**SLR- RG - 324**

| Seat No. | |
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**M.Sc. (Computer Science) (Semester – I) (New) (CBCS) Examination, 2017**
**OBJECT ORIENTED PROGRAMMING USING C++**

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

Time: 10.30 AM to 01.00 PM

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

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

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

2) Which of the following is not a type of constructor?
   a) Copy constructor b) Friend constructor
   c) Default constructor d) Parameterized constructor

3) Which of the following cannot be friend?
   a) Function b) Class c) Object d) Operator function

4) Which of the following concepts provides facility of using object of one class inside another class?
   a) Encapsulation b) Abstraction
   c) Composition d) Inheritance

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

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

7) How “Late binding” is implemented in C++?
   a) Using C++ tables b) Using Virtual tables
   b) Using Indexed virtual tables d) Using polymorphic tables

8) Which of the following problem causes an exception?
   a) Missing semicolon in statement in *main ()*.
   b) A problem in calling function.
   c) A syntax error.
   d) A run-time error.

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

10) Which of the following operators cannot be overloaded?
a) [ ] b) -> c) ? : d) *

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

1) A C++ program is identical to a C program with minor changes in coding.
2) Templates create different versions of a function at runtime.
3) A Protected member of a base class cannot be accessed from a member function of the derived class.
4) Data members of a class cannot be initialized in the class definition.

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

1) Function Template
2) Input / Output stream.

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

1) eof(), fail() and bad().
2) Default argument.

**Q.3 Answer the following.**

**A)** Write an object oriented program in C++ that print the factorial of given number. **07**

**B)** Define polymorphism. How polymorphism is achieved at compile time and run time? **07**

**Q.4 Answer the following.**

**A)** Write an object oriented program in C++. To read a set of numbers and store it as an one dimensional array and find out largest and smallest numbers. **07**

**B)** When do we declare a member of a class as static? Why it is necessary? **07**

**Q.5 Answer the following.**

**A)** What are manipulators? Explain with examples endl and setw manipulators. **07**

**B)** What is Constructor function? What are the special characteristics of constructor function? **07**

**Q.6 Answer the following.**

**A)** What is meant by inheritance? Explain single inheritance with Examples. **07**

**B)** What is exception handler? What are the keywords used to handle an exception in C++ **07**

**Q.7 Answer the following.**

**A)** Write a program to show how the binary operator is overloaded using friend function. **07**

**B)** What is difference between procedure oriented programming and object oriented programming. **07**

**SLR- RG -325**

| Seat No. | |
|---|---|

**M.Sc.(Computer Science)(Semester - I)(New) (CBCS) Examination, 2017**
**DATA STRUCTURES**

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

Time: 10.30 AM to 01.00 PM

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

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

1) The _____step count is the minimum number of steps that can be executed for the given parameter.
   a) Best case b) Worst case
   c) Average case d) None of the above

2) Big-Oh notation is used to denote_____
   a) Lower Bounds b) Upper Bounds
   c) Upper and Lower Bounds d) None of the above

3) The function which calls itself is called_____.
   a) Reverse function b) Recursive function
   c) Return function d) None of the above

4) _____ a tree means visiting all its nodes to get the complete tree information.
   a) Searching b) Traversing
   c) Sorting d) None of the above

5) In _____ we traverse the tree levelwise from left to right starting from the root.
   a) Depth First Traversal b) Breadth First Traversal
   c) Left to Right Traversal d) Levelwise traversal

6) A large collection of structured information is called a_____.
   a) Data structure b) Array
   c) Database d) None of above

7) The time complexity of Bubble sort is _____
   a) $O(n^2)$ b) $O(n^3)$ c) O(2n) d) O(n)

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

9) When each array element is another array, it is called a ____
   a) 1D array  b) 2D array
   c) 3D array  d) Multidimensional array

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

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

1) The tree is linear data structure
2) In the infix form, the operator precedes the two operands.
3) The queue operated in First in first out.
4) Tower of Hanoi is example of recursion.

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

1) Need for Data Structure
2) Complexity of an algorithm

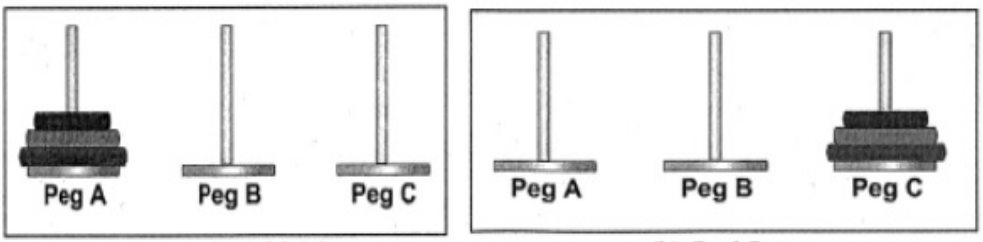
**B) Answer the following.** **06**

1) Discuss the advantages and disadvantages of binary search.
2) What is the efficiency of Binary Search?

**Q.3 Answer the following.**

**A)** Define Array? Discuss the different ways of representing two-dimensional Arrays in memory with suitable examples. **07**

**B)** Discuss in detail how to satisfy the constraints to solve Tower of Hanoi problem having three disks and three pegs? **07**




(a) Initial State (b) Goal State

**Q.4 Answer the following.**

**A)** Define the term Stack? Explain in detail insertion and deletion operation in stack with suitable example. **07**

**B)** What do you mean by Binary Tree? Construct a Binary tree from given series and show the results of Pre-order, In-order and Post-order traversing at constructed Binary tree. **07**
**Series: 2 4 1 5 7 3 20.**

**Q.5 Answer the following.**

**A)** Define the term Sorting? Perform Bubble Sort and show the result in passes on following series. **07**
**Series: 39, 5, 43, 83, 66, 10, 8, 91, 26, 55, 3, 72, 100, 12, 60.**

**B)** Define a linked list. Explain with example representation of queue using linked list. **07**

**Q.6 Answer the following.**

**A)** Discuss Breadth and Depth First search as a classical tree traversing algorithm with suitable example? **07**

**B)** Define Algorithm. Discuss the characteristics of an algorithm. **07**

**Q.7 Answer the following.**

**A)** State the algorithm for conversion of Infix into Postfix string? Apply the same on given infix expression show its conversion into postfix string? **07**

**Infix Expression: ((a + b)* (c-d)/e**

**B)** State the algorithm of Binary Search and Linear Search and also show the results of the both of the search on given series to find the number 55 in it. **07**

**Series: 6, 35, 90, 13, 89, 77, 55, 10, 613, 10, 19, 61.**

**SLR- RG- 326**

| Seat No. | |
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# M.Sc. ( Computer Science) (Semester- I) (New) (CBCS) Examination, 2017
# SOFTWARE ENGINEERING

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

Time: 10.30 AM to 1.00 PM

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

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

1) The new modules, that re need to be replaced or mofified, and they are also designed against requirements specification set in the previous stage is.
   a) Acceptance testing b) System testing
   c) Delivery d) Design

2) Which is not a software life cycle model?
   a) Spiral model b) Waterfall model
   c) Prototyping model d) Capability Maturity model

3) The longer a fault exists in software.
   a) The more tedious its removal becomes
   b) The more costly it is to detect and correct
   c) The less likely it is to be properly corrected
   d) All of the above mentioned

4) Which deals with maintaining the quality of software product?
   a) Quality assurance b) Quality control
   c) Quality efficiency d) None of the above

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

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

7) Which of these is not used for calculating total cost of quality for a software product?
   a) Cost of Prevention
   b) Cost of Appraisal
   c) Cost of Failure
   d) Cost of Implementation

8) Which of the following statements explains portability in non – functional requirements?
   a) It is a degree to which software running on one platform can easily be converted to run on another platform.
   b) It can be enhanced by using languages, OS' and tools that are universally available and standardized.
   c) The ability of the system to behave consistently in a user – acceptable manner when operating within the environment for which the system was intended.
   d) Both a and b

9) RAD is a linear sequential software development process model. RAD is an acronym for _____.
   a) Rapid application development
   b) Rapid action development
   c) Rough application development
   d) Rough action development

10) The SRS document is also known as _____ specification.
   a) Black box
   b) White box
   c) Gray box
   d) None of the above

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

1) One can choose Waterfall Model if the project development schedule is tight.
2) Preparation of various stages of development in software project management is called sliding window concept.
3) Spiral Model has user involvement in all its phases.
4) Company has latest computers and state-of the- art software tools, so we shouldn't worry about the quality of the product.

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

1) Transform and Transaction mappings.
2) Software Quality Assurance.

**B) Answer the following.** **06**

1) What are the limitation of waterfall model?
2) Why software doesn't wear out?

**Q.3 Answer the following.**

**A)** Explain object oriented concepts of software engineering in detail. **07**

**B)** Differentiate between waterfall model and spiral model. **07**

**Q.4 Answer the following.**

**A)** Consider your own project and explain the following phases. **07**

1) Requirements Gathering
2) Analysis
3) Design

**B)** Why black box testing is essential in software engineering. **07**

**Q.5 Answer the following.**

**A)** Explain different myths in software engineering. **07**

**B)** Explain briefly about Architectural Design Optimization. **07**

**Q.6 Answer the following.**

**A)** Explain the classical analysis methods. **07**

**B)** What is software design? Explain various concepts of Design. **07**

**Q.7 Answer the following.**

**A)** Explain data objects, attributes and relationships. **07**

**B)** Explain why there is a need for requirements analysis. **07**

**RG- 327**

| Seat No. | |
|---|---|

# M. Sc. (Computer Science) (Semester – I) (New) (CBCS) Examination, 2017
# OPERATING SYSTEM

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

Time: 10.30 AM to 01.00 PM

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

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

1) The Banker's algorithm is used_____
   a) to rectify deadlock b) to detect deadlock
   c) to prevent deadlock d) to solve deadlock

2) Which of the following is not a necessary condition for deadlock to occur?
   a) Mutual exclusion b) Hold and wait
   c) Wait and signal d) Circular wait

3) Swapping _____
   a) Works best with many small partitions
   b) Allows many programs to use memory simultaneously
   c) Allows each program in turn to use the memory
   d) None of these

4) When a computer is first turned on or restarted, a special type of absolute loader called _____
   a) Compile loader b) Boot loader
   c) Bootstrap loader d) System loader

5) _____is requirement for the solution to critical section problem.
   a) Mutual exclusion b) Progress
   c) Bounded Waiting d) All of above

6) A page fault occurs when _____
   a) the Deadlock happens
   b) the Segmentation starts
   c) the page is found in the memory
   d) the page is not found in the memory

7) Which of the following memory allocation scheme suffers from external fragmentation?
   a) Segmentation b) Pure demand paging
   c) Swapping d) Paging

8) Which of these is an example of a virtual resource?
   a) Print server b) Virtual machine
   c) Virtual memory d) All of the above

9) A scheduler which selects processes from Primary memory is called _____
   a) Long Term Memory
   b) Medium Term Scheduler
   c) Short Term Memory
   d) Queue Scheduler

10) Which of these is a technique of improving the priority of process waiting in Queue for CPU allocation?
   a) Starvation b) Relocation c) Promotion d) Aging

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

1) A real time system has well defined and fixed time constraints.
2) In a segmentation scheme the logical memory will be divided into pages.
3) The process of storing and restoring from PCB is called context switch.
4) The storage replacement strategy program placed in the largest hole in memory is best fit.

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

1) Directory structure
2) Thrashing

**B) Answer the following:** **06**

1) Differentiate between a preemptive and non-preemptive scheduling.
2) What are the three major activities of an operating system with regard to file management?

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

**A)** Write about Banker's algorithm in detail.
**B)** Explain different file allocation methods with advantages and disadvantages.

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

**A)** Describe various approaches for recovering from deadlock.
**B)** What is semaphore? Explain three common uses of semaphore.

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

**A)** Discuss the performance on demand paging.
**B)** Explain critical section problem. What are the requirements that critical section problem must satisfy?

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

**A)** Describe the access matrix facility in detail.
**B)** What is process? Explain the process state transition diagram.

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

A) What is multiprogramming? Explain distributed and time sharing operating system.
B) Explain FCFS page replacement algorithm in detail.

**SLR- RG-328**

**Seat No.**

# M.Sc - (Computer Science) (Sem-I) (New) (CBCS) Examination, 2017
## DBMS

Day & Date: Tuesday, 25-04-2017 **Marks: 70**

Time: 10.30 AM to 01.00 PM

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

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

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

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

3) ODBC stands for _____
   a) Object data base connectivity
   b) Oral data base connectivity
   c) Oracle data base connectivity
   d) Open data base connectivity

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

5) Multi value dependency among attribute is checked a which level.
   a) 2Nf b) 5NF c) 4NF d) 3NF

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

7) _____is a preferred method for enforcing data integrity.
   a) Constraints b) store procedure c) triggers d) cursors
8) The data base schema is written in.
   a) HLL b)DML b) DDL c) DCL

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

10) _____command can be used to modify a column in a table.
   a) Alter  b) Update  c) Insert  d) Create

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

1) Conceptual model is independent of both hardware and software.
2) A file manipulation command that extract some of the records from a file is called SELECT.
3) The full form of DDL is dynamic data language.
4) Transaction processing is associate with every thing below except conforming an action or triggering response.

