) No functional dependencies (FDs) exist
   b) No multivalued dependencies (MVDs) exist
   c) No partial MVDs exist
   d) No partial FDs exist

7) SELECT _____ FROM emp WHERE dept name='MCA.';
Which of the following should be used to find the mean of the salary?
   a) Mean(salary)   b) Avg(salary)
   c) Sum(salary)   d) Count(salary)

8) How many join types in join condition?
   a) 2   b) 3
   c) 4   d) 5

9) _____ will undo all statements up to commit.
   a) Transaction   b) Flashback
   c) Rollback   d) Abort

10) The command _____ such tables are available only within the transaction executing the query and are dropped when the transaction finishes.
   a) Create table   b) Create temporary table
   c) Create view   d) Create label view

B) Fill in the blanks OR Write True/False   **06**
1) Each row contains information on individual topics.
2) The group of one or more columns used to uniquely identify each row of a relation is called its Primary Key.
3) Relationships link data from individual tables to increase the usefulness of the database.
4) A database has data and relationships.
5) A database design may be based on existing data.
6) The relational database model was created by E.C. Fodd.

Q.2 Answer the following.   **16**
   a) Explain two aggregate functions of SQL.
   b) Draw an ER diagram for Hospital management system.
   c) What is Database Recovery? List the recovery techniques.
   d) What is serializability? Explain it.

Q.3 Answer the following. (8 + 8)   **16**
   a) Explain the following:
     i) Key constraints   ii) Integrity constraints
   b) Explain briefly about 1NF, 2NF and 3NF with suitable examples.

Q.4 Answer the following. (8 + 8)   **16**
   a) What are the different data models present and explain briefly?
   b) Explain the concept of functional dependency with an example.

Q.5 Answer the following. (8 + 8)   **16**
   a) Explain the following SQL constructs with examples:
     i) Order by   ii) group by and having
     iii) select   iv) schema
   b) How the use of 2PL and Strict 2PL Locking protocols to prevent interference between two transactions.

Q.6 Answer the following. (8 + 8)   **16**
   a) Explain different types of joins in SQL with examples.
   b) Briefly discuss about various lock-based mechanisms used in concurrency control.

Q.7 Answer the following. (8 + 8)   **16**
   a) What is a Function in PL/SQL? How to create it? Give an example of function.
   b) What is Distributed Database? Explain its type.

Seat No.

M.Sc. (Semester - I) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Data Structures and Algorithms (MSC18103)

Day & Date: Friday, 21-07-2023　　　　　　　　　　　Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1　A)　Choose correct alternatives　　　　　　　　　　　　　　　　10

1) A Binary Tree can have _____.
   a) Can have 2 children
   b) Can have 1 children
   c) Can have 0 children
   d) All of the above

2) Which traversal technique lists the nodes of a binary search tree in ascending order?
   a) Post-order
   b) In-order
   c) Pre-order
   d) linear-order

3) Binary search tree is an example of:
   a) Divide and conquer technique
   b) Greedy algorithm
   c) Back tracking
   d) Dynamic Programming

4) Which one of the following is a physical data structure?
   a) Array
   b) Linked lists
   c) Stacks
   d) Tables

5) The number of edges in a complete graph of n vertices is _____.
   a) n
   b) n(n-1)/2
   c) n(n + 1)/2
   d) None of these

6) What is the alternate name of bucket sort?
   a) group sort
   b) radix sort
   c) bin sort
   d) uniform sort

7) A queue follows _____.
   a) FIFO (First In First Out) principle
   b) LIFO (Last In First Out) principle
   c) Ordered array
   d) Linear tree

8) Double circular linked list contains _____ NULL links.
   a) One
   b) Two
   c) Three
   d) Zero

9) Process of inserting an element in stack is called _____.
   a) Create
   b) Push
   c) Evaluation
   d) Pop

10) Which of the following is not the type of queue?
    a) Ordinary queue
    b) Circular queue
    c) Priority queue
    d) Single ended queue

B) **Write True or False.** 06
1) Binary search is used for searching in a sorted array.
2) An undirected graph which contains no cycles is called a forest.
3) Stack works in FIFO.
4) Tree is non-linear data structure.
5) New nodes are added at front end of the queue.
6) Nodes that are not root and not leaf are called as internal nodes.

Q.2 **Answer the following.**
1) Explain counting sort with example. **04**
2) What is BFS and DFS in graph? **04**
3) What is queue? What are the operations on queue? **04**
4) What is primitives and non-primitive data type? **04**

Q.3 **Answer the following.**
a) Explain single and multidimensional array with suitable example. **08**
b) What is searching? Explain binary search algorithm. **08**

Q.4 **Answer the following.**
a) What is stack? Explain operations on stack. **08**
b) Explain tree traversal algorithm with example. **08**

Q.5 **Answer the following.**
a) Write a program for implementation of circular queue. **08**
b) What is linked list? Explain types of linked list. **08**

Q.6 **Answer the following.**
a) What is graph? Explain graph representation technique. **08**
b) Explain Quick sort algorithm with suitable example. **08**

Q.7 **Answer the following.**
a) Write an algorithm for converting infix expression to postfix expression. **08**
b) Write an algorithm for inserting and deleting an element from doubly linked list. **08**

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M.Sc. (Semester - I) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Software Engineering (MSC18109)

Day & Date: Saturday, 22-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and 2 are Compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
3) Figure to right indicate full marks.

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

1) SDLC stands for_____.
   a) System Design Life Cycle
   b) Software Development Life Cycle
   c) System Development Life cycle
   d) Software Design Life Cycle

2) _____ of the following property does not correspond to a good Software Requirements Specification (SRS).
   a) Verifiable   b) Ambiguous
   c) Complete   d) Traceable

3) The degree of interaction between two modules is known as_____.
   a) Cohesion   b) Strength
   c) Coupling   d) Inheritance

4) The aim of software engineering is to produce software that is ____.
   a) Fault free
   b) Delivered on time
   c) Delivered within budget
   d) All of these

5) 4GL is an example of ____ processing.
   a) Black Box   b) White Box
   c) Functional   d) Both Black Box & Functional

6) Alpha and Beta testing are forms of _____ testing.
   a) Integration   b) Acceptance
   c) System   d) Unit

7) _____ consists of the auditing and reporting functions of management.
   a) Quality assurance   b) Quality control
   c) Quality cost   d) FTR

8) _____ of the following black box testing.
   a) Basic path testing   b) Boundary value analysis
   c) Code path analysis   d) None of the mentioned

9) A_____ is a square matrix whose size (i.e. number of rows and columns) is equal to the number of nodes on the flow graph.
   a) connection matrix   b) flow matrix
   c) graph matrix   d) none of these

10) The _____ layer contains the design details that enable each object to communicate with its collaborators.
   a) Subsystem   b) Class and object
   c) Message   d) Responsibility

B) State True or False.   06
   1) Product line software development depends the reuse of existing software components to provide software engineering leverage.
   2) In general software only succeeds if its behavior is consistent with the objectives of its designers.
   3) Larger programming teams are always more productive than smaller teams.
   4) Black-Box testing is used to demonstrate that software functions are operational, that input is properly accepted and output is correctly produced.
   5) Coupling and cohesion can be represented using a dependence matrix.
   6) Vertical partitioning, often called factoring, suggests that control (decision making) and work should be distributed top-down in the program structure