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

1) Fragmentation
2) DBA

**B) Answer the following.** **06**

1) Explain DDL and DML give one example each.
2) Explain Strong entity set and weak entity set.

**Q.3 Answer the following.**

**A)** Explain three level architecture of DBMS with neat diagram. **07**

**B)** Define entity and attribute. Explain the different types of attribute that occur in E-R model. **07**

**Q.4 Answer the following.**

**A)** Explain domain constraints and boyce code normal form with examples. **07**

**B)** What is relational algebra? Enlist and explain the fundamental operation of Relational algebra. **07**

**Q.5 Answer the following.**

**A)** Explain in detail the concept of serializability. **07**

**B)** Explain log based recovery in detail. **07**

**Q.6 Answer the following.**

**A)** Explain the advantages of optimization in query processing. **07**

**B)** Discuss two phase commit protocol and its significance. **07**

**Q.7 Answer the following.**

**A)** How do you implement distributed database in a real time environment. **07**

**B)** Describe the concept of nested table and varying arrays. **07**

**SLR-RG - 329**

| Seat No. | |
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## M.Sc. (Computer Science) (Semester – I) (Old) (CBCS) Examination, 2017
## OBJECT ORIENTED PROGRAMMING USING C++

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

Time: 10.30 AM to 01.00 PM

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

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

1) Constructors are called when?
   a) a method is declared b) a class is declared
   c) an object is declared d) None of these

2) Function overloading in C++ is _____.
   a) a group function with the same name
   b) all have the same members and type of arguments
   c) Functions with same name and same numbers and type of arguments
   d) None of these

3) The process of building new classes from existing one is called
   a) polymorphism b) structure c) inheritance d) cascading

4) Use of virtual function implies
   a) overloading b) overriding
   c) static binding d) dynamic binding

5) It is possible to declare as a friend
   a) a member function b) a global function
   c) a class d) all of these

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

7) Exception handling is targeted at
   a) run time error b) compile time error
   c) logical error d) all of these

8) To enter a comment in a C++ program you begin the comment with
   a) ** b) && c) \\ d) //

9) A function that is called automatically each time an object is destroyed in a
   a) Constructed b) Destructor c) Destroyer d) Terminator

10) Redirection redirects
   a) a stream from a file to the screen
   b) a file from a device to a stream
   c) a device from the screen to a file
   d) the screen from a device to a stream

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

1) A protected member of a base class cannot be accessed from a member function of the derived class.
2) Data members of a class cannot be initialized in the class definition.
3) The Operator can be overloaded.
4) In looping for loop is also known as entry controlled loop.

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

1) Function Template.
2) Operator overloading.

**B) Explain the following term:** **06**

1) Default argument.
2) Structure and classes.

**Q.3 Answer the following:**

**A)** What are manipulators? Explain with example endl and setw manipulators. **07**

**B)** What is meant by inheritance? Explain single inheritance with example. **07**

**Q.4 Answer the following:**

**A)** What is a constructor? Explain parameterized constructor with example. **07**

**B)** Write a program to overload unary minus operator. **07**

**Q.5 Answer the following:**

**A)** Write a C++ program to implement multi-level inheritance in which take ‘STUDENT’ as base class and derive the class ‘TEST’ and ‘RESULT’ (Assume your own data variables). **07**

**B)** Explain Virtual base class with example. **07**

**Q.6 Answer the following:**

**A)** What is exception handler? What are the keywords used to handle an exception in C++. **07**

**B)** What is meant by virtual function? Explain rules for virtual functions. **07**

**Q.7 Answer the following:**

**A)** What is a stream? Explain the features of I/O system supported by C++. **07**

**B)** Write an object oriented program in C++ to read a set of numbers and store it as one dimensional array and find out largest and smallest numbers. **07**

**SLR- RG -330**

| Seat No. | |
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# M.Sc.(Computer Science)(Semester - I)(Old) (CBCS) Examination, 2017
# DATA STRUCTURES

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

Time: 10.30 AM to 01.00 PM

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

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

1) The _____step count is the minimum number of steps that can be executed for the given parameter.
   a) Best case b) Worst case
   c) Average case d) None of the above

2) Big-Oh notation is used to denote_____
   a) Lower Bounds b) Upper Bounds
   c) Upper and Lower Bounds d) None of the above

3) The function which calls itself is called_____.
   a) Reverse function b) Recursive function
   c) Return function d) None of the above

4) _____ a tree means visiting all its nodes to get the complete tree information.
   a) Searching b) Traversing
   c) Sorting d) None of the above

5) In _____ we traverse the tree levelwise from left to right starting from the root.
   a) Depth First Traversal b) Breadth First Traversal
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6) A large collection of structured information is called a_____.
   a) Data structure b) Array
   c) Database d) None of above

7) The time complexity of Bubble sort is _____
   a) $O(n^2)$ b) $O(n^3)$ c) O(2n) d) O(n)

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

9) When each array element is another array, it is called a ____
   a) 1D array  b) 2D array
   c) 3D array  d) Multidimensional array

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

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

1) The tree is linear data structure
2) In the infix form, the operator precedes the two operands.
3) The queue operated in First in first out.
4) Tower of Hanoi is example of recursion.

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

1) Need for Data Structure
2) Complexity of an algorithm

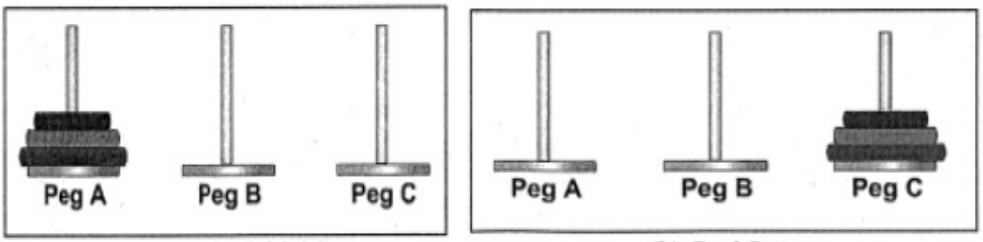
**B) Answer the following.** **06**

1) Discuss the advantages and disadvantages of binary search.
2) What is the efficiency of Binary Search?

**Q.3 Answer the following.**

**A)** Define Array? Discuss the different ways of representing two-dimensional Arrays in memory with suitable examples. **07**

**B)** Discuss in detail how to satisfy the constraints to solve Tower of Hanoi problem having three disks and three pegs? **07**




(a) Initial State (b) Goal State

**Q.4 Answer the following.**

**A)** Define the term Stack? Explain in detail insertion and deletion operation in stack with suitable example. **07**

**B)** What do you mean by Binary Tree? Construct a Binary tree from given series and show the results of Pre-order, In-order and Post-order traversing at constructed Binary tree. **07**
**Series: 2 4 1 5 7 3 20.**

**Q.5 Answer the following.**

**A)** Define the term Sorting? Perform Bubble Sort and show the result in passes on following series. **07**
**Series: 39, 5, 43, 83, 66, 10, 8, 91, 26, 55, 3, 72, 100, 12, 60.**

**B)** Define a linked list. Explain with example representation of queue using linked list. **07**

**Q.6 Answer the following.**

**A)** Discuss Breadth and Depth First search as a classical tree traversing algorithm with suitable example? **07**

**B)** Define Algorithm. Discuss the characteristics of an algorithm. **07**

**Q.7 Answer the following.**

**A)** State the algorithm for conversion of Infix into Postfix string? Apply the same on given infix expression show its conversion into postfix string? **07**

**Infix Expression: ((a + b)* (c-d)/e**

**B)** State the algorithm of Binary Search and Linear Search and also show the results of the both of the search on given series to find the number 55 in it. **07**

**Series: 6, 35, 90, 13, 89, 77, 55, 10, 613, 10, 19, 61.**

| Seat No. | |
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# M.Sc.(Computer Science) (Semester- I) (CBCS)
## (Old) Examination, 2017
## SOFTWARE ENGINEERING

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

Time: .10.30 AM to 1.00 PM

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

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

1) The most important feature of spiral model is
   a) Requirement analysis
   b) Risk management
   c) Quality management
   d) Configuration management

2) Which of these terms is a level name in the Capability Maturity Model?
   a) Ad hoc. b) Repeatable c) Reusable d) Organized

3) Which of the items below is not of the software engineering layers?
   a) Process b) Manufacturing c) Tool d) Method

4) Case tool is…….
   a) Computer Aided Software Engineering
   b) Component Aided Software Engineering
   c) Constructive Aided Software Engineering
   d) Computer Analysis Software Engineering

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

6) If a program in its functioning has not met user requirements is some way, then it is
   a) Error b) Fault c) Failure d) Defect

7) Pseudo code can replace
   a) Flow chart b) DFSs
   c) ER diagram d) None of the above

8) The model that assumes that effort and development time are functions of product size alone is
   a) Basic COCOMO model
   b) Incremental COCOMO model
   c) Detailed COCOMO model
   d) All COCOMO model

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

10) Changes made to the system to reduce the future system failure chances is called.
   a) Preventive maintenance  b) Adaptive maintenance
   c) Corrective maintenance  d) Perfective maintenance

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

1) Specifying requirements is often very difficult in Prototyping.
2) Software has become critical to advancement in almost all areas of human endevour.
3) The software process is the way in which we produce software. This differs from organization.
4) Software is not manufactured.

**Q.2 Write short notes of the following:**

**A)** Describe the communication techniques used in Requirements Analysis? **08**

**B)** List the limitation of Software testing. **06**

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

**A)** Explain the RAD model and its advantages over Prototyping.

**B)** What is Software Design? Discuss the software engineering design process.

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

**A)** Describe the Evolutionary software process model.

**B)** Write the test cases for user login form.

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

**A)** What is software testing? Discuss the Software Testing Strategies.

**B)** Explain in detail the use of Data Dictionary.

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

**A)** How to manage the Object Software Project.

**B)** Explain the elements of analysis.

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

**A)** Define software measurement? Describe the Matrices for software quality.

**B)** What are the software characteristics and components? Explain.

| Seat No. | |
|---|---|

# M.Sc. (Computer Science) (Sem - I) (Old)
# (CBCS) Examination, 2017
# NUMERICAL ANALYSIS

Day & Date: Tuesday, 25-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

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

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

1) A computer that represents only 4 significant digits with rounding would calculate 66.666 x 33.333 as
   a) 2220 b) 2221 c) 2221.17778 d) 2222

2) The truncation error in calculating $f'(1)$ for $f(x) = x^3$ by $f'(x) \approx \frac{f(x+h)-f(x)}{h}$ with h = 0.1 is
   a) 0.1 b) -0.1 c) -0.31 d) -0.13

3) An equation such as $\tan(x) = x$ has _____roots.
   a) Zero b) one c) two d) infinite

4) The goal of forward elimination steps in the Gauss elimination method is to reduce the coefficient matrix to _____ matrix.
   a) a diagonal b) an identity
   c) a lower triangular d) none of these

5) The next iterative value of the root of $x^2$-4=0 using secant method, if the initial guesses are 3 and4, is
   a) 2.2857 b) 2.5000 c) 5.5000 d) 5.7143

6) In $f(x) = 0$, if $f(x)$ is real and continues in the interval a < x < b, then there is at least one real root in the interval between a and b iff
   a) $f(a)f(b) > 0$ b) $f(a)f(b) < 0$
   c) $f(a)f(b) \geq 0$ d) (a) or (b)

7) The following functions(s) can be used for interpolation:
   a) Polynomial b) Exponential
   c) Trigonometric d) All of the above

8) A square matrix $\boldsymbol{A}$ is lower triangular if
   a) $a_{ij} = 0, j > i$ b) $a_{ij} = 0, i > j$
   c) $a_{ij} \neq 0, j > i$ d) $a_{ij} \neq 0, i > j$

9) In composite Simpson's $\frac{3}{8}$ rule the number of segments n must be

a) any positive integar
b) a multiple of 2 and 3
c) multiple of 3
d) an odd number

10) When the differentiate equation contains only first derivative, it is called a

a) first-order differentiate equation
b) second-order differentiate equation
c) first-degree differentiate equation
d) none of these

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

1) If $\nabla y_2 = 4, y_0 = 2$ and $y_1 = 4$ then $\nabla^2 y_2 = 4$.
2) The general solution of the differentiate equation $y' = ae^x$ is $y = e^{x.}$
3) If $x_0 = 8$, $x_1 = 4$ and $f_0 = 20$, $f_1 = 10$ then the first divided difference $f[x_0, x_1] = 2.5$
4) Let $x_1 = 0$ be the first approximation to the root of the equation $f(x) = x^2 - 3x + 2$. The next approximation to the root of the equation by using Newton-Raphson method is $x_2 = \frac{2}{3}$ .

**Q.2 A) i) Define an absolute error.** **04**

Given x=10.00 $\pm$ 0.05 and y=0.055 $\pm$ 0.002
Find the maximum value of the absolute error in $x^2 + y$ .

**ii)** Define the operators $\Delta, \nabla \; and \; E$. Show that $E^{-1}\Delta \equiv \nabla$. **04**

**B) i)** State Mean-value theorem for derivatives. **03**

**ii)** State the theorem which states about the convergence of the root obtained by the iteration method. **03**

**Q.3 A)** Explain Regula Falsi method. **07**

**B)** Given the following information : **07**

| $x$ | 1 | 3 | 7 | 8 |
|---|---|---|---|---|
| $y = f(x)$ | 0 | 1.0986 | 1.9459 | 2.0794 |

Find $f(2)$ by using Langrange's interpolation formula.

**Q.4 A)** Explain Newton's forward difference interpolation formula. **07**

**B)** Find a root of the equation $x^2 - 5x + 6 = 0$ using secant method with initial estimates $x_1 = 0$ $x_2 = 1$. Use at least three iterations. **07**

**Q.5 A)** Explain Simpson's 1/3 rule. **07**

**B)** Solve the system $3x_1 + 2x_2 + x_3 = 10$, $2x_1 + 3x_2 + 2x_3 = 14$, $x_1 + 2x_2 + 3x_3 = 14$ by using Dolittle LU decomposition method. **07**

**Q.6 A)** Explain Gaussian elimination method. **07**

**B)** Give the equation **07**

$\frac{dy}{dx} = 3x^2$+1 with $y(1) = 2$

Estimate $y(2)$ by Euler's method using h=0.25.

**Q.7 A)** Write a note on Euler's modified method. **07**

**B)** Evaluate the integral $I = \int_4^3 x^4 \, dx$ by using Trapezoidal rule with h=1. **07**

Verify your results by actual integration.

**SLR- RG-333**

| Seat No. | |
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# M. Sc. (Semester- II) (New) (CBCS) Examination, 2017
## COMPUTER SCIENCE
## JAVA PROGRAMMING

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

Time: 10.30 AM to 01.00 PM

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

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

1) An _____is group of like typed variables that are referred to by common name.
   a) Array b) Static c) Final d) None of the above

2) Which class cannot be a subclass in java?
   a) Abstract b) Final c) Parent d) None of the above

3) Which of the operator is used reference of current object in Java?
   a) New b) this c) static d) None of the above

4) Which of default imported Package in Java?
   a) java.awt b) java.lang c) java.util d) java.window

5) Which of these is correct way of inheriting class A by class B?
   a) class B + class A { } b) class B inherits class A { }
   c) class B extends A { } d) class B extends class A { }

6) Which statements is always the first non-comment statement in Java Program?
   a) Import b) Include c) Hidden d) None of above

7) _____ represents a has a kind of Relationship?
   a) Serialization b) Threads
   c) Containment d) None of the above

8) What is return type of method that Does not Returns Any value?
   a) Integer b) float c) void d) None of above

9) How to import a entire package pkg?
   a) Import pkg  b) import pkg all
   c) import *pkg  d) import pkg.*

10) Which is the program is used to compile java code?
   a) .jar  b) .java  c) java.doc  d) .javac

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

1) Interfaces can be extended by class.
2) Import statement is always the first non-comment statement in Java Program.
3) Input stream – This depicts the flow data source to the programs memory.
4) JVM is platform independent.

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

1) Features of Java
2) 'while' looping statement

**B) Answer the following.** **06**

1) Why java so popular for web development?
2) Describe three types of errors with suitable example.

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

**A)** Write a program to create package named Student contains ClassInfo and TeacherInfo Classes.

**B)** What is applet? Discuss the life cycle of applet.

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

**A)** Write a program to read a text file and copy content into another file.

**B)** Define Multithreading. Explain the steps so write multithreading program.

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

**A)** Write AWT program to calculate the salary of employee. (Consider suitable field)

**B)** Differentiate the Method Overloading and Method overriding.

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

**A)** State features of the layout manager BorderLayout and explain how to implement it.

**B)** What are the steps to connect to the database in java?

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

**A)** Write a program for Array index out of bounds type of exception.

**B)** Explain the use of prepared statement and callable statement.

| Seat No. | |
|---|---|

# M.Sc.(Computer Science) (Semester- II) (New) Examination, 2017 (CBCS)
## COMPUTER COMMUNICATION NETWORK

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

Time: 10.30 AM to 1.00 PM

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

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

1) An unauthorized user is a network _____issue.
   a) Performance b) Reliability
   c) Security d) all the above

2) This was the first network.
   a) CSNET b) NSNET c) ANSNET d) ARPANET

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

4) Which one of the following is a data link protocol?
   a) Ethernet b) point to point protocol
   b) HDLC d) all of the mentioned

5) The 4 byte IP address consists of
   a) Network address b) Host address
   c) Both (A) and (B) d) None of the mentioned

6) In virtual circuit network each packet contains
   a) Full source and destination address
   b) a short VC number
   c) both (A) and (B)
   d) none of the mentioned

7) User datagram protocol is called connectionless because
   a) All UDP packets are treated independently by transport layer
   b) It sends data as a stream of related packets
   c) Both (a) and (b)
   d) None of the mentioned

8) Transmission control protocol is
   a) Connection control protocol
   b) Uses a three way handshake to establish a connection
   c) Receive data from application as a single stream
   d) All of the mentioned

9) Application developer has permission to decide the following on transport layer side.
   a) Transport layer protocol
   b) Maximum buffer size
   c) Both of the mentioned
   d) None of the mentioned

10) Application layer offers _____ service
   a) End to end
   b) Process to process
   c) Both of the mentioned
   d) None of the mentioned

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

1) A _____ is a data communication system within a building, plant, or campus, or between nearby buildings.
2) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called _____
3) The lowest IP address is_____
4) Subnet of 194.24.0.8/22 is_____

**Q.2 A) Solve following.** **08**

1) A router has just received the following new IP address: 57.6.96.0/21, 57.6.104.0/21, 57.6.112.0./21 and 57.6.120.0/21. If all of them use the same outgoing line, can they be aggregate? If so, to what? If not, why not?
2) A computer on a 6 Mbps network is regulated by token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?

**B) Write short note on:** **06**

1) Admission Control
2) Piggybacking

**Q.3 A)** What is framing? Explain any two methods with a suitable example. **07**

**B)** What is routing? Explain distance vector routing with a suitable example. **07**

| | | | |
|---|---|---|---|
| **Q.4** | **A)** | Describe in brief network addressing with a example. | **07** |
| | **B)** | What is computer network? Its application. | **07** |
| **Q.5** | **A)** | Briefly explain OSI reference model. | **07** |
| | **B)** | Write a note on performance enhancement in application layer. | **07** |
| **Q.6** | **A)** | Write note on SMTP, AGP, ARP and ICMP. | **07** |
| | **B)** | What is a conjunction? Explain any two methods with example. | **07** |
| **Q.7** | **A)** | Explain ARPANET in details. | **07** |
| | **B)** | What are the elements of transport layer? Explain briefly any two transport element. | **07** |

**SLR- RG-335**

| Seat No. | |
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# M.Sc. (Computer Science) (Semester-II) (New) (CBCS) Examination, 2017
## UML

Day & Date: Monday, 24-04-2017 **Marks: 70**

Time: 10.30 AM to 01.00 PM

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

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

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

2) Components can be represented by which of the following?
   a) Components symbols b) Stereotypes
   c) Rectangular boxes d) Both a & b

3) What does a component diagram consists of?
   a) Components , their relationship to the environment
   b) Packages & dependency
   c) Internal structure
   d) Both a & b

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

5) Which of these are not included in architectural design specification?
   a) Collaboration b) Relationships
   c) Implementation d) Properties

6) Which of the following is not element of UML diagram notation?
   a) Icons b) Vertex c) String d) None of above

7) Abstraction is classified into _____ types.
   a) 4 b) 3 c) 2 d) 1

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

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

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

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

1) A property is a characteristics of the entity designated by a model element.
2) Interfaces in component diagram defines relationship between components & environment.
3) A physical architecture is the configuration of product's major constituents.
4) A node is a computational resource.

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

1) State chart diagram
2) Synchronization in packages

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

1) Relationships
2) Object oriented design process

**Q.3 Answer the following.**

**A)** What is UML? Explain importance of modeling. **07**

**B)** What is an activity diagram? Explain the various elements of an activity diagram. **07**

**Q.4 Answer the following.**

**A)** Draw use case diagram for ATM machine. **07**

**B)** Explain the difference between interaction diagram and collaboration diagram. **07**

**Q.5 Answer the following.**

**A)** Draw class diagram and object diagram for hospital management system. **07**

**B)** Explain events and signals used in advanced behavioral modeling. **07**

**Q.6 Answer the following.**

**A)** Describe the various steps in constructing object model. **07**

**B)** Explain building blocks of UML. **07**

**Q.7 Answer the following.**

**A)** What are the parts of deployment diagram? **07**

**B)** What are the modeling technique for component diagram? **07**

**SLR- RG-336**

**Seat No.**

## M.Sc. (Computer Science) (Semester- II) (New) (CBCS) Examination, 2017
## SOFTWARE TESTING

Day & Date: Monday, 24-04-2017 **Marks: 70**

Time: 10.30 AM to 01.00 PM

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

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

1) While collecting requirements for performance testing, it is important to decide whether they are_____ that is to ensure that the performance requirements are quantified and validated in an objective way.
   a) Measurable b) scalable c) testable d) Objective

2) _____model is the oldest & most straight forward of the structured SDLC methodologies.
   a) Waterfall b) Spiral c) Iterative d) None of these

3) _____refers to the planned & systematic way of monitoring the quality of the process which is followed to maintain the quality of the software.
   a) Quality control b) Quality assurance
   c) Testing d) None of these

4) _____is done at the end of the development process & takes place after verifications are completed.
   a) Regression b) Validation c) Coding d) None of these

5) With _____model, software is built in small chunks, each time adding more functionality.
   a) Spiral b) Iterative c) Waterfall b) None of these

6) _____ testing techniques is performed to determine whether or not the software system has met the requirements specification.
   a) Acceptance b) Functional
   c) Regression d) None of these

7) _____ testing are derived from the knowledge of the software's structure or internal implementation.
a) Static b) Structural c) Unit d) System

8) _____testing is the process of determining the speed or effectiveness of the software.
a) System b) Glass c) Performance d) None of these

9) _____ is the quantitative indication of extent, capacity, dimension, amount or size of some attribute of a process or product.
a) Metrics b) Automation
c) Acceptance d) None of these

10) _____testing makes use of specialized tools to control the execution of tests and compares are actual results against expected result.
a) Black box b) Unit
c) Automated software d) None of these

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

1) Use-cases can provide useful input into the design of black-box and state-based tests of OO software.
2) A test case specification document is used to keep track of each test run.
3) Black box testing is also called as Structure based technique.
4) Unit Testing is done by testers.

**Q.2 A) Attempt the following questions.** **08**

1) What are the Context of Testing in Producing software?
2) What are the Phases of software project? Explain with example.

**B) Write a short notes on following:** **06**

1) Static testing
2) Project Metrics

**Q.3 Attempt the following questions.** **14**

**A)** Explain white Box Testing with an example.
**B)** What are the types of Regression Testing?

**Q.4 Attempt the following questions.** **14**

**A)** Elaborate on Verification & Validation with an example.
**B)** Explain Spiral & Iterative Life Cycle Models in brief.

**Q.5 Attempt the following questions.** **14**

**A)** Explain the process of Black Box Testing in detail.
**B)** Explain when to do Usability Testing.

**Q.6 Attempt the following questions.** **14**

**A)** What is Integration Testing? Give its Advantages.
**B)** Why is system Testing done?

**Q.7 Attempt the following questions.** **14**

**A)** What are the Skills Needed for Automation?
**B)** Explain the Tools Used for Internationalization.

**SLR-RG– 337**

| Seat No. | |
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## M.Sc.(Computer Science) (Semester – II)
## (Old) (CBCS) Examination, 2017
## JAVA PROGRAMMING

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

Time: 10:30 AM to 01.00 PM

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

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

1) What does AWT stands for?
   a) All Window Tools b) All Writing Tools
   c) Abstract Window Toolkit d) Abstract Writing Toolkit

2) Which of these is used to perform all input & output operations in java?
   a) Streams b) Variable c) Classes d) methods

3) Which of these events will be generated if we close an applet's window?
   a) Action Event b) Component Event
   c) Adjustment Event d) Window Event

4) Which of these methods can be used to output a sting in an applet?
   a) Display () b) Wait ()
   c) Draw String () d) Transient ()

5) Which two of the following methods are defined in class Thread?
   1. start() 2. wait() 3. notify() 4. run() 5. terminate()
   a) 1 and 4 b) 2 and 3 c) 3 and 4 d) 2 and 4

6) Which of the following will directly stop the execution of a Thread?
   a) wait() b) notify()
   c) notifyall() d) exits synchronized code

7) what will be the output of the program?

```
public class RTExcept
{
   public static void throwit()
   {

      System.out.print("throwit");
      Throw new RuntimeException();
}
```

```
    public static void main(String [] args)
    {
       try
      {
         System.out.print(“hello”);
        throwit();
      }
      catch (Exception re)
      {
         System.out.print(“caught”);
      }
      finally
     {
        System.out.print(“finally”);
     }
     System.out.ptintIn(“after”);
    }
}
```

a) hello throwit caught
b) Compilation fails
c) hello throwit Runtime Exception caught after
d) hello throwit caught finally after

8) What will be the output of the program?

```
public class Test
{
   public static void aMethod () throws Exception
   {
      try/* Line 5 */
      {
         throw new Exception(); /* Line 7 */
      }
      finally /* Line 9 */
      {
          System.out.print(“finally”); /* Line 11 */
      }
  }
  public static void main(String args[])
  {
      try
      {
        aMethod();
      }
     catch (Exception e) /* Line 20*/
     {
         System.out.print(“exception”);
     }
    System.out.print(“finished”); /* Line 24 */
  }
}
```

a) Finally
b) Exception finished
c) Finally exception finished
d) Compilation fails

9) What will be the output of the program

```
public class Test
{
    public int aMethod()
    {
        static int i=0;
         i++;
         return I;
    }
    public static void main (String args[])
    {
         Test test = new Test();
         test.aMethod();
          int j = test.aMethod();
         System.out.println(j);
     }
  }
```

a) 0 b) 1 c) 2 d) Compliation fails

10) What will be the output of the program?