Q.2 Write Short Note on.   16
   a) Metrics
   b) DFD
   c) Transform mapping
   d) Integration Testing

Q.3 Answer the following.
   a) Explain Prototyping model in detail.   08
   b) What is ERD? Explain with one example.   08

Q.4 Answer the Following.
   a) What is Software Engineering? Explain Software Processes, Projects and Products.   08
   b) Explain elements of the Analysis model in detail.   08

Q.5 Answer the following.
   a) What is Architectural Design? Explain in detail.   08
   b) Explain different partitioning techniques in detail.   08

Q.6 Answer the following.
   a) What is White-Box testing? Explain in detail.   08
   b) Explain Object Oriented Design in detail.   08

Q.7 Answer the following.
   a) Explain Quality Assurance Technique in detail.   08
   b) Explain Software Project Metrics in detail.   08

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M.Sc. (Semester - I) (New) (CBCS) Examination: March/April-2023
**COMPUTER SCIENCE**
UML (MSC18110)

Day & Date: Saturday, 22-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and. 2 are compulsory.
                         2) Attempt any three questions from Q. No. 3 to Q. No. 7
                         3) Figure to right indicate full marks.

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

1) UML provides which of these levels of visibility that can be applied to attributes and operations?
    a) Public   b) Package
    c) Protected and Private   d) All of the mentioned

2) What is UML?
    a) UML is Unified Modeling Language
    b) Graphical language for visualizing artifacts of the system
    c) Allow to create a blue print of all the aspects of the system
    d) UML shows a complete or partial view

3) What is collection of model elements called?
    a) Box   b) Dependency
    c) UML packages   d) Package members

4) Which among these are the rules to be considered to form Class diagrams?
    a) Class symbols must have at least a name compartment
    b) Compartment can be in random order
    c) Attributes and operations can be listed at any suitable place
    d) None of the mentioned

5) Which of these are the heuristics?
    a) Name classes, attributes, and roles with noun phrases
    b) Name operations and associations with verb phrases
    c) Stick to binary associations
    d) All of the mentioned

6) Key elements of use-case diagrams are _____.
    a) People, computer   b) Actors, use cases
    c) People, classes and objects   d) Uses, cases

7) Which core element of UML is being shown in the figure?
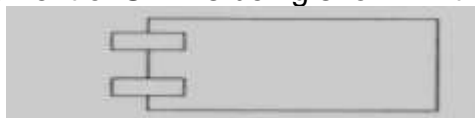
    a) Node   b) Interface
    c) Class   d) Component

8) Who consider diagrams as a type of Class diagram, component diagram, object diagram, and deployment diagram?
   a) Structural
   b) Behavioral
   c) non-behavioral
   d) non structural

9) _____UML diagrams has a static view.
   a) Collaboration
   b) Use case
   c) State chart
   d) Activity

10) Object diagram is used to show the design _____ view of a system.
   a) Static
   b) Dynamic
   c) Logical
   d) Process

B) Fill in the blanks.   06
1) The use case _____ is used to textually describe the sequence of steps of each interaction.
2) _____ diagrams depict the system's object structure. They show object classes that the system is composed of as well as the relationships between those classes.
3) In an activity diagram the diamond shape is used to represent a _____ or a _____.
4) To show who does what in an activity diagram you would divide it into _____.
5) The version of the use case created during requirements analysis is called a(n) _____ use case.
6) _____ is a stronger form of _____.

Q.2 Answer the following.   16
   a) What is structural model?
   b) What is State?
   c) What is Use Case?
   d) What is UML?

Q.3 Answer the following.   16
   a) Explain Use Case Diagrams with Example.
   b) Explain Component Diagrams with Example.

Q.4 Answer the following.   16
   a) What is an attribute? Explain its syntax in UML.
   b) Draw the class diagram for the School Management System.

Q.5 Answer the following.   16
   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?

Q.6 Answer the following.   16
   a) Explain sequence diagrams with Example.
   b) Explain Mechanisms in UML and architecture in UML

Q.7 Answer the following.   16
   a) Explain various phases of Software development Life cycle.
   b) What is a package? Explain importing and exporting in packages.

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M.Sc. (Semester - II) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Java Programming (MSC18201)

Day & Date: Wednesday, 19-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

Q.1   **A)**   **Choose Correct Alternative.**   **10**

1) _____ is a special member function.
   - a) Method
   - b) class
   - c) use defined function
   - d) constructor

2) The string is defined in _____ namespace.
   - a) java.Lang
   - b) java.String
   - c) java.Char
   - d) java.Awt

3) In Java thread to thread, communication is called _____.
   - a) Passing
   - b) sending
   - c) messaging
   - d) calling

4) A package is a collection of _____.
   - a) Classes
   - b) interfaces
   - c) editing tools
   - d) classes and interfaces

5) The _____ and _____ classes are abstract classes that support reading and writing of byte streams.
   - a) reader, writer
   - b) objectinputstream, objectoutputstream
   - c) inputstream, outputstream
   - d) None of these

6) Multidimensional arrays are actually _____.
   - a) Arrays of element
   - b) Arrays of variable
   - c) Arrays of arrays
   - d) None of these

7) Which of the following is not keyword?
   - a) NULL
   - b) implements
   - c) Protected
   - d) Switch

8) The out object is an object encapsulated inside the _____ class and represents the standard output device.
   - a) Standard
   - b) local
   - c) global
   - d) system

9) Method overloading is one of the ways that Java supports _____.
   - a) Encapsulation
   - b) class
   - c) inheritance
   - d) polymorphism

10) In the second type, the information written in java after // is ignored by the _____.
    a) Interpreter   b) Compiler
    c) Programmer   d) All of the above

B) Write True or False.   **06**
1) A final class may not have any abstract method.
2) Every method of a static class is implicitly final.
3) The class at the top of exception class hierarchy is Throwable.
4) Operators are passed to a method by use of call by reference.
5) All Java classes are derived from java.lang.Object.
6) Inner classes are anonymous classes.

Q.2 Answer the following.   **16**
  1) StringTokenizer
  2) Resultset interface
  3) Adapter Classes with its advantages
  4) Different methods of object class

Q.3 Answer the following:
  a) Explain different types of drivers in jdbc.   **10**
  b) What is event delegation model? Explain sources and listeners.   **06**

Q.4 Answer the following.
  a) Explain inter-thread communication with example.   **10**
  b) Explain the multiple catch block with suitable example.   **06**

Q.5 Answer the following.
  a) What is synchronization? Explain with example.   **10**
  b) What is difference between statement and Prepared Statement interface?   **06**

Q.6 Answer the following.
  a) Create a windows application to insert and display student information.   **10**
  b) Explain different access specifiers in java.   **06**

Q.7 Answer the following.
  a) What is the significance of Layout managers? Discuss briefly various layout managers.   **10**
  b) Differentiate between interface and an abstract class.   **06**

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M.Sc. (Semester - II) (New) (CBCS) Examination March/April-2023
COMPUTER SCIENCE
Python Programming (MSC18202)

Day & Date: Sunday, 23-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

Q.1 A) Choose the correct alternatives from the given options.   10

1) For fetch the data, which function we use to run the select query?
    a) fetch()   b) rawquery()
    c) executequery()   d) execute()