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

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

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

1) In an instance method or a constructor, "this" is a reference to the current object.
2) The "switch" selection structure must end with the default case.
3) An array in the java programming language has the ability to store many different types of values.
4) Assignment operator is evaluated Left to Right.

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

1) Synchronization
2) Final variable and method

**B) Answer the following:** **06**

1) State various features of java
2) Explain with suitable example how to extend exception.

**Q.3 Answer the following:**

**A)** Explain Applet Life cycle with example. **07**

**B)** Explain String Buffer class and explain any 4 methods of it. **07**

**Q.4 Answer the following:**

**A)** Explain how to draw following shape in applet. **09**

1. Rectangle
2. Ellipse
3. Arcs

**B)** WAP to read number from user and check it is Prime or not. If given number is negative or zero then throw exception and massage “Enter number greater than zero”. **05**

**Q.5 Answer the following:**

**A)** Explain any Window Listener methods with example. **07**

**B)** What is multithreading? Explain the life cycle of the thread. **07**

**Q.6 Answer the following:**

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

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

**B)** What is abstract class? State its properties with example. **06**

**Q.7 Answer the following:**

**A)** Explain any Mouse Motion Listener methods with example and how to check which mouse button is pressed by using Mouse Event class. **07**

**B)** Explain the inner class in java with example. **07**

| Seat No. | |
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# M.Sc. (Computer Science)(Semester- II) (Old)
# (CBCS) Examination, 2017
# COMPUTER COMMUNICATION NETWORK

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

Time: 10.30 AM to 1.00 PM

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

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

1) Which of the following is an example of wireless network and mobile computing both?
   a) Desktop computers in offices
   b) A notebook computer used in hotel room
   c) Networks in unwired buildings
   d) Store inventory with a handheld computer

2) Purpose of each layer is to_____
   a) Offer services to upper layer
   b) Use services provided by lower layer
   c) Reduce design complexity
   d) All of theses

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

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

5) If _____is implemented then, packets are injected into subnet individually and routed independently.
   a) Connectionless service
   b) Connection oriented service
   c) Address resolution protocol
   d) Access control protocol

6) _____is a processor that keeps track of all mobile hosts within it's home area.
   a) Foreign Agent  b) Home Agent
   c) Visiting Agent  d) Local Agent

7) Newly created socket do not have addresses. These are assigned using _____primitive in Berkeley Sockets.
   a) SOCKET  b) BIND  c) ASSIGN  d) CONNECT

8) Which of the following statements is not true about TCP protocol?
   a) All TCP connections are full duplex and point-to-point
   b) TCP does not support multicasting or broadcasting.
   c) TCP connection is byte stream.
   d) None of these

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

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

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

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

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

1) NSFNET
2) Flooding

**B) Answer the following.** **06**

1) Explain flow control in data link layer.
2) Define web document. Explain about static web documents and dynamic web documents.

**Q.3 Answer the following.**

**A)** Describe about wireless networks and also explain the concept of PAN, wireless LAN and Wireless WAN. **07**

**B)** Explain architecture of internet in detail. **07**

**Q.4 Answer the following.**

| | | |
|---|---|---|
| **A)** | Explain the concept of sliding window protocol? Explain sliding window protocol back n strategy. | **07** |
| **B)** | What is framing? Explain the methods used for framing at data link layer. | **07** |

**Q.5 Answer the following.**

| | | |
|---|---|---|
| **A)** | Give the comparison of virtual circuit subnet and datagram subnet in detail. | **07** |
| **B)** | Explain link state routing with the example. | **07** |

**Q.6 Answer the following.**

| | | |
|---|---|---|
| **A)** | Discuss the connection establishment mechanism at transport layer. | **07** |
| **B)** | Discuss about wireless TCP and UDP protocols in brief. | **07** |

**Q.7 Answer the following.**

| | | |
|---|---|---|
| **A)** | Explain about HTTP protocol in detail. | **07** |
| **B)** | Explain the architecture overview of WWW in detail. | **07** |

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# M.Sc. (Computer Science) (Semester – II) (Old)
# (CBCS) Examination, 2017
# UML

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 10:30 AM to 01.00 PM

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

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

1) Which of the following is true about architecture?
   a) An architecture does guarantee high quality or low cost
   b) An architecture hardly points out areas of risk in a design
   c) All of the above
   d) None of the above

2) What encapsulates both and data manipulation functions?
   a) Object b) Class c) Super class d) Sub class

3) Detailed design is further classified into following?
   a) Mid- level design b) Low level design
   c) All of the cave d) None of the above

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

5) What is an interaction diagram?
   a) Interaction diagrams are the UML notations for dynamic modeling of collaborations
   b) Interaction diagrams are a central focus of engineering design
   c) All of the above
   d) None of the above

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

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

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

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

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

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

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

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

i. Events and signals
ii Use case diagrams.

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

i. Synchronization in processes.
ii Principles of modeling

**Q.3 Answer the following:**

**A)** Explain the importance of object oriented design modeling. **07**

**B)** Explain in detail the common mechanisms used in structural modeling. **07**

**Q.4 Answer the following:**

**A)** Describe various steps in constructing object model. **07**

**B)** What are advantages of UML? Also explain the building blocks of UML.

**Q.5 Answer the following**

**A)** Explain various notations used in UML. **07**

**B)** Explain aggregation and composition with the help suitable example. **07**

**Q.6 Answer the following**

**A)** What are the elements of use case diagram? Draw a use diagram to model the behavior. Of a cell phone. **07**

**B)** What is a package? How it is represented in UML? Describe importing and exporting of package. **07**

**Q.7 Answer the following**

**A)** What is an interaction diagram? What is the difference between sequence diagram and collaboration diagram and collaboration diagram **07**

**B)** Explain UML software development life cycle? **07**

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# M.Sc. (Computer Science) (Sem - II) (Old) (CBCS) Examination, 2017
## Database Management System

Day & Date: Saturday, 29-04-2017 Max Marks: 70

Time: 10.30 AM to 1.00 PM

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

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

1) A default value constrains feeds_____.
   a) Constant value b) Varying value
   c) Given value if not supplied d) None

2) COUNT function is used for _____.
   a) Counting of tables b) Counting of values
   c) Counting of records d) Counting of tuples

3) A table that is 1NF and includes no partial dependencies only is said to be in _____
   a) 1NF b) 2NF c) 3NF d) 4NF

4) A _____ defined as a key that is used strictly for data retrieval purposes.
   a) Primary key b) Secondary key
   c) Foreign key d) Logical key

5) The process of attempting to improve the locking is known as_____
   a) Check pointing b) Concurrency control
   c) Recovering d) Polymorphism

6) To delete a database _____command is used.
   a) delete database database_name
   b) Delete database_name
   c) drop database database_name
   d) drop database_name

7) _____is critical in formulating database design.
   a) Row column order b) Number of tables
   b) Functional dependency d) Normalizing

8) A _____array is a set of objects, each with the same data type.
a) varying b) abstract c) large d) nested

9) To pass on granted privileges to other user the _____clause is used
a) create option b) grant option
c) update option d) select option

10) _____ operator is basically a join followed by a project on the attributes of first relation.
a) Join b) Semi join c) Full join d) Inner join

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

1) Varchar data type allows for storage of numbers.
2) Data models provide logical relationship among data elements.
3) Privileges once given can be denied to a user using COMMIT command.
4) Varying arrays are collectors that allow repetition of only those column values that change.

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

1) Client / Server Architecture
2) Nested tables

**B) Answer the following.** **06**

1) Explain referential integrity.
2) Explain aggregate functions.

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

1) Differentiate Standalone Vs Distribute databases
2) What is Normalization? Explain Boyce codd's normal form.

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

1) Explain ACID properties with suitable examples.
2) Explain DML commands and DCL commands.

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

1) Explain indexing in detail.
2) Explain E-R model with examples.

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

1) Explain parameterized Cursor with example.
2) Explain various Recovery techniques.

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

1) Explain SET operators with examples.
2) Explain Data Model.

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| Seat No. | |
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**MSC-II (Semester – III) (Old) (CBCS) Examination, 2017**
**COMPUTER SCIENCE (Paper – IX)**
**WEB DESIGN TECHNIQUES**

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

Time: 02.30 PM to 05.00 PM

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

**Q.1 A) Choose the correct alternatives** **14**

1) Which Statements is true?
   a) An XML document can have one root element.
   b) An XML document can have one child element.
   c) XML elements have to be in lowercase
   d) All of the above

2) "Yahoo", "Infoseek" and "Lycos" are _____?
   a) Search Engines b) Browsers
   c) News groups d) None of these

3) <TITLE>.. </TITLE tag must be within _____.
   a) Title b) Form c) Header d) Body

4) Which tag is used to display the numbered list?
   a) <OL></OL> b) <DL></DL> c) <UL></UL> d) <LI></LI>

5) <SCRIPT>.. <SCRIPT> tag can be placed within _____.
   a) Header b) Body c) Both A and B d) None of these

6) Which is true to challenge the text colour to red?
   a) <BODY BGCOLOR=RED> b) <BODY TEXT= RED>
   c) <BODY COLOR=RED> d) None of these

7) Which sign does jQuery use as a shortcut for jQuery?
   a) The % sign b) The? Sin c) The $ sign d) The * sign

8) Which jQuery method is used to set one or more style properties for selected elements?
   a) css() b) html() c) style() d) head()

9) What is the correct way of describing XML data?
   a) XML uses a DTD to describe data
   b) XML uses a description node to describe data
   c) XML uses XSL to describe the data
   d) XML uses a validators to describe the data

10) Which of the following jQuery method get the text contents of an element?
   a) Text () b) getText () c) getContent () d) None of these

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

1) It is possible to use jQuery together with AJAX?
2) The jQuery html () method works for both HTML and XML documents.
3) Prev () jQuery method adds the previous selection to the current selection?
4) Comments in XML documents is given by /* _____ */

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

i) Ajax Events
ii) DOM

**B) Answer the following:**

i) Explain DTD with example **06**
ii) What is jQuery? Explain the features of jQuery.

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

1) Explain the following HTML tags with attributes:
   i) <head> ii) <html> iii) <ul> iv) <table>
2) What is function? Explain how parameters are passed to functions in JavaScript?

**Q.4 Answer the following:**

1) Explain CDATA in XML with example
2) What is cascading style sheet? Explain types of CSS with examples.

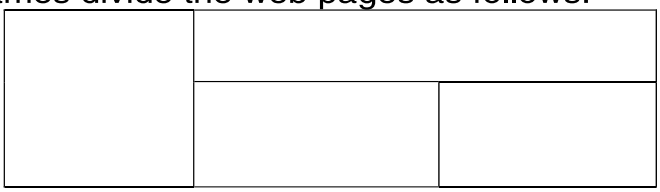
**Q.5 Answer the following:** **14**

1) Explain AJAX with example.
2) Write and explain tags to create following HTML elements with their attributes:
   i) Textbox ii) Drop-down list iii) password field
   iv) Checkbox v) Radio button

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

1) Develop a Java Script program to display a message:
   i) "Welcome to Solapur" – When page is loaded and
   ii) "THANK YOU visit again"- When page in unloaded

2) Using Frames divide the web pages as follows:



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

1) Explain use of XSLT in XML with example.
2) What is the use of HTML from? Create a HTML page for login details.

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## M.Sc. (Computer Science) (Semester– III) (Old) (CGPA) Examination,2017
## ARTIFICIAL INTELLIGENCE

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

Time: 02.30 PM to 05.00 PM

**N.B. :** 1) Q.**1** andQ.**7** are **compulsory** Questions.
**2**) Attempt any Three Questions from Q.3 to Q.7
3) Figures to **right** indicate **full** marks.

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

1) A Physical Symbol system has necessary and sufficient means for general_____ action.
a) Universal b) Physical c) Intelligent d) Casual

2) _____ as AI technique provides a way of separating important features and variations from many unimportant ones that would otherwise overwhelm any process.
a) Abstraction b) Search c) Use of knowledge d) None of these

3) The second requirement of good control strategy is that it be ___
a) Realistic b) Systematic c) Isolated d) Reasonable

4) Generate and Test algorithm is a depth first search procedure since ____ solutions must be generated before they can be tested.
a) Partial b) Commutative c) Optimal d) Complete

5) Acquisitional efficiency is the _____ to acquire new information easily.
a) Inference b) Ability c) Disability d) Representation

6) Real world fact can be represented as _____ propositions written as Well formed formulas *(wff's)*in propositional logic.
a) Physical b) Semantic c) Alphabetic d) Logical

7) A ____ representation is one in which the control information that is necessary to use the knowledge is considered to be embedded in the knowledge itself.
a) Declarative b) Defined c) Procedural d) programmable

8) _____ measures the extent to which the evidence supports the negation of the hypothesis.
a) Measure of belief
b) Measure of Evidence
c) Measure of disbelief

d) Measure of Hypothesis

9) Transfer of an abstract relation can be represented as ___
a) ATRANS b) PTRANS c) MTRANS d) PROPEL

10) In _____ step, the structures created by the syntactic analyzer are assigned meanings.
a) Bayesian Network b) Explanation
c) Semantic Analysis d) Syntactic Analysis

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

1) DESIGN ADVISOR has given advice to chip designer, who can accept or reject the advice.
2) Pragmatic Analysis is collection of attributes and associated values that describe some entity in the real world.
3) Backward rules encode knowledge about how to respond to certain input configurations.
4) The attribute *is*a is being used to show class inclusion.

**Q.2 A) Write a short note.** **08**

1) Semantic Net
2) Heuristic Search

**B) Answer the following:** **06**

1) What do you mean by Certainty factor?
2) State the meaning of Expert System?

**Q.3 Answer the following:**

A) What do you mean by knowledge representation? Discuss various approaches to knowledge representation. **07**

B) Discuss in detail a Hill Climbing and situations in which it may fail to find a solution. **07**

**Q.4 Answer the following:**

A) Discuss in detail various task domains of Artificial Intelligence. **07**

B) What do you mean by Probability? Explain in detail Bayes Theorem with suitable example? **07**

**Q.5 Answer the following:**

A) What do you mean by Game Playing? Explain in detail Min-Max Search Procedure with suitable example? **07**

B) Discuss in detail different technique of knowledge acquisition to build an Expert system. **07**

**Q.6 Answer the following:**

A) Define the term Artificial Intelligence. Explain Water Jug problem with suitable example? **07**

B) Discuss in detail forward versus backward reasoning for representing knowledge using rules.

**Q.7 Answer the following:**

A) What do you mean by Natural Language Processing? Explain in detail various steps in the process to do it. **07**

B) What do you mean by Crypt-arithmetic problem? Discuss concept of constraint satisfaction for the solution of following problem. **07**

```
        S   E   N   D
+       M   O   R   E
-----------------------------------------
    M   O   N   E   Y
```

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## M.Sc.(Computer Science) (Semester – III) (CGPA) (Old) Examination, 2017
## MOBILE COMPUTING

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

Time: 02.30 PM to 05.00 PM

**N.B. :** *1) Q.**1** andQ.**7** are **compulsory** Questions.*
*2) Attempt any **Three** Questions from **Q.3 to Q.7***
*3) Figures to **right** indicate **full** marks.*

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

1) DSSS meaning _____
   a) Direct sequence spread spectrum b) Direct sequence space spectrum
   c) Direct sequence space signals d) Direct source space spectrum

2) ____ CSMA system, all stations wishing to transmit access the medium at the same time, as soon as it becomes idle.
   a) P-persistent b) Non- persistent c) 1- persistent d) CA

3) EMS means_____
   a) Electrical message service b) Erosion mobile service
   c) Enhanced Message service d) Enhanced Message service

4) The A interface is typically based on circuit- switched _____ system.
   a) PCM-40 b) PCM-20 c) PCM-30 d) PCM-25

5) THE Operation and maintenance center (OMC) moniters and controls all other network entities via the _____ interface.
   a) B b) I c) O d) C

6) A distribution system connects several BSSs via the AP to form a single network and thereby extends the wireless coverage area. This network is now called an____
   a) Extended Service Set b) Extra Service Sell c) WLAN d) GSM

7) What is the use of content provider in android?
   a) To send the data from an application to another application
   b) To store the data in a database
   c) To share the data between applications
   d) None of the above.

8) What is Manifest.xml in android?
   a) It has information about layout in an application
   b) It has the information about activities in an application
   c) It has all the information about an application

d) None of the above

9) Forming groups of piconets called _____.
   a) Scatternet  b) Bluetooth  c) WIFI  d) Infra read

10) Layouts in android?
   a) Frame Layout  b) Linear Layout
   c) Relative Layout  d) All of the above

**B) Fill in the Blanks:** **04**

1) The main task of ____ layer comprises channel coding and error detection/correction.
2) Algorithm A3 is used for ____
3) _____ is ADB in android
4) _____ Techniques involve spreading the bandwidth needed to transmit data in which does not make sense at first sight.

**Q.2 A) Describe the following:** **08**

1) MOC
2) Android GUI architecture

**B) Write a short note on:** **06**

1) Traditional TCP
2) Hidden Terminal

**Q.3 A)** What is Signal propagation? Explain the Path loss of radio signals. **07**

**B)** Describe in details GSM architecture. **07**

**Q.4 A)** What is the function mobile network layer? Explain conjunction control with a suitable example. **07**

**B)** What is the importance of having an emulator within the Android environment? Explain with suitable example.

**Q.5 A)** What are the different states wherein a process is based? Describe any two with example. **07**

**B)** Describe architecture of an infrastructure based IEEE 802.11. **07**

**Q.6 A)** What is scatter-net? Explain its architecture **07**

**B)** What is spread spectrum? Explain in details DSSS. **07**

**Q.7 A)** What is the handover? Explain its different scenarios. **07**

**B)** What is Pico-net? Explain its architecture. **07**

| Seat No. | |
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# M.Sc. (Computer Science) (Semester – III) (Old) (CGPA) Examination, 2017
# OPERATION REASEARCH

Day & Date: Tuesday, 25-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

***Instruction :*** *1) Q.NO.**1** and Q.NO.**2** are **compulsory**.*
*2) Attempt any 3 **questions** from Q.**No3** to Q.**No.7**.*
*3) Figure to the **right** indicates full **marks**.*

**Q.1 A) Choose the correct alternative (one mark each)** **10**

1) A st-cut is partition (A,B) of the verties with _____
   a) SEA b) SEA &tEB c) tEB d) None of these

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

3) Which of the following is the assumption of an LP model
   a) Divisibility b) Proportionality
   c) Additivity d) All of the above

4) If an opportunity cost value is used for an unused cell to test optimatity, it should be _____
   a) equal to zero b) most negative number
   c) most positive number d) any value

5) The degeneracy in the transportation problem indicates that
   a) dummy allocation(s) need to be added
   b) The problem has no feasible solution
   c) The multiple optimal solution exist
   d) (a) & (b) but not (c).

6) If there were n workers & n jobs there would be
   a) n! solutions b) (n-1)! Solutions
   c) $(n!)^n$ solutions d) n solutions

7) For maximization LP model, the simplex method terminated when all values
   a) $Cj - zj \leq 0$ b) $Cj - zj \geq 0$ c) $Cj - zj = 0$ d) $zj \leq 0$

8) If for a given solution, a slack variables is equal to zero then
   a) the solution is optimal
   b) the solution is infeasible
   c) The entire amount of resource with the constraint in which the slack variable appears has been consumed
   d) All of the above

9) For any primal problem & its dual.
   a) optimal value of objective function is same
   b) primal will have an optimal solution if f dual does too
   c) both primal & dual cannot be infeasible
   d) All of the above

10) The another term commonly used for activity slack time is.
   a) Total float
   b) Free float
   c) Independent float
   d) All of the above

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

1) If dual has an unbounded solution, primal has feasible solution.
2) In time cost-trade-off function analysis cost decreases linearly as time increases.
3) When the given cost matrix is not square matrix, the assignment problem is called an unbalanced problem.
4) MODI algorithm is used to solve assignment problem.

**Q.2** a) What is assignment problem? Give two applications. **04**

b) Define Critical Path Analysis. **03**

c) What are linear programming & what are its major assumption & limitation. **04**

d) Define optimistic time. **03**

**Q.3** a) Give the difference between PERT & CPM. **06**

b) Solve the following LP problem by graphically **08**

Min z = $20x_1 + 10\,x_2$

Subject to $x_1 + 2\,x_2 \leq 40$

$3\,x_1 + x_2 \geq 30$

$4\,x_1 + 3x_2 \geq 60$

$x_1,\ x_2 \geq 0$

**Q.4** a) Determine an initial basic feasible solution to the following transportation problem by using vogel's Approximation method **07**

| | | Destination | | | | |
|---|---|---|---|---|---|---|
| | | $D_1$ | $D_2$ | $D_3$ | $D_4$ | Supply |
| Source | $S_1$ | 21 | 16 | 15 | 3 | 11 |
| | $S_2$ | 17 | 18 | 14 | 23 | 13 |
| | $S_3$ | 32 | 27 | 18 | 41 | 19 |
| | Demand | 6 | 10 | 12 | 15 | |

b) Explain the Hungarian method to solve assignment problem. **07**

**Q.5** a) Give outlines of the simplex method in linear programming. **07**

b) Solve Min z = $6x_1 + x_2$ **07**

Subject to constraints

$2x_1 + x_2 \geq 3,\ x_1 - x_2 \geq 0, x_1,\ x_2 \geq 0$

by dual simplex method.

**Q.6** a) Explain Matroid with an example. **06**

b) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do each job is known & given in the following table **08**

| | | Jobs | | | | |
|---|---|---|---|---|---|---|
| | | I | II | III | IV | V |
| Men | A | 2 | 9 | 2 | 7 | 1 |
| | B | 6 | 8 | 7 | 6 | 1 |
| | C | 4 | 6 | 5 | 3 | 1 |
| | D | 4 | 2 | 7 | 3 | 1 |
| | E | 5 | 3 | 9 | 5 | 1 |

Find the assignment of men to jobs that will minimize the total time taken

**Q.7** a) The following table gives the activities in a construction project & other relevant information **12**

Activity Immediate Time(months) Direct cost (Rs)

| | Predecessor | Normal | Crash | Normal | Crash |
|---|---|---|---|---|---|
| A | - | 4 | 3 | 60 | 90 |
| B | - | 6 | 4 | 150 | 250 |
| C | - | 2 | 1 | 38 | 60 |
| D | A | 5 | 3 | 150 | 250 |
| E | C | 2 | 2 | 100 | 100 |
| F | A | 7 | 5 | 115 | 175 |
| G | D, B, E | 4 | 2 | 100 | 240 |

Indirect costs vary as follows:

| Months: | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
|---|---|---|---|---|---|---|---|
| Cost (Rs.) | 600 | 500 | 400 | 250 | 175 | 100 | 75 |
| | 8 | 7 | 6 | | | | |
| | 50 | 35 | 25 | | | | |

a) Draw an arrow diagram for the project

b) Determine the project duration which will result in minimum total project cost.

b) Define Critical Path. **02**

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# M.Sc. - II (Semester – III) (New) (CBCS) Examination, 2017
## COMPUTER SCIENCE
## Web Design Techniques (Paper IX)

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

Time: 02.30 PM to 05.00 PM

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

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

1) The _____element is used to create definition list.
   a) ul b) li c) dl d) ol

2) The _____attribute of an input element is used to clears the contents in the form.
   a) type=”set” b) type=”reset”
   c) type=”clear d) type=”submit”

3) ____is used to create named anchors for hyperlinks to a particular parts of an HTML document.
   a) Internal Link b) External Link
   c) Anchor Link d) Part Link

4) An XML document is considered ____if it is syntactically correct.
   a) well parsed b) well formed
   c) well documented d) well valid

5) ____of the following is correct JQuery code for setting background color of all p elements to red.
   a) $(“P”).all(“background-color”, “red”);
   b) $(“P”).set(“background-color”, “red”);
   c) $(“P”).style(“background-color”, “red”);
   d) $(“P”).css(“background-color”, “red”);

6) DTD is an acronym for _____
   a) Document Type Definition
   b) Document Tag Definition
   c) Document Type Declaration
   d) Data Type Definition

7) XSLT provides the ____element to allow alternate conditional statements.
   a) xsl:if b) xsl:choose c) xsl:when d) xsl:alternate

8) The Java script language is belongs to _____
   a) Object oriented  b) Object based
   c) Class oriented  d) Method oriented

9) _____of the following is correct CSS statement.
   a) body { background-color; #d0e4fe; }
   b) body { background-color: #d0e4fe }
   c) body { background-color: #d0e4fe; }
   d) body ( background-color: #d0e4fe; )

10) jQuery is a _____
   a) JavaScript Language  b) JavaScript Library
   c) JavaScript Method  d) JavaScript Object

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

1) We cannot use JQuery and AJAX together.
2) For Image Mapping purpose <area> is used.
3) HTML and XML are mark-up languages based on SGML.
4) getDate() function of data object return current date in javascript.

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

1) What are different types of CSS? Explain with example.
2) Explain any 8 text formatting tags with example.

**B) Answer the following:** **06**

1) Explain Data object with example.
2) Explain DTD with example.

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

1) What is Image Mapping? Explain image mapping with example.
2) Explain different UI controls used in JQuery.

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

1) Explain how to install and configure Apache web server.
2) What is XML schema? Explain how to create schema with example.

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

1) Design Book information XML file and display book in tabular form.
2) Explain control and looping statements used in JavaScript.

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

1) Write JavaScript code which checks given number is Prime and Armstrong or not.
2) Explain text formatting and margin properties in CSS with example.