2) Which keyword we use to fetch the data from the table in database?
    a) fetch   b) select
    c) raw   d) All of the above

3) _____ of the following is not a geometry management method.
    a) grid()   b) place()
    c) pack()   d) flowlayout()

4) Config() in Python Tkinter are used for _____.
    a) destroy the widget
    b) place the widget
    c) change property of the widget
    d) configure the widget

5) How does run() method is invoked?
    a) By Thread.run()   b) By Thread.start()
    c) By Thread.create()   d) None of these

6) Which thread method is used to wait until it terminates?
    a) None   b) wait()
    c) waitforthread()   d) join()

7) Which module in Python supports regular expressions?
    a) re   b) regex
    c) pyregex   d) none of these

8) In python function can return _____ values.
    a) only one   b) only two
    c) only three   d) Any number of

9) If we want to know the current working directory we can use _____
    method of 'os' module.
    a) getcwd()   b) getCurr()
    c) currWd()   d) currDir()

10) Which of the following is a two dimensional pandas Data structure?
    a) Series   b) DataFrame
    c) Panel   d) None of these

B) Fill in the blanks. 06
1) The full form of MVC is _____.
2) To add drawings like line, oval, rectangle _____ Container is Used.
3) A variable that is defined inside a method and belongs only to the current instance of a class is called _____ variable.
4) To call the super class constructor _____ method is used.
5) To read a binary file _____ file opening mode is used.
6) The code statement math.floor(2.6) will return _____.

Q.2 Answer the following. 16
a) Define dict. Explain any four functions dict.
b) Explain the use oftry, except, else, finally keywords in exception handling.
c) Explain the functionalities of random module.
d) Write a simple python program to read the content from one file and write to another file.

Q.3 Answer the following.
a) Design a GUI that uses Frame, Label, Entry, Checkbutton, Radiobutton, Spinbox and Button widgets. 08
b) Write a python application to insert and display Book details like Acc_no, Title, Author, Publication and Price using My SQL database. 08

Q.4 Answer the following.
a) Explain multiple inheritance with example. 08
b) Explain function decorators and chained decorators with example. 08

Q.5 Answer the following.
a) What is DataFrame? Write the features of DataFrame. Explain how to create a DataFrame from python Dictionary. 10
b) Explain the python built-in functions map, zip, reduce and filter with example. 06

Q.6 Answer the following.
a) Write a python program to demonstrate communication between threads using wait() and nitify() methods. 10
b) What is Histogram? Create a Histogram to visualize the data of students as Marks on X-axis and No. of Students on Y-axis 06

Q.7 Answer the following.
a) Create a pandas DataFrame and show the functionalities of Selection of Column, Addition of Column and Deletion of Column. 10
b) Explain Django web framework. 06

Seat No.

M.Sc. (Semester - II) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Computer Communication Network (MSC18207)

Day & Date: Tuesday, 25-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) A collection of computers and devices connected together via communication devices and transmission media is called a _____.
   a) Workgroup   b) Network
   c) Mainframe   d) Server

2) The term HTTP stands for _____.
   a) Hyper terminal tracing program   b) Hypertext tracing protocol
   c) Hypertext transfer protocol   d) Hypertext transfer program

3) _____is more likely to occur during the frame transmission in Stop-and-Wait ARQ mechanism.
   a) Normal operation
   b) Delay in an acknowledgement
   c) Loss of frame or an acknowledgement
   d) All of the above

4) In OSI model, _____ layer is responsible for creating and recognizing frame Boundaries.
   a) Network Session   b) Data link
   c) Physical   d) Transport

5) A subset of a network that includes all the routers but contains no loops is called _____.
   a) spanning tree   b) parse tree
   c) spider tree   d) special tree

6) In IPv4, when data is encapsulated in a frame, the total size of the datagram must be less than the _____.
   a) MUT   b) MTU
   c) MAT   d) none of these

7) 125.8.200.1 IP address belongs to _____.
   a) Class B   b) Class A
   c) Class C   d) Class D

8) DHCP (dynamic host configuration protocol) provides _____ to the client.
   a) IP address   b) MAC address
   c) URL   d) None of the mentioned

9) _____ allows non-ASCII data to be sent through e-mail.
   a) POP   b) SMPT
   c) MPEG   d) MIME

10) The maximum length (in bytes) of an IPv4 datagram is _____.
    a) 32   b) 1024
    c) 65535   d) 512

B) State True or False.   **06**
    1) Protocol is an agreement between the communicating parties on how communication is to proceed.
    2) CRC stands for code redundancy check.
    3) A subset of a network that includes all the routers but contains no loops is called spanning tree.
    4) Electronic mail uses SMTP application layer protocol.
    5) DHCP protocol is used to transport all information between Web servers and clients.
    6) The network layer concerns with packets.

Q.2 Answer the Following.   **16**
    1) Internetwork
    2) User Datagram Protocol (UDP)
    3) Subnet
    4) Address Resolution protocol (ARP)

Q.3 Answer the following:
    a) Explain OSI Reference Model in detail.   **08**
    b) What is Congestion? Explain Congestion Control algorithm.   **08**

Q.4 Answer the following:
    a) Explain Sliding Window Protocol in detail.   **08**
    b) Explain store and forward packet switching technique.   **08**

Q.5 Answer the following:
    a) What is TCP? Explain TCP segment header structure in detail.   **08**
    b) Explain HTTP (Hyper Text Transfer Protocol) in detail.   **08**

Q.6 Answer the following:
    a) Explain Electronic Mail in detail.   **08**
    b) What is RPC? Explain implementation of RPC mechanism.   **08**

Q.7 Answer the following
    a) Distinguish between Virtual Circuit and Datagram Subnet.   **08**
    b) What is Routing algorithm? Explain Hierarchical routing algorithm in detail. **08**

Seat No.

M.Sc. (Semester - II) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Artificial Intelligence (MSC18208)

Day & Date: Tuesday, 25-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) A production rule consists of _____.
   a) A set of Rule
   b) A sequence of steps
   c) Both (a) and (b)
   d) Arbitrary representation of a problem

2) External actions of the agent is selected by _____.
   a) Perceive   b) Performance
   c) Learning   d) Actuator

3) Fuzzy relation associates _____ to a varying degree of membership.
   a) columns   b) tuples
   c) fields   d) none of the above

4) In the learning method, the target output is not presented to the network _____.
   a) Supervised learning   b) Unsupervised learning
   c) Reinforced learning   d) Hebbian learning

5) In which of the following situations might a blind search be acceptable?
   a) real-life situation   b) complex game
   c) small search space   d) all of the above

6) Neural Computing is _____.
   a) mimics human brain
   b) information processing paradigm
   c) Both a and b
   d) none of the above

7) In an artificial Neural Network, interconnected processing elements are called _____.
   a) nodes or neurons   b) weights
   c) Axons   d) Soma

8) Conversion of a fuzzy set to single crisp value is called _____.
   a) Fuzzification   b) Defuzzification
   c) fuzzy logic   d) fuzzy rule

9) A heuristic is a way of trying _____.
   a) To discover something or an idea embedded in a program
   b) To search and measure how far a node in a search tree seems to be from a goal
   c) To compare two nodes in a search tree to see if one is better than the other is
   d) All of the above

10) The performance of an agent can be improved by _____.
   a) Learning
   b) Observing
   c) Perceiving
   d) None of the above

B) Fill in the blanks.   **06**
   1) Frames in artificial intelligence are derived from semantic nets. (True / False)
   2) The space for all possible feasible solutions is called _____.
   3) The _____ was originally called the "imitation game" by its creator.
   4) _____ is the first operator applied to a population in a genetic algorithm.
   5) The number of elements in a set is called cardinality. (True / False)
   6) Neurons can send multiple signals at a time. (True / False)

Q.2 Answer the Following.   **16**
   1) What is the difference between Local Maxima, plateau and ridge?
   2) What are the issues in the design of search programs?
   3) What are the advantages of Depth First Search?
   4) Explain the steps involved in a simple problem-solving technique.

Q.3 Answer the following: **16**
   a) Define Game playing. Explain in minimax search procedure with a suitable example.
   b) Explain the Dempster-Shafer theory with example.

Q.4 Answer the following: **16**
   a) Explain heuristic search techniques with example.
   b) What are the approaches to knowledge representation? Explain in detail.

Q.5 Answer the following: **16**
   a) Explain partitioned semantic Nets with descriptions.
   b) What are the different tasks of Artificial Intelligence? Explain in detail.

Q.6 Answer the following: **16**
   a) State and explain the water jug problem with a suitable example.
   b) What are the four properties of knowledge representation? Explain with an example.

Q.7 Answer the following   **16**
   a) How to define a problem as a state-space search? Discuss it with the help of an example.
   b) What are the different types of agents? Explain in detail.

Seat No.

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Digital Image Processing (MSC18301)

Day & Date: Monday, 10-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) The American Bankers Association E-13B font character set were designed on a _____ grid.
   a) 9×7 b) 10×10
   c) 5×7 d) 16×16

2) The ratio of the major to the minor axis is called as _____.
   a) Compactness   b) Eccentricity
   c) Circularity   d) Euler Number

3) The contra-harmonic mean filter is primarily used for filtering _____ noise.
   a) salt or pepper   b) Impulse
   c) Exponential   d) Gaussian

4) The technique used in the tasks such as zooming, shrinking, rotating, etc. are known as _____.
   a) Filters   b) Sampling
   c) Quantization   d) Interpolation

5) To convert frequency domain image to spatial domain _____ transformation function is used.
   a) Logarithmic   b) Inverse Fourier transform
   c) Negative   d) Fourier transform

6) When threshold value only depends on gray-level values the threshold is called as _____ threshold.
   a) global   b) local
   c) adaptive   d) dynamic

7) The quality of a digital image determines by _____.
   a) The discrete gray levels
   b) The number of samples
   c) discrete gray levels & number of samples
   d) None of these

8) The Closing is defined as _____ using the same structuring element.
   a) dilation followed by dilation   b) erosion followed by dilation
   c) erosion followed by erosion   d) dilation followed by erosion

9) Find power log transformation of pixel using following values.
   Pixel intensity=30, scaling constant=1.5 and gamma=2
   a) 900   b) 1350
   c) 2.21   d) 4.43

10) The _____ category deals with patterns described using quantitative descriptors, such as length, area, and texture.
   a) decision-theoretic   b) structural
   c) statistical classifiers   d) neural networks

B) Fill in the blanks   **06**
1) The degree of similarity between two shapes are calculated using ___.
2) The expanded form of JPEG is _____.
3) The network image consisting of 7 vertices, 11 edges, 2 faces, 3 holes and 1 connected region then _____ is Euler number.
4) If the pixel value of Black white image is '1' then it is represented by the _____ color.
5) The log transformation is calculated using _____.
6) Image has 200 rows and 300 columns and 128 gray levels are used to store each pixels then _____ bytes are required to store this image.

Q.2 Answer the following.   **16**
a) Explain chain code and shape number with example.
b) Explain different Arithmetic operation on image.
c) Explain Uniform Noise and Rayleigh Noise in detail.
d) Explain the American Bankers Association E-13B font character set and corresponding waveforms.

Q.3 Answer the following.
a) Explain image interpolation in detail.   **08**
b) What is Polygonal Approximation? Explain in detail.   **08**

Q.4 Answer the following.
a) What is Histogram Equalization? Equalize the following Histogram.   **10**

0	1	2	3	4	5	6	7
100	90	50	20	0	0	0	0

b) Explain Thinning and Thickening in detail.   **06**

Q.5 Answer the following.
 a) What is thresholding? Explain local, global and Adaptive thresholding in detail. **08**
 b) Explain Image Sampling and Quantization in detail. **08**

Q.6 Answer the following.
 a) What are different components used in Digital Image Processing? Explain in detail. **08**
 b) What is histogram? Explain Histogram specification in detail. **08**

Q.7 Answer the following.
 a) What is segmentation? Explain discontinuity base segmentation. **08**
 b) Explain different Smoothing filters in spatial domain. **08**

Set No.		Set	P

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Open Source Technologies (PHP, MySql) (MSC18302)

Day & Date: Tuesday, 11-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

Instructions: 1) Q. Nos. 1 and. 2 are compulsory.
       2) Attempt any three questions from Q. No. 3 to Q. No. 7
       3) Figure to right indicate full marks.

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

1) _____ is valid variable in PHP.
   a) $3hello   b) $_hello
   c) $this   d) $5_Hello

2) The explode () is used for _____.
   a) Meagre the string
   b) Display the string
   c) Take input string
   d) Split a string into array of string

3) The _____ statement is used to display output in PHP.
   a) Write   b) Echo
   c) Print   d) both b and c

4) The isset() function in PHP is used to check _____.
   a) whether variable is assigned or not
   b) whether the variable is free or not
   c) whether variable is string or not
   d) whether variable is session or not

5) The _____ function is used to set cookie in PHP.
   a) createcookie()   b) setcookie()
   c) assigncookies()   d) None of these

6) The _____ function is used to check value is null or not.
   a) null()   b) is_null()
   c) isnull()   d) null_value()

7) The _____ operator is used to check for value is Less Than equal to or greater than in PHP.
   a) <=   b) >
   c) <=>   d) <>=

8) The _____ function is used to get the ASCII value of a character in PHP.
   a) val()   b) asc()
   c) ascii()   d) chr()

9) _____ is the correct way to invoke a method.
   a) Object->methodName();   b) $object::methodName();
   c) $object->methodName();   d) object::methodName();

10) The _____ method is used to send query to the database.
    a) query()
    b) send_query()
    c) query_to_mysql()
    d) mysqli_query()

B) Fill in the blanks. **06**

1) The _____ keyword is used to prevent a method from being overridden by a subclass.
2) The _____ operator is used to check variables are equal and having same type.
3) The _____ function is used to converts the first character of a string to uppercase.
4) The _____ keyword is used to implement interface.
5) The _____ keyword is used to raise the exception.
6) The _____ method returns the error code generated from the execution of the last MySQL function.