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

1) Explain Input tag in detail.
2) Explain different JQuery traversing methods with example.

**SLR-RG– 346**

| Seat No. | |
|---|---|

## Computer Science(Semester – III) (New) (CBCS) Examination, 2017
## ARTIFICIAL INTELLIGENCE

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

Time: 2::30 PM to 05.00 PM

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

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

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

2) Search provides a way of solving problems for which no more _____ approach is available as well as a framework into which any _____ techniques that are available can be embedded.
   a) Indirect b) Direct c) Partial d) Incomplete

3) The problem can be solved by using rules, in combination with an appropriate _____, to move through the problem space.
   a) Rule based system b) Decision making
   c) Reasoning d) Control strategy

4) A good general purpose _____ that is useful for variety combinatorial problems is nearest neighbor _____, which work by selecting the locally superior alternative at each step.
   a) Breadth First Search b) Solution Space
   c) Depth First Search d) Heuristic

5) The AND-OR Graph is useful for the representation of problems that can be solved by_____ them into a set of smaller problems, all of which must then solved.
   a) Integrating b) Combining
   c) Decomposing d) Adding

6) The sentence "*All people were either faithful to Ruler or hated him"* would be represented using predicate logic as-
   a) *people(x)→→faithfulto (x,Ruler)V hate (x, Ruler)*
   b) *∀x :people(x) →faithfulto (x,Ruler) V hate (x, Ruler)*

c) *people (x)V →faithfulto (x, Ruler) V hate (x, Ruler)*
d) *: people (x) →faithfulto(x,Ruler) V→hate (x,Ruler)*

7) Alpha represents a _____ bound on the value that a maximizing node may ultimately be assigned.
a) Upper b) Lower c) Middle d) Branch

8) _____ rules encode knowledge about how to achieve particular goals
a) Backward b) Sequential c) Forward d) Both a and b

9) For _____ script it is possible appropriate to activate the script fully and to attempt to fill in its slot with particular objects and people involved in the current situation.
a) Emotional b) Fleeting
c) None-fleeting d) Pointer

10) PROSPECTOR is a program that provides advice on _____.
a) Rogerian therapist b) Chip designer
c) Chemical Synthesis d) Mineral exploration

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

1) A genetic symbol system has necessary and sufficient means for general intelligent action.
2) The task in classification to examine input and then to decide which of set of known classes the input is an instance of.
3) The requirement conceptual dependency is that it should not cause motion in the solution space.
4) A clause is defined to be a $wff$ in conjunction normal form but with no instances of the connector.

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

i. Generate and Test
ii. Reasoning

**B) Answer the following:** **06**

i. Briefly state issues in the design of search programs?
ii. What do you mean by fuzzy logic?

**Q.3 Answer the following:**

**A)** Define the term Resolution. Explain in detail an algorithm to convert a $wff$ into clause form? **07**

**B)** Discuss in detail MinMax Search procedure with suitable example? **07**

**Q.4 Answer the following:**

**A)** What do you mean by Heuristic search? Discuss problems by which Steepest Ascent Hill climbing may get fail to find solution. **07**

**B)** Define the term Matching. Explain in detail different kinds of approaches for Matching?

**Q.5 Answer the following**

A) Define the meaning of knowledge representation? Discuss different approaches of resenting it with suitable example? **07**

B) What do you mean by Statistical Reasoning? Discuss concept of Certainty factor and Rule based system in detail. **07**

**Q.6 Answer the following**

A) What do you mean by Semantic Net? Discuss the concept of Semantic net as weak slot and filler structure. **07**

B) State the meaning of Natural Language Processing? State and explain steps of Natural Language Processing with suitable example? **07**

**Q.7 Answer the following**

A) What do you mean by Artificial Intelligence? Explain the concept of Constraint Satisfaction used to solve below crypt-arithmetic problem. **07 I**

```
    S E N D
+   M O R E
-------------
M O N E Y
```

B) What do you mean by Expert System? Explain in detail solution of water jug problem with suitable example. **07**

| Seat No. | |
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# M.Sc. (Computer Science) (Semester – III) (New)
## (CBCS) Examination, 2017
## MOBILE COMPUTING

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

Time: 02.30 PM to 05.00 PM

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

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

1) _____ CSMA system, all stations wishing to transmit access the medium at the same time, as soon as it becomes idle,
   a) P-persistent b) On-persistent
   c) I-persistent d) CA-persistent

2) DAMA is an _____ reservation scheme.
   a) Implicit b) Explicitly
   c) Transmission d) All of these

3) HDLC means _____
   a) High-Level Data Link control
   b) High Data link control
   c) High Data Layer Control
   d) High Data load Control

4) The A interface is typically based on circuit-switched _____ system.
   a)PCM-40 b)PCM-20 c)PCM-30 d)PCM-25

5) The main task of _____ layer comprise channel coding and error detection/correction.
   a) Data link b) Network
   c) Physical d) Transport.

6) Algorithm A3 is used for _____
   a) Authentication b) Encryption
   c) Generation of cipher d) None of these

7) A distribution system connects several BSSs via the AP to form a single network and thereby extends the wireless coverage area. This network is now called an _____
   a) Extended Service Set b) Extra Service Sell
   c) WLAN d) GSm

8) A _____ is a collection of Bluetooth devices which are synchronized to the hopping sequence.
   a) Piconet b) Master c) Slave d) wlan

9) forming groups of piconets called_____
   a) scatternet b) Bluetooth c) WIFI d) Infra read

10) What is the use of content provider in android?
   a) To send the data from an application to another application
   b) To store data in a database
   c) To share the data between application
   d) None of the above.

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

1) In frequency hopping spread spectrum, the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels.
2) This RTS is not heard by C. but triggers an acknowledgement from B is called clear to send (CTS).
3) Group special mobile (GSM) was founded in 1945.
4) Cellular phone network not required base stations, infrastructure networks.

**Q.2 A) Write a short note on following:** **4+4**

1) What is security algorithm in GSM?
2) Types of android application.

**B) Answer the following:** **3+3**

1) Roaming
2) Mobile Tele service

**Q3 Answer the following:** **7+7**

1) What is Multiplexing? Explain in details Code division multiplexing
2) What is Modulation? Explain in details advanced frequency and phase shift keying.

**Q4 Answer the following:**

1) What is the cell? Explain cellular system in details. **7+7**
2) Explain procedure of Localization and calling in details .

**Q.5 Answer the following:**

1) Explain format of IEEE 802.11 frame using DSS.
2) Write a note on Entities and terminology in mobile IP.

**Q.6 Answer the following:** **7+7**

1) What is snooping TCP, Explain it's advantages.
2) Explain in details android application life cycle.

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

1) Explain Android GUI architecture.
2) Explain android application priority and process states.

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# M.Sc. (Computer Science) (Semester – III) (New) (CBCS) Examination, 2017
# DIGITAL IMAGE PROCESSING

Day & Date: Tuesday, 25-04-2017 Max. Marks: 70

Time: 2:30 PM to 05.00 PM

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

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

1) In the applications which use nuclear medicine_____ used.
   a) X- rays b) Gamma rays
   c) Ultraviolet rays d) Microwave

2) Due to _____ considerations, the number of gray levels is usually an integer power of 2.
   a) Hardware b) Software c) Firmware d) Both (a) and(b)

3) The storage space required for storing an image of size 128 x 64 with 128 gray levels is _____ KB.
   a) 56 b) 1024 c) 7 d) 128

4) *min filter* is a _____ filter.
   a) Order statistic b) Averaging
   c) Sharpening d) Noise reduction

5) Which statement (s) is/ are correct?
   i. In a Fourier transformed image at location *F* (0, 0) average value is available.
   ii. High pass filter is useful to reduce effect of small dots
   a) (i) b) (ii) c) Both (i) and (ii) d) None

6) Which of the following is not an order statement filter?
   a) Median filter b) Min filter
   c) Midpoint filter d) None of these

7) When an opening is performed on an equilateral triangle of each side 3 cm using a structuring element which is right angle triangle with base and height 1, the change in the area of result will be_____
   a) Area remains same but shape changes

b) Area and shape remains same
c) Area increases
d) Area decreases

8) Hough transform is used for_____
   a) Global processing
   b) Linking edge and detecting boundary
   c) Detecting lines
   d) All the above

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

10) In the year 1936 Fisher presented a technique for classification of object called as_____.
   a) Discriminant analysis b) Discrimination analysis
   c) Description analysis d) Description analysis

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

1) $D_8$ distance between pixels at coordinates (1, 7, 12) and (6, 4, 2) is _____.
2) Expression for Butterworth lowpass filter is_____.
3) The PDF for exponential noise is_____.
4) For sub regions $R_1, R_2 \ldots, R_n$ Partitioned in region R, P ($R_{i)}$ = TRUE for i =1, 2,…., *n,* where $P(R_i)$ is a _____.

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

a) Image formation model.
b) Uniform noise.

**B) Answer the following:** **06**

a) Comparison between first and second order derivatives.
b) Given the threshold $T$ as 150, check whether a line inclined at 45° passes through following image;

| | | |
|---|---|---|
| 38 | 76 | 44 |
| 84 | 65 | 122 |
| 100 | 22 | 16 |

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

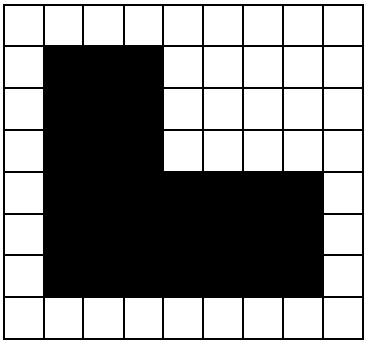
**A)** Discuss adjacencies with suitable examples.
**B)** Apply global thresholding algorithm on following image to obtain binary image by selecting initial threshold using mid-point filter. Iteration of algorithm must stop when difference of threshold is less than 0.2

| | | |
|---|---|---|
| 8 | 0 | 9 |
| 10 | 14 | 12 |
| 13 | 15 | 7 |

**Q.4 Answer the following:**

**A)** Describe Butterworth low pass filter. Compare it with others. **14**

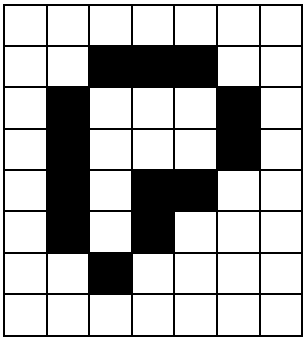
**B)** Find inner and outer boundary of the following image using 3x3 square structuring element:



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

A) Discuss Gaussian and Rayleigh noise. Compare them.

B) Fill following region using cross structuring element.



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

A) How to detect edge? Explain.

B) Find mean and covariance matrix for the vectors **14**
$x_1$=(0,1,0)$^T$,$x_2$(1,1,0)$^T$,$x_3$ = (1,0,0)$^T$ and $x_4$ = (0,1,1)$^T$

**Q.7 Answer the following**

A) Discuss matching the objects using correlation. **14**

B) Compute midpoint matrix for the following. Consider only values within the boundary of matrix for computation.

| | | |
|---|---|---|
| 37 | 12 | 19 |
| 03 | 76 | 45 |
| 53 | 98 | 62 |

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**Seat No.**

# M.Sc. (Computer Science) (Semester- IV)
# (Old) (CGPA) Examination, 2017
# DISTRIBUTED OPERATING SYSTEM

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

Time: 02.30 PM to 5.00 PM

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

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

1) Which of the following is a visual (mathematical) way to determine the deadlock occurrence?
   a) Resource allocation graph b) Starvation graph
   c) Insertion graph d) All of above

2) A collection of instruction that perform a single logical function is called_____.
   a) Transaction b) operation c) function d) all the above

3) A system is in a safe state only if there exists a____
   a) Safe allocation b) Safe resource
   c) Safe sequence d) All of the above

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

5) RPC provides a _____ on the client side, a separate one for each remote procedure.
   a) Stub b) Identifier c) name d) process

6) If timestamps of two events are same then the events are.
   a) Non-concurrent b) Monotonic
   c) Concurrent d) Non – monotonic

7) Which routing technique is used in distributed system.
   a) Fix routing b) virtual routing
   c) dynamic routing d) all of the abovea

8) Virtual memory is commonly implemented by _____
   a) Segmentation b) Swapping

c) Demand paging d) None of above

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

10) Network operating system runs on
a) Server b) Every system in the network
b) Both a and b d) all of these

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

1) Message passing provides both synchronization and communication, which are fundamental requirements for interacting processes.
2) Each site (node) in a distributed system is subject to the Same type of failure as in a centralized system.
3) Data replication is favored where most process request are read only and where the data are relatively static.
4) The purpose of timestamping is to avoid the use of locks.

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

1) file replication
2) virtual memory

**B) Answer the following.** **06**

1) Explain domain name system.
2) What is stub? Explain method for stub generation.

**Q.3 Answer the following.**

**A)** What do you mean by file server? Describe in detail the remote access model and upload / download model. **07**

**B)** Explain the architecture of RPC in detail. **07**

**Q.4 Answer the following.**

**A)** What is meant by client-server communication? **07**

**B)** Explain clock synchronization in detail. **07**

**Q.5 Answer the following.**

**A)** Explain process migration? Discuss the issues which need to be addressed in designing process migration facility. **07**

**B)** What is election algorithm? Explain Bully algorithm. **07**

**Q.6 Answer the following.**

**A)** How the security technique can be implemented in distributed operating system? **07**

**B)** What is distributed file system? Specify desirable features of good distributed file system. **07**

**Q.7 Answer the following.**

**A)** What are the main difference between a network and distributed operating system? **07**

**B)** What is thread? Explain thread design issues in distributed operating system? **07**

| Seat No. | |
|---|---|

# M. Sc (Computer Science) (Sem IV) (Old) (CGPA) Examination, 2017
## Data Mining and Warehouse

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

Time: 02.30 PM to 5.00 PM

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

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

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

2) _____ describe the data contained in the data warehouse.
   a) Relational data b) Operational data
   c) Metadata d) Informational data

3) The granularity of the fact is the _____ of detail at which it is recorded.
   a) Transformation b) Summarization
   c) Level d) Transformation and Summarization

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

5) An OLTP system is _____ oriented.
   a) Market b) Business c) management d) Customer

6) The cuboid that holds the lowest level of summarization is called the _____
   a) Apex cuboid b) Base cuboid
   c) 3-D cuboid d) 2-D cuboid

7) Fact constellation is also called a _____ schema.
   a) Galaxy b) snowflake c) star d) none of these

8) _____refers to the level of understanding and insight that is provided by the classifier or predictor.
   a) Interpretability b) Scalability
   c) Robustness d) None of these

9) _____where aggregation operations are applied to the data

in the construction of a data cube.

a) Dimensionally reduction b) Attribute subset selection
c) Data cube aggregation d) Numerosity reduction

10) The full form of OLAP is

a) Online Advanced Processing
b) Online Analytical Processing
c) Online Advanced Preparation
d) Online Analytical Performance

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

1) OLAP system mainly focuses on the current data.
2) Task-relevant data specifies the portions of the database or The set of data in which the user is interested.
3) Retail data mining can help identify customer buying behavior, discover customer shopping patterns and trends, improve the quality of customer service.
4) An enterprises warehouse collects all of the information about subjects spanning the entire organization.

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

1) Data Transformation
2) Trends in Data Mining

**B) Answer the following.** **06**

1) What is Data Cleaning? Explain any two methods for missing Values.
2) Explain Virtual warehouse.

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

**A)** What is Data Warehouse? Explain the difference between OLTP and OLAP.

**B)** What is data cube? Explain Star schema and Snowflake schema with diagram.

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

**A)** What is classification? Explain Issues regarding Classification and Prediction.

**B)** Explain the steps for Bayesian classification.

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

**A)** Explain Data Mining primitives.

**B)** What is Association Rule? Explain multilevel association rule from transaction database.

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

**A)** Discuss market basket analysis in detail.

**B)** What is Cluster Analysis? Explain typical requirements of clustering in data mining.

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

**A)** Explain various data mining applications in detail.

**B)** Explain the procedure for K-means algorithm.

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| Seat No. | |
|---|---|

# M.Sc. (Computer Science) (Sem- IV) (Old) (CGPA) Examination, 2017
## Digital Image Processing

Day & Date: Monday, 24-04-2017 Max Marks: 70

Time: 02.30 PM to 5.00 PM

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

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

1) Fluorescence in one of the applications in
   a) Gamma ray imaging b) Infrared imaging
   c) Microwave band d) Ultraviolet imaging

2) An image of size 32 x 32 pixels formed with 256 gray levels need _____ bits of storage space.
   a) 6400 b) 8192 c) 32768 d) 262144

3) Histogram equalization will converts _____
   a) Darker image into high contrast image
   b) Brighter image into high contrast image
   c) Low contrast image into high contrast image
   d) All the above

4) For a one – dimensional discrete signal with values $f(x)$ = [1, 2, 3, 4, 5, 6, 7, 8, 9,], its Fourier transform F(0) is _
   a) 1 b) 5 c) 9 d) 45

5) Which of the following statement is not correct about properties of frequency domain filtering?
   a) The slowest varying frequency component corresponds to the average gray level of an image
   b) There is no direct association between specific components of an image and its transform
   c) It is difficult to restore original signals after applying transform
   d) The higher frequencies corresponds to edges and noise in an image

6) Notch filter is _____
   a) Low pass filter b) High pass filter
   c) Sharpening filter d) Average filter

7) The two principal properties used for establishing similarity of edge pixels for edge linking through local processing are:
   i) The difference of intensity values used to produce the edge pixel.
   ii) The strength of the response of the gradient operator used to produce the edge pixel.
   iii) The direction of the gradient vector
   a) (i) and (ii)
   b) (i) and (iii)
   c) (ii) and (iii)
   d) (i), (ii) and (iii)

8) Thresholding generally converts _____into_____.
   a) Color image, grayscale image
   b) Color image, binary image
   c) Grayscale image, binary image
   d) Binary image, B/w image

9) A shape has 5 connected components, 12 edges, 6 vertices and 8 holes. It has _____faces.
   a) 3 b) 7 c) 9 d) 10

10) Suppose $\alpha$ = 110011001010 and b = 1100110000101101 are strings for two region boundaries? The measure of Similarity R between both the strings is_____
   a) 0.5 b)1 c) 2 d) 8

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

1) The necessary condition for contrast stretching with two control points $(r_1, s_1)$ and $(r_2, s_2)$ to become thresholding function are_____, _____ and _____
2) The one-dimensional discrete Fourier transformation function is expressed as _____
3) Techniques for detecting the three basic types of gray–level.
4) American Bankers Association E- 13B font character set has _____ characters.

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

1) Imaging is ultraviolet band.
2) Rayleigh noise.

**B) Answer the following.** **06**

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

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

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

2) A row of pixels in an image have following intensity values. Compute their second derivatives.
7, 3, 2, 1, 0, 1, 2, 3, 4, 4, 4

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

**A)** Discuss one dimensional Fourier transform and its inverse.

**B)** What is the result of applying 3x3 mean filters on the following image segment?

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

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

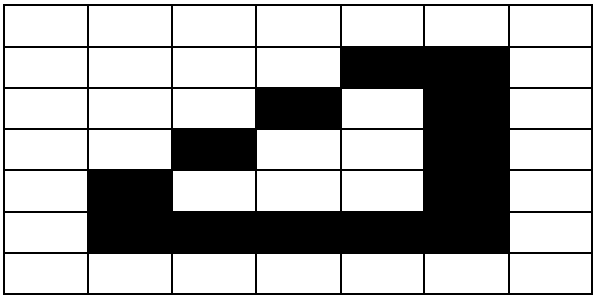
**A)** Describe adaptive local noise reduction filter.

**B)** Perform opening on a rectangle of width 6 cm and height 4 cm using a circle of 1 cm radius. Clearly show all intermediate steps.

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

**A)** Derive Laplacian second order derivative mask for edge enhancement.

**B)** Fill in the following region using morphological region filling algorithm.



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

**A)** Describe local processing algorithm for edge linking and boundary detection.

**B)** The two classes of objects denoted by $\omega_1$, and $\omega_2$ have sample mean vectors $m_1$ = (10, 5, 12), and $m_2$ = (4, 9, 6) respectively. Compute decision boundary between these two objects. Also find the class of object with features (8, 8, 8,).

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

**A)** How minimum distance classifier is used for object

classification? Explain with an example.

**B)** Compute the covariance matrix for the following vectors: $(1, 1, 0, 1)^T$, $(1, 1, 1, 1,)^T$, $(0, 1, 0, 1)^T$ and $(1, 0, 0, 1,)^T$.

**SLR- RG - 352**

| Seat No. | |
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# M.Sc. (Computer Science) (Semester - IV) (Old) (CGPA) Examination, 2017
# .NET TECHNOLOGY

Day & Date: Saturday, 29-04-2017 Max. Marks: 70

Time: 02.30 PM to 5.00 PM

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

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

1) Which of the following is the feature of managed code?
   a) Language interoperability b) Enhanced security
   c) Type safety d) All of these

2) _____used to implement the event handling mechanism.
   a) Indexers b) Delegates
   c) Both a and b d) None of these

3) Which of the following is the predefined reference type?
   a) Object b) String c) Both a and b d) None of these

4) _____ property checked to know that is the page back or not.
   a) PostBack b) Post c) BackPost d) IsPostBack

5) The Load event occurs before the form becomes visible.
   a) True b) False

6) _____property allows to navigate all the controls in a logical order.
   a) Index b) Tab c) TabIndex d) TabOrder

7) The result of _____method invoked by the multicast delegate is returned.
   a) First b) Last c) Not return value d) None of these

8) _____data type is returned in IsPostBack property.
   a) Int b) string c) float d) boolean

9) Which of the following is not event of a form?
   a) Load b) Closed c) Deactivate d) Click

10) Unboxing is the conversion of value type to object type.
   a) True b) False

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

1) All .Net classes are derived from System. Collections.
2) Panel control represents a container for other controls.
3) The default time duration for a Cookie is 70 minutes.
4) @page directive assign page specific attributes in an ASP.NET Application.

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

1) AdRotator control
2) What is Cookie? How to create a Cookie?

**B) Answer the following.** **06**

1) Role of the JIT complier in .NET Framework.
2) Differentiate between a HyperLink control and a LinkButton Control.

**Q.3 Answer the following.**

**A)** What is .net framework? Explain the different functions provided by CLR. **07**

**B)** What is master page? How to create nested master page? Give one example. **07**

**Q.4 Answer the following.**

**A)** Explain Asp.Net page directives. **07**

**B)** What is DataSet? Explain with its advantages. **07**

**Q.5 Answer the following.**

**A)** What is Validation? Explain Custom Validation with suitable example. **07**

**B)** Explain web form events available in ASP.Net with different example. **07**

**Q.6 Answer the following.**

**A)** Explain the term. **07**

a) CheckBox b) ComboBox c) Timer

**B)** What is state management? Explain the role of Application & Session state. **07**

**Q.7 Answer the following.**

**A)** Explain the steps to use a delegate with examples. **07**

**B)** What are abstract classes? Give the characteristics of an abstract class and one example. **07**

**SLR-RG - 353**

| Seat No. | |
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# M.Sc. (Computer Science) (Semester-IV) (New) (CBCS) Examination, 2017
## DISTRIBUTED OPERATING SYSTEM

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

Time: 02.30 PM to 5.00 PM

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

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

1) The _____ allows hundreds of machines within a building to be connected in such a way that small amount information can be transferred between machines milliseconds.
   a) Switch based multiprocessor
   b) File Transfer Protocol
   c) Local Area Network
   d) Bus based multiprocessor

2) _____ are loosely coupled software on loosely coupled hardware.
   a) Network Operating System
   b) Operating system
   c) Distributed systems
   d) None of these

3) _____ is an agreement between the communicating parties on how communication is to proceed.
   a) Acknowledgment b) Protocol
   c) Security d) Directory server

4) If send is _____, it returns the control to the caller immediately, before the message is being sent.
   a) Blocking b) Adhesive
   c) Compressive d) Non-blocking

5) A technique is called _____, when a packet is sent to one of the group addresses; it is automatically delivered to all machines listening to the address.
   a) Broadcasting b) Uni-casting
   c) Multicasting d) Point to Point

6) A _____ property means that, if the system has some invariants that must always hold, if they held before the transactions, they will hold afterward too.
   a) Isolated b) Atomicity c) Durable d) Consistent

7) A processor allocation strategy called _____, in this process once placed on a machine stays there until it get terminates.
   a) Migratory b) Stable allocation
   c) Non-migratory d) Remote Procedure call

8) UTC stands for _____. It is a basis of all modern civil timekeeping.
   a) Uniform Time Clock
   b) Universal Time Clock
   c) Uniform Coordinated Time
   d) Universal Coordinated Time.

9) The _____ is a specification of what the file system offers to its client.
   a) File importer b) File Server
   c) File Service d) File Control Block

10) From computer's point of view, the _____ is the program most intimately involved with the hardware. In this context, we can view _____ as a resource allocator.
   a) Computer Architecture b) ALU unit
   c) Operating System d) None of these

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

1) Data sharing allows user to share expensive peripherals like color printers.
2) In tightly coupled system, the inter-machine message delay is large and data rate is low.
3) The telephone is a connection-oriented communication system.
4) When open groups are used, any member process in the system can send message to any group member.

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

1) Lamport's Happens-Before relation
2) Atomic Transactions

**B) Answer the following.** **06**

1) What do you mean by Client and Server?
2) Define the term Multithreading.

**Q.3 Answer the following.**

**A)** What is mean by System Model? Discuss registry based algorithm for finding and using an idle workstations. **07**

**B)** State and explain in detail comparison of MS-windows NT and **07**

Novel Netware.