Q.2 Answer the following.
a) Explain different type checking functions used in PHP. **04**
b) Explain Client-Side Scripting and Server-Side Scripting with example. **04**
c) Explain steps to create website using joomla. **04**
d) Explain difference between GET and POST arguments. **04**

Q.3 Answer the following.
a) What is associative array? Explain how to create associative array with example. **08**
b) Explain conditional and looping statements with example. **08**

Q.4 Answer the following.
a) What is exception? Explain how to create user define exception with example. **08**
b) Write PHP script for sending and receiving email. **08**

Q.5 Answer the following.
a) What are different ways to fetch results from query result? Give example. **10**
b) What is difference between require () and include()? Explain with example. **06**

Q.6 Answer the following.
a) Write PHP script to insert, delete and update records. **08**
b) Write PHP script for reading and writing file. **08**

Q.7 Answer the following.
a) What are different parameter passing techniques used in PHP? Explain with example. **08**
b) Write PHP script for: **08**
    1) Whether given number is Armstrong number or not and
    2) Whether given number is Palindrome number or not

Set No.		Set	P

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Network Security (MSC18307)

Day & Date: Wednesday, 12-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7
3) Figure to right indicate full marks.

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

1) Which is not an objective of network security?
   a) Identification   b) Authentication
   c) Access control   d) Lock

2) Pretty good privacy (PGP) is used in _____.
   a) Browser security   b) Email security
   c) FTP security   d) Wi-Fi security

3) The combination of key exchange, hash, and encryption algorithms defines a _____ for each SSL session.
   a) List of protocols   b) Cipher suite
   c) List of keys   d) None of the above

4) SSL provides _____.
   a) Message integrity   b) Confidentiality
   c) Compression   d) All of the above

5) Biometric authentication works on the basis of _____.
   a) Human characteristics   b) Passwords
   c) Smart cards   d) Pin

6) X.509 certificate recommends which cryptographic algorithm?
   a) RSA   b) DES
   c) AES   d) Rabin

7) Security features that control that can access resources in the OS.
   a) Authentication   b) Identification
   c) Validation   d) Access control

8) Digital signature cannot provide _____ for the message.
   a) Integrity   b) Confidentiality
   c) Non repudiation   d) Authentication

9) In Cryptography, when text is treated at the bit level, each character is replaced by _____.
   a) 4 Bits   b) 6 Bits
   c) 8 Bits   d) 10 Bits

10) The Advanced Encryption Standard (AES), has three different configurations with respect to the number of rounds and_____.
    a) Data Size   b) Round Size
    c) Key Size   d) Encryption Size

B) **Fill in the blanks.** 06

1) _____ is the kind of firewall is connected between the device and the network Connecting to internet.
2) _____ is the first step in DES.
3) _____ is a block cipher.
4) _____ is an example of LDAP.
5) The full form of SSL is _____.
6) _____ process is used for verifying the identity of a user.

Q.2 **Answer the following.** 16

a) Explain Confidentiality and Authentication in security?
b) Explain the concept of ACL and capabilities in Access Control Mechanisms.
c) Explain the Concept of Secure Hash and Key management in Cryptography.
d) What is Network Security? Explain Internet Security Protocol?

Q.3 **Answer the following.** 16

a) Briefly explain Biometrics and Digital Signatures in Authentication mechanism.
b) Briefly explain Intrusion Detection and Prevention in System Security.

Q.4 **Answer the following.** 16

a) What is mean by Ciphers? Explain Symmetric Ciphers and Block Ciphers in Cryptography.
b) Define the term Web Security? Explain SET and E_mail Security in Web Security.

Q.5 **Answer the following.** 16

a) What is mean by Firewalls? Explain different types of firewalls in details.
b) Briefly explain Interference and Role Base Model in Access control mechanism.

Q.6 **Answer the following.** 16

a) Define the term Threats, Risks and Attacks? Explain Types of attack with Security Services.
b) Briefly explain PGPs I MIME and IP Security in web Security.

Q.7 **Answer the following.** 16

a) Briefly explain Digital Signature and Non-repudiation in Cryptography.
b) Briefly explain Model for Internet work Security in network security.

Seat No.

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2023
Computer Science
Cloud Computing (MSC18308)

Day & Date: Wednesday, 12-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

Q.1 A) Multiple choice questions.   **10**

1) Utility computing describes a business model for ____delivery of computing power.
   a) On-demand   b) On-supply
   c) On-customer   d) On-merchant

2) The main principle behind this model is offering computing, storage, and software "as a _____.
   a) Software Suit   b) Terminal
   c) Machine   d) Service

3) Public clouds are provided by a designated service provider for general people under a utility based _____ consumption model.
   a) Pay-per-use   b) Rent-per-use
   c) ATM per-use   d) Credit-per-use

4) _____ solutions have emerged as the core of successful information management and the enterprise backbone of nearly any organization.
   a) FRP   b) DRP
   c) MRP   d) ERP

5) _____applications, refer to a class of systems that manage transaction-oriented applications, typically using relational databases.
   a) PLAP   b) OLAP
   c) SLAP   d) ALAP

6) As more and more vendors enter the _____ cloud segment, cloud providers will strive to gain competitive advantage by adopting various optimization strategies or value-added services to the customers.
   a) EaaS   b) MaaS
   c) PaaS   d) IaaS

7) ____ provides customer with a similar offer: it allows users to deploy their own distributed system on top of their virtual infrastructure.
   a) GoldenGrid   b) GolfGrid
   c) GuestGrid   d) GoGrid

8) ____ allows developing scalable applications for the cloud.
   a) Azare   b) Azuer
   c) Azure   d) Azuret

9) _____allows customers to reach their applications securely without having to employ complex back-end configurations like VPN's.
   a) Sensor Socket   b) Software Socket
   c) System Software d) Secure Socket

10) _____ provides network-based access to commercially available software.
    a) PaaS   b) IaaS
    c) SaaS   d) CaaS

B) Write true or false.   **06**
1) PaaS administrator or business analyst as the primary resource for managing and maintaining their integration work. A good example is Informatica On-Demand Integration Services.
2) Virtualized resources can be dynamically reconfigured to adjust to a variable load (scale), allowing also for an optimum resource utilization.
3) SOA stands for Service Oriented Architecture.
4) All services are allocated in a "cloud" that actually is a collection of devices and resources connected through the Internet.
5) Google App Engine is a development platform and a runtime environment focusing primarily on web applications that will be run on top of Google's server infrastructure.
6) By using Eucalyptus, users can not test and deploy their cloud applications on the private premises and naturally move to the public virtual infrastructure provided by Amazon EC2 and S3 in a complete non transparent manner.

Q.2 Answer the following   **16**
   a) Explain in brief Private Clouds.
   b) What is IaaS?
   c) What is Internet?
   d) What do you mean by Virtual Machine (VM)?

Q.3 Answer the following.
   a) Explain in detail Host Level Security as Infrastructure Security.   **08**
   b) Explain in detail different problems and issues in Cloud Computing.   **08**

Q.4 Answer the following.
   a) Define Cloud? Explain in detail various types Cloud Service Models with suitable example.   **08**
   b) What are Amazon EC2 Compute Units? State and explain its features.   **08**

Q.5 Answer the following.
   a) What is PaaS? Discuss in detail major roles and components of Service Oriented Architecture (SOA).   **08**
   b) State and explain Public, Community, Hybrid, Private Cloud Deployments Models.   **08**

Q.6 Answer the following.
   a) State and explain features and advantages Google App Engine.   **08**
   b) State and explain different approaches of resource virtualization.   **08**

Q.7 Answer the following.
   a) Define Cloud Computing? Discuss its architecture and advantages of it. **08**
   b) Explain in detail Software as a Service (SaaS) with suitable example. **08**

Seat No.	

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2023
Computer Science
Mobile Computing (MSC18309)

Day & Date: Wednesday, 12-07-2023   Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) Which of the following are the limitations of mobile devices?
   a) It consumes power very rapidly.
   b) The keypad is smaller as compared to the desktop.
   c) It is a constant distraction.
   d) All of the above.

2) Which of the following protocol enables access to the internet from a mobile device?
   a) HTTP   b) WAP
   c) ISD   d) TCP/IP

3) What is the basic function of the snooping TCP?
   a) Flow control
   b) Congestion control
   c) For enabling fast local retransmission if the pocket loss is the case
   d) All of the above

4) A 4G communication supports the data rates of_____.
   a) 1024 Mbps   b) 512 Mbps
   c) 100 Mbps   d) 50 Mbps

5) For the transmission purpose, which of the following code is applied because of its special characteristics?
   a) CDMA (Code-Division Multiple Access)
   b) GSM (Global System for Mobile communication)
   c) GPRS (General Packet Radio Service)
   d) None of these

6) In which of the following techniques the total bandwidth is divided into the required number of channels of smaller bandwidth along with the guard spaces between the channels?
   a) FHSS   b) DSSS
   c) Both of these   d) None of these

7) In which of the following type of handover, does the handover takes place between distinct cells but within the range of similar BSC?
   a) Inter MSC handover
   b) Intercell, Intra BSC handover
   c) Intercell, intra MSC handover
   d) Intracell handover

8) Which of the following service of GSM provides to permit transparent or non-transparent, asynchronous or synchronous transmission of the data?
   a) Supplementary services   b) Teleservices
   c) Bearer services   d) All of the above

9) Which of the following layer of protocol architecture all the radio-related functions for signaling?
   a) The layer 2 or LAPD (Link Access Protocol Balanced)
   b) The layer 1 or physical layer
   c) Mobility management layer
   d) Call management layer

10) For the purpose of encapsulating all packets destined for the UE, which tunneling protocol is used?
    a) UMTS tunneling protocol   b) PDCP tunneling protocol
    c) RNS tunneling protocol   d) GPRS tunneling protocol

B) State true or false.   **06**
1) If the size of an obstacle is in the order of the wavelength or less, then waves can be _____.
2) A mobile phone uses _____ type of duplex communication.
3) _____ are the logical representation of data.
4) In this range digital audio broadcasting takes place _____ MHz and 1452 - 1472 MHz.
5) A _____ is a collection of Bluetooth device which are synchronized to the same hopping sequence.
6) The power of the received signal changes considerably over time, quick changes in the received Power are also called_____.

Q.2 Answer the following   **16**
a) Bluetooth
b) WAP
c) Handover types
d) CDMA 2000

Q.3 Answer the following.   **16**
a) Discuss the IRDIUM case study in detail.
b) Draw and explain the architecture of PCS (Personal Communication Services).

Q.4 Answer the following.   **16**
a) Write a note on quality services in 3G.
b) Explain the network signaling system in detail.

Q.5 Answer the following.   **16**
a) Draw and explain the GPRS architecture in detail.
b) Explain the wireless local loop technologies.

Q.6 Answer the following.   **16**
a) Write in brief the advance techniques in Mobile Computing.
b) Explain the W-CDMA in detail.

Q.7 Answer the following.   **16**
a) Explain the RSS part in GSM architecture.
b) Write a note on WML.

Seat No.

Set **P**

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
.Net Technology (MSC18401)

Day & Date: Monday, 10-07-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Choose the correct alternatives from the options. 10

1) _____ is server side state management technique.
   a) Query string b) Session State
   c) Hidden Field d) Cookies

2) If a class inheriting an abstract class does not define all of its methods then such class is known as _____.
   a) Abstract class b) Static class
   c) Simple class d) Sealed class

3) _____ namespace contains fundamental classes with the core ADO.NET functionality.
   a) System.Data.common b) System.Data.SqlTypes
   c) System.Data.SqlClient d) System.Data

4) Access specifiers for interface members are always _____.
   a) Public b) Protected
   c) Private d) Internal

5) Choose the incorrect statement about the delegate.
   a) delegates are object-oriented
   b) delegates are type-safe
   c) delegates are of value types
   d) delegate is like unction pointer in c

6) _____ property of Listbox are need to set for multiple selection of list items.
   a) Multiple b) MultiSelect
   c) MultiItem d) SelectionMode

7) The _____ namespace is used for working with the stream classes.
   a) System.IO b) System.Input
   c) System.Output d) System.Stream

8) _____ is not validation control defined in ASP.Net.
   a) RequiredField Validator b) Text Validator
   c) Regular Expression Validator d) Custom Validator

9) A _____ is a request sent from a client to a server from the same page user is already working with.
   a) PostBack b) PostRequest
   c) ViewBack d) CrossPagePost

10) The advertisement file in AdRotator control is a _____.
 a) HTML document   b) XML schema
 c) XML document   d) XSLT file

B) Fill in the blanks **06**
 1) CLS stands for _____.
 2) Defining two methods with the same name and same parameters but in different class is called as method _____.
 3) If we want to create read only property, then only _____ is write.
 4) To create connection with SQLServer, then _____ namespace is used.
 5) To create CircularHotSpots, we need to set _____ parameters.
 6) When IIS is installed it automatically creates a directory named _____.

Q.2 Answer the following. **16**
 a) Explain #define and #undef with example.
 b) What are the types of data types used in C#? List all types and their subtypes.
 c) List out different events in the page life cycle.
 d) What are IsPostBack and AutoPostBack properties? Give example.

Q.3 Answer the following.
 a) What is ADO.Net? Explain any three namespaces used in ADO.Net. **08**
 b) Create a web page that displays the Examination schedule in the Calendar control. **08**

Q.4 Answer the following.
 a) What is cookies? Explain cookies in detail. **08**
 b) What are the client-side and server-side validations? Explain all validation controls used in ASP.Net with example. **08**

Q.5 Answer the following.
 a) Design a web page that displays 10 advertisements using AdRotator control. **08**
 b) What is an Event? Explain the event in detail with an example. **08**

Q.6 Answer the following.
 a) Create a windows application for inserting and deleting records using stored procedures. **10**
 b) What are properties? Explain properties with example. **06**

Q.7 Answer the following.
 a) What is the ASP.Net directive? Explain different directives used in ASP.Net. **10**
 b) What is the difference between a 2D array and a Jagged array? Explain Jagged Array with example. **06**

| Seat No. | | **Set** | **P** |

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Machine Learning (MSC18402)

Day & Date: Wednesday, 12-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions.   **10**

1) The _____ is a set of numbers and the _____ is their ordered list.
   a) Input, output   b) Output, input
   c) Integer, pointer   d) Pointer, integer

2) Application of machine learning methods to large databases is called _____.
   a) Coal mining   b) Data mining
   c) MongoDB   d) JSON

3) To be intelligent, a system that is in a changing environment should have the ability to _____.
   a) Earn   b) Perform
   c) Destroy   d) Learn