**Q.4 Answer the following.**

**A)** What do you mean by Multi-computers? State and explain in detail advantages and disadvantages of Distributed OS? **07**

**B)** Discuss in detail Distributed algorithm for Mutual Exclusion in Distributed OS. **07**

**Q.5 Answer the following.**

**A)** What do you mean by Process? Discuss in detail different kinds of thread usage. **07**

**B)** State and explain in detail scheme of various Election algorithms with suitable examples. **07**

**Q.6 Answer the following.**

**A)** What do you mean by Virtual Memory? Discuss principle of demand paging to efficiently handle page fault in system. **07**

**B)** Discuss in detail working mechanism of Remote Procedure Call with suitable example? **07**

**Q.7 Answer the following.**

**A)** What do you mean by False Deadlock? Discuss in detail centralized deadlock detection with suitable example. **07**

**B)** What do you mean Distributed File System? Discuss in details characteristics file service interface. **07**

| Seat No. | |
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# M.Sc. (Computer Science) (Sem IV) (New) (CBCS) Examination, 2017
## Data Mining and Warehouse

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

Time: 02.30 PM to 5.00 PM

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

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

1) Query tools and data mining tools are _____.
   a) Same b) different c) complementary d) standard

2) In K – nearest neighbour the input is translated to _____.
   a) Values
   b) Points in multidimensional space
   c) Strings of characters
   d) Nodes

3) _____ is a mining tool from integral solutions.
   a) WEKA b) web miner c) rapid miner d) clementine

4) The _____ is one of the operation research techniques.
   a) Associate rules b) K-nearest neighbour
   c) Decision tress d) Genetic algorithm

5) Metadata is used by the end users of_____.
   a) Managing database b) Structuring database
   c) Querying purposes d) Making decisions

6) SQL stands for _____.
   a) Simple query language
   b) Structured query language
   c) Strong query language
   d) Simple language

7) Association rules are always defined on _____.
   a) Binary attribute
   b) Single attribute
   c) Relational database
   d) Multidimensional attribute

8) _____ analysis divides data into groups that are meaningful, useful, or both.
   a) Cluster b) Association c) Classification d) Relation

9) Which of the following is the not a type of clustering?
a) K-means b) Hierarchical c) Partitional d) Splitting

10) The goal of data mining is _____.
a) To explain some observed event or condition
b) To confirm that data exists.
c) To analyze data for expected relationships.
d) To create a new data warehouse.

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

1) The operational data are used as a source for the data Warehouse.
2) Data Integration is not the process of combining multiple data Sources.
3) Data mining is used to extract the data patterns.
4) Pattern recognition is used to identify and classify the patterns.

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

1) Trends in data mining
2) Data Transformation

**B) Answer the following.** **06**

1) What is data Cleaning? Explain it.
2) State and Explain in short issues regarding with classifications.

**Q.3 Answer the following.**

**A)** Describe the various data mining primitives. **07**

**B)** Explain the multilevel association rules from transactional databases. **07**

**Q.4 Answer the following.**

**A)** Explain the procedure in Bayesian classification method with example. **07**

**B)** What is data cube? Explain different forms of multidimensional data model. **07**

**Q.5 Answer the following.**

**A)** Define data warehouse? Explain the difference between OLTP and OLAP. **07**

**B)** What is clustering? Explain Agglomerative and divisive hierarchical clustering. **07**

**Q.6 Answer the following.**

**A)** Explain OLAP operations with example. **07**

**B)** Define Data Mining. Explain their need and applications with examples. **07**

**Q.7 Answer the following.**

**A)** How to extract the rules from a decision tree? Explain. **07**

**B)** Explain K-means algorithm in detail. **07**

| Seat No. | |
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# M.Sc. (Computer Science) (Sem IV) (New) (CBCS) Examination, 2017
## Soft Computing

Day & Date: Monday, 24-04-2017 Max Marks: 70

Time: 02.30 PM to 5.00 PM

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

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

1) To generate the output of a neuron, the weighted sum is passed through a non-linear filter known as _____
   a) Squash function b) Transfer function
   c) Activation function d) All the above

2) A single layer neural network contains _____ layer.
   a) One input, one hidden, one output
   b) One input, one output
   c) Only one
   d) Input cum hidden, output

3) When input for a neuron is between 0 and 1 and the transfer function used is hard limiter, what is the output?
   a) 0 b) 1
   c) linear between 0 and 1 d) non-linear between 0 and 1

4) A set $A$ in $\mathbb{R}^n$ is called convex iff, for every pair of points $r = \langle r_i | i \in \mathbb{N}_n \rangle$ $and$ $s = \langle s_i | \in \mathbb{N}_n \rangle$ in $A$ and every real number $\lambda \in [0,1]$, the point t = _____
   a) $\langle \lambda r_i + (1-\lambda)s_i | \, i \in \mathbb{N}_n \rangle$
   b) $\langle \lambda r_i + (1+\lambda)s_i | \, i \in \mathbb{N}_n \rangle$
   c) $\langle (1-\lambda) r_i + \lambda s_i | \, i \in \mathbb{N}_n \rangle$
   d) $\langle (1+\lambda) r_i + \lambda s_i | \, i \in \mathbb{N}_n \rangle$

5) Let R be a binary relation between two fuzzy sets X and Y, given as:
   $R(X,Y) = \begin{bmatrix} .3 & 1 & .7 \\ .5 & 0 & .2 \\ .1 & .4 & .6 \end{bmatrix}$ The range of R is _____
   a) $[.1 \quad 0 \quad .2]$ b) $\begin{bmatrix} .3 \\ 0 \\ .1 \end{bmatrix}$ c) $[.5 \quad .4 \quad .7]$ $d)$ $\begin{bmatrix} .7 \\ .5 \\ .6 \end{bmatrix}$

6) $\alpha \geq \beta$ implies _____
   a) ${}^{\alpha}A \geq {}^{\beta}A$ b) ${}^{\alpha}A \leq {}^{\beta}A$ c) ${}^{\alpha}A \supseteq {}^{\beta}A$ d) ${}^{\alpha}A \subseteq {}^{\beta}A$

7) Let $A$ be a fuzzy set defined on *X* and any number $\alpha \in [0,1]$, the $\alpha$-cut, ${}^{\alpha}A$ is expressed as _____ and ${}^{\alpha}A$ is a _____set.
   a) $\{x | A(x) \geq \alpha\}$, crisp b) $\{x | A(x) \geq \alpha\}$, fuzzy

c) $\{x|A(x) > \alpha\}$, crisp  d) $\{x|A(x) \geq \alpha\}$, fuzzy

8) The relationship "*is sibling of*" is _____
(i) reflexive (ii) Symmetric (iii) Transitive
a) (i) and (ii) b) (i) and (iii)
c) (ii) and (iii) d) (i), (ii) and (iii)

9) A distributed genetic algorithm is one of the _____ search techniques.
a) Guided random b) Calculus based
c) Enumerative d) Sequential genetic algorithm

10) If $P_m$ = 0.3, which of the following is correct after mutation of 11001 10101?
a) 10101 10101 b) 11001 11001
c) 00001 10101 d) 11010 00101

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

1) The Unipolar sigmoidal activation function is expressed as ___
2) A fuzzy set A on $\mathbb{R}$ is said to be convex iff _____ for all $x_1, x_2 \in \mathbb{R}$ *and all* $\lambda \in [0,1]$.
3) *t-conorm* is another name of _____ operation of fuzzy sets.
4) _____is the degree to which the better individuals are selected during the evolution process of genetic search.

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

1) Hidden layer computation in multilayer perceptron.
2) Prove that every fuzzy complement has at most one equilibrium.

**B) Answer the following.** **06**

1) Let $A(x)$ is a fuzzy set expressed as below. What is $\cdot^4 A$?

$$A(x) = \begin{cases} 1 & \text{when } x \leq 4 \\ \frac{(7-x)}{3} & \text{when } 4 < x < 7 \\ 0 & \text{when } x \geq 7 \end{cases}$$

2) Give example of extension principle.

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

**A)** What is different activation functions used in neural network computation? Discuss each with graph.
**B)** Solve the XNOR non separable problem by combining perceptrons.

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

**A)** Derive expression for gradient of weight matrix ($\Delta W$) using steepest descent method.
**B)** Consider the fuzzy sets $A, B$ *and* $C$ defined on the interval $X = [0,10]$ of real numbers by the membership grade functions.

$$A(x) = \frac{x}{x+2}, B(x) = 2^{-x}, C(x) = \frac{1}{1+10(x-2)^2}$$

Determine mathematical equations and draw graphs of the membership grade functions of each of the following sets:
$\bar{A}, \bar{B}, \bar{C}$

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

**A)** Describe the fundamental properties of crisp set operations.

**B)** Let P=$\begin{bmatrix} .5 & .9 & .2 \\ .1 & .4 & .8 \\ .7 & .2 & 0 \end{bmatrix}$, $Q$=$\begin{bmatrix} .1 & 0 & .6 & .1 \\ .3 & .5 & .1 & .4 \\ 0 & .9 & .5 & .9 \end{bmatrix}$, find the following:

1) Domain, Range and Height of P and Q,
2) Standard composition, Sagittal diagram and membership matrix for P and Q.

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

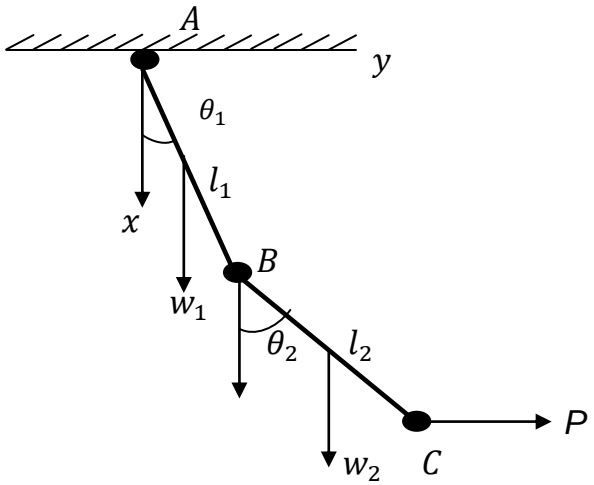
**A)** Describe the seven Axioms of fuzzy t – conorms with suitable examples.

**B)** Find R, equivalence class of R(X, X) with respect to x and X/R for the following:
Let X=[1, 2, 3, ……, 50] and R(X,X) = {<x, y> l x and y are even and divisible by 5}.

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

**A)** Discuss binary encoding method using knapsack problem.

**B)** Two uniform bars are connected by pins at *A* and *B* and supported at *A*. A horizontal force *P* acts at *C*. knowing the force, length of bars and its weight determine the equilibrium configuration of the system if friction at all joints are neglected, $0 \leq \theta_1, \theta_2 \leq 90$.




Randomly generated 8-bit strings representing angles $\theta_1 and\ \theta_2$ are:
0000 0010
0011 0011
0100 0101
0101 1000
0110 1001
1000 1010
1010 1011
1101 1110
Compute fitness function given following parameters:
P=2, $W_1 = 2$, $W_2 = 1$, $l_1 = 5$, $l_2 = 1$

| Seat No. | |
|---|---|

# M.Sc. (Computer Science) (Semester – IV) (New)
# (CBCS) Examination, 2017
# .NET TECHNOLOGY

Day & Date: Saturday, 29-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

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

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

1) Default scripting language in ASP
   a) EcmaScript b) VBScript c) PERL d) JavaScript

2) File extension used for ASP.NET files.
   a) .web b) .ASP c) .ASPX d) None of the above

3) Which of the following character ends every C# statement?
   a) Period (.) b) Colon (:) c) Semicolon (;) d) Comma(,)

4) ASP. NET is
   a) Windows application b) Web application
   c) Consol application d) All the above

5) From which of these classes, the character based output stream class Stream Writer is derived?
   a) TextWrite b) TextReader
   c) Character Stream d) All of the mentioned

6) Which of these classes contains only floating point functions?
   a) Math b) Process c) System d) Object

7) Which of these methods of class String is used to separate a substring from a String object?
   a) Substr () b) Substring ()
   c) substring() d) none of the mentioned

8) Which of these methods of class are used to remove the leading and backward whitespaces?
   a) starts With() b) trim() c) Trim() d) do Trim()

9) Which of the following are parts of the .NET Framework?
   1) The Common Language Runtime (CLR)
   2) The Framework Class Libraries (FCL)
   3) Microsoft Published Web Services
   4) Applications deployed on IIS
   5) Mobile Applications
      b) Only 1,2,3
      c) Only 1,2
      d) Only 1,2,4
      e) Only 4,5

10) What is the use of try & catch?
   a) It is used to manually handle the exception
   b) It helps to fix the errors
   c) It prevents automatic terminating of the program in cases when an exception occurs
   d) All of the mentioned

**B) Fill in the Blanks** **04**

1) _____ is a property common to every validation control.
2) _____ is first method that is fired during the page load.
3) All comparison operators return _____ type value.
4) _____ is the data type return in IsPostback property.

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

i) Reflection
ii) Boxing and unboxing

**B) Answer the following:** **06**

i) Explain CLR
ii) Explain global.asax.

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

**A)** What is nesting of master page and explain with an example?
**B)** What is Validation? Explain Custom Validator, ValidationSummary.

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

**A)** Explain the differences between ASP and ASP. Net applications.
**B)** What is State management? Explain Application in ASP.NET?

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

**A)** What is method overriding? Explain with example
**B)** What is namespace? Explain how to create namespace with example.

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

**A)** What is method overriding? Explain with.
**B)** Explain AutoPostBack and runat properties with example?

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

**A)** Differentiate in between ASP and ASP.NET
**B)** Write C# program to find maximum and minimum number from an array.

**SLR-RG-816**

| Seat No. | |
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# M.Sc.(Computer Science) (Semester - III) (Old) (CGPA) Examination, 2017
## Modeling