4) _____ learning is the execution of a computer program to optimize the parameters of the model using the training data or past experience.
   a) Source code   b) HTML
   c) Database   d) Machine

5) In finding _____ rule, the researchers are interested in learning a conditional probability.
   a) Association   b) Distribution
   c) Conjunction   d) Disjunction

6) _____ recognition, which is recognizing character codes from their images.
   a) Special character   b) Markup character
   c) Optical character   d) Degenerative character

7) _____ recognition, the input is acoustic and the classes are words that can be uttered.
   a) Sound   b) Track
   c) Genre   d) Speech

8) In _____ learning, there is no such supervisor and we only have input data. The aim is to find the regularities in the input.
   a) Semantic   b) Unsupervised
   c) Supervised   d) Conditional

9) In document _____, the aim is to group similar documents.
   a) Specification   b) Clustering
   c) Verification   d) Identification

10) The machine learning program should be able to assess the goodness of policies and learn from past good action sequences to be able to generate a policy. Such learning methods are called____ learning algorithms.
   a) Strategic
   b) Reinforcement
   c) Evaluative
   d) Supervised

B) **State true or false.** 06
   1) In some applications, the output of the system is a sequence of actions.
   2) Aim of machine learning is not to understand the processes underlying learning in humans and animals, but to build useful systems, as in any domain of engineering.
   3) Implementation from particular observations to general descriptions is called inference and learning is called estimation.
   4) A robot navigating in an environment in search of a goal location is another application area of reinforcement learning.
   5) Scientists do not design experiments and make observations and collect data.
   6) Machine learning is not at all related to artificial intelligence.

Q.2 **Answer the following** 16
   a) What do you mean by Machine Learning?
   b) Explain in brief Underfitting.
   c) What is the process of Data cleaning?
   d) Write a short note on Artificial Intelligence.

Q.3 **Answer the following.**
   a) What do you mean by Clustering? Discuss various steps of K-Means clustering with suitable example? 08
   b) State and explain Machine Learning vs Artificial Intelligence vs Deep Learning. 08

Q.4 **Answer the following.**
   a) State the Machine Learning types? Explain in detail general steps of Machine Learning? 08
   b) What is KNN algorithm? Explain working of KNN to classify a person having weight '57kg' and Height '171cm' as Normal or Underweight? 08

Weight	Height	Class
51	167	Underweight
55	170	Normal
58	169	Normal
57	173	Normal
56	174	Underweight

Q.5 **Answer the following.**
   a) What is Reinforcement Learning? Discuss different applications of Machine Learning? 08
   b) What is Classification? Discuss its various types with suitable example? 08

Q.6 Answer the following.

a) What do you mean by Regression? Explain in detail linear regression with example? **08**

b) Discuss Apriori Association rule to predict the support value for the given transancation with minimum support value of '2'? **08**

Pass 1: {A}, {B}, {C}, {D}, {E}

Pass 2: {A,B}, {A,C}, {A,D}, {A,E}, {B,C}, {B,D}, {B,E}, {C,D}, {C,E}

Pass 3: {A,B,C}, {A,B,D}, {A,B,E}, {B,C,D},{B,C,E}, {C,D,E}

Transaction	Itemset
T1	{B, C, D, E}
T2	{B, C, D}
T3	{A, B, D}
T4	{A, B, C, D, E}
T5	{A, B, C}
T6	{B, E}

Q.7 Answer the following.

a) What is Dimension reduction? Explain in detail various steps of PCA algorithm? **08**

b) State and explain Naive Bayes Classification for the given frequency table and generate likelihood table for $(P(x/c) = P(Sunny \mid Yes) = ?)$ and $(P(x/c) = P(Sunny \mid No) - ?)$ **06**

Frequency Table		Play Tennis	
		Yes	No
Outlook	Sunny	3	2
	Overcast	4	0
	Rainy	2	3

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No.</td><td></td></tr>
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Set **P**

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2023
Computer Science
Data Warehouse and Mining (MSC18403)

Day & Date: Friday, 14-07-2023 Max. Marks: 80
Time: 03:00 AM To 06:00 PM

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

Q.1 A) Choose the correct alternative: 10

1) A____ is a set of views over operational databases.
   a) Enterprise warehouse b) Data Mart
   c) Virtual warehouse d) Refresh

2) ____, which detects errors in the data and rectifies them when possible.
   a) Refresh Data b) Data Cleaning
   c) Data Transformation d) Data Extraction

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

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

5) The _____ schema is a variant of the star schema model.
   a) hybrid schema b) star schema
   c) Fact constellation schema d) Snowflake schema

6) An _____ system usually adopts an entity-relationship (ER) data model.
   a) OLAP b) OLEP
   c) OLTP d) None of these

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

8) The class label of each training tuple is provided, this step is known as _____.
   a) Unsupervised learning b) self learning
   c) supervised learning d) None of these

9) An agglomerative hierarchical clustering method uses a _____ strategy.
   a) Top-down b) Bottom-up
   c) Random d) None of these

10) DIANA stands for_____.
    a) Divisive And Not Applicable
    b) Divisive Analysis
    c) Distinct Analysis
    d) None of these

B) Write true/false. **06**

1) An OLAP system manages current data that, typically, are too detailed to be easily used for decision making.
2) The fact table contains the names of the facts, or measures, as well as keys to each of the related dimension tables.
3) Drill-down is the reverse of roll-up. It navigates from less detailed data to more detailed data.
4) A virtual warehouse contains a subset of corporate-wide data that is of value to a specific group of users.
5) In DIANA, all of the objects are used to form one initial cluster.
6) The k-Medoids algorithm takes the input parameter, k, and partitions a set of n objects into k clusters so that the resulting intracluster similarity is high but the intercluster similarity is low.

Q.2 Answer the following. **16**

a) What is Data transformation? Explain with suitable example.
b) What is data mining? Explain 'kind of knowledge to be mined' as a primitive.
c) What is Association Rule? Explain 'mining in multidimensional associations.
d) Explain Agglomerative hierarchical clustering method with example.

Q.3 Answer the following.

a) What is cluster analysis? Explain different types of data in cluster analysis. **08**
b) What is classification? Explain different issues regarding with classifications. **08**

Q.4 Answer the following.

a) Define Data warehouse? Explain various OLAP operations. **08**
b) Explain three-tier Data warehouse architecture with well labelled diagram. **08**

Q.5 Answer the following.

a) Explain k-means algorithm with suitable example. **08**
b) Explain Bayesian classification algorithm with suitable example. **08**

Q.6 Answer the following.

a) What is Association rule? Explain Market Basket Analysis as a example of it. **08**
b) What is data cube? Explain different schemas for multidimensional model. **08**

Q.7 Answer the following.

a) Explain the procedure for decision tree induction method with example. **08**
b) Explain new trends in Data Mining. **08**

Seat No.	

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Soft Computing (MSC18409)

Day & Date: Sunday, 16-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Choose the correct alternatives from the options.   **16**

1) A perceptron is _____.
   a) A single layer feed-forward neural network with pre-processing
   b) An auto-associative neural network
   c) A double layer auto-associative neural network
   d) A neural network that contains feedback

2) The height of a fuzzy set is _____.
   a) Largest α-cut of set members
   b) Largest strong α-cut of set members
   c) Largest membership grade of set members
   d) All the above

3) Which of the following happens during creation of offspring?
   a) Reproduction   b) Mating
   c) Cross over   d) Mutation

4) Which of the following is associated with fuzzy logic?
   a) Crisp set logic   b) Many-valued logic
   c) Two-valued logic   d) Binary set logic

5) Which of the following is offered by the Bayesian network?
   a) Partial description of the domain
   b) A complete description of the domain
   c) complete description of the problem
   d) None of the above

6) Back propagation can be defined as _____.
   a) It is another name given to the curvy function in the perceptron.
   b) It is the transmission of errors back through the network to adjust the inputs.
   c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.
   d) None of the above

7) What is meant by an auto-associative neural network?
   a) A neural network including feedback
   b) A neural network containing no loops
   c) A neural network having a single loop
   d) A single layer feed-forward neural network containing feedback

8) Applying recombination and mutation leads to set of new candidates called as _____.
   a) Parent
   b) Sub-parent
   c) Offspring
   d) grant child

9) Which of the following operating is responsible to jump from hill to another hill?
   a) Mutation
   b) cross over
   c) Fitness Function
   d) Selection

10) Genetic algorithms are heuristic methods that do not guarantee an optimal solution to a problem.
    a) True
    b) False

11) A fuzzy set where in no membership value is equal to 1 is called _____ fuzzy set
    a) Normal
    b) Subnormal
    c) Convex
    d) Concave

12) Which crossover operator is used in evolutionary programming?
    a) Single point
    b) Two point
    c) Uniform point
    d) None

13) Core of soft computing is _____.
    a) Fuzzy logic
    b) Neural network
    c) Genetic Algorithm
    d) All Above

14) What is adaline in neural networks?
    a) Adaptive linear element
    b) automatic linear element
    c) adaptive line element
    d) none of the mentioned

15) Correlation learning law is what type of learning?
    a) Supervised
    b) Unsupervised
    c) either supervised or unsupervised
    d) both supervised or unsupervised

16) Fitness function, Crossover, Selection, Mutation are _____ features.
    a) Fuzzy set
    b) Genetic Algorithm
    c) Neural Network
    d) All Above

Q.2 Answer the following.   **16**
    a) Crisp Set V/s Fuzzy set.
    b) Calculate the α and α^+ for A = {0.4/a+ 0.3/b+0.9/c+0.1/d} where α= {0.2, 0.5, 0.7}
    c) Advantages of GA
    d) Crossover

Q.3 Answer the following.   **16**
    a) Let A and B are fuzzy sets. A= {0.3/a+ 0.8/b+1/c+0.7/d+0.1/e}
       B= {0/a+0.5/b+0.8/c+0.2/d+0.4/e}.
       Find the $(A \cap B), (A \cup B), (\overline{A \cup B}), (\overline{A \cap B})$
    b) Calculate the Max-Prod for following relation. S= {0.4/0+ 0.9/1+ 0.0/2}

$$R = \begin{bmatrix} 0.8 & 1.0 & 0.1 \\ 0.6 & 0.3 & 0.8 \\ 0.1 & 0.6 & 0.3 \end{bmatrix}$$

Q.4 Answer the following.   **16**
    a) Obtain the output of neuron Y for the given weight and input matrices for
       i)   Binary sigmoidal and
       ii)   Bipolar Sigmoidal
       I= [0.4, 0.9, -0.2], W= [-0.1,0.3, 0.8] with bias= 0.48
    b) Explain the most commonly known network architecture.

Q.5 Answer the following.   **16**
    a) In the back propagation neural network how hidden and output network computation Works? Discuss.
    b) Write the application of Fuzzy set. Explain with example.

Q.6 Answer the following.   **16**
    a) What are different learning methods? Explain it.
    b) A simple artificial neuron has following 5 inputs and weights given by X= {2, 1, 0, 4, 2} and W= {4,2, 1,0,5}. The threshold value is 10. Computer the results using threshold function and sigmoidal function.

Q.7 Write a note on   **16**
    a) Tournament Selection
    b) Basic terminology of GA

| Seat No. | | | | Set | **P** |

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2023
COMPUTER SCIENCE
Block Chain Technology (MSC18410)

Day & Date: Sunday, 16-07-2023   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) Blockchain has _____ versions.
   a) 2   b) 3
   c) 4   d) 5

2) Smart Contract characteristics do not include _____.
   a) Fast and cost-effective   b) Alterable
   c) A high degree of accuracy   d) Transparency

3) Hash identifying each block in the blockchain is generated using which of the following cryptograph algorithm _____.
   a) SHA128   b) SHA256
   c) Both of them   d) None of them

4) Who is introduced the digital online cryptocurrency known as Bitcoin?
   a) Satoshi Nakamoto   b) Nick Szabo
   c) Wei Dai   d) Hal Finney

5) Which is the application of Blockchain Technology?
   a) Cross-border payments
   b) Anti-money laundering tracking system
   c) Supply chain and logistics monitoring
   d) All the above

6) What is Proof of Stake?
   a) certificate needed to use the blockchain
   b) password needed to access an exchange
   c) How private keys are made
   d) transaction and Block Verification Protocol

7) What is a smart contract?
   a) Programs stored on a blockchain that run when predetermined conditions are met
   b) Online contract
   c) Digital contract
   d) All the above

8) If a hacker wanted to alter a blockchain, what percentage of the block copies would he have to alter?
   a) Only his copy   b) 1%
   c) 51%   d) 100%

9) _____ is a distributed ledger that is publicly accessible.
   a) Permissioned Blockchain   b) Permission Less Block chain
   c) Both of these   d) None of these

10) In _____, hackers generate numerous fake network nodes.
    a) Sybil attack   b) Phishing attack
    c) Both of these   d) None of these

B) Write true/false   **06**
1) A blockchain enables peer-to-peer transfer of digital currency without any intermediaries such as bank.
   a) True   **b)** False
2) Blockchain is a solution to the double-spend problem.
   a) True   **b)** False
3) A Node is computer on block chain.
   a) True   **b)** False
4) Cryptographic Hash function transforms arbitrary length string that act more or less as a fingerprint of the document.
   a) True   **b)** False
5) In Bitcoin in order to communicate, the opcodes (OP CODES) used.
   a) True   **b)** False
6) Hyperledger Fabric is an open source framework.
   a) True   **b)** False

Q.2 Answer the following.   **16**
a) Distributed Network Technology.
b) Technologies invented in Block chain 2.
c) Ethernum Virtual Machine.
d) Trilemma of blockchain.

Q.3 Answer the following.   **16**
a) What are different applications of blockchain technology?
b) Explain Proof of work and Proof of Stake.

Q.4 **Answer the following.** 16
   a) What is Byzantine Fault Tolerance? Explain in detail.
   b) Explain Bitcoin scripting vs. Ethereum Smart Contracts.

Q.5 **Answer the following.** 16
   a) What are different hash functions? Explain in detail.
   b) What is difference between Blockchain 1 and Blockchain 2?

Q.6 **Answer the following.** 16
   a) Explain blockchain 3.0 with Hyperledger fabric.
   b) What are mechanism/methods to prevent Security issues in Blockchain?

Q.7 **Answer the following.** 16
   a) Difference between Public Blockchain and Private Blockchain.
   b) What is smart contract? Explain EVM in details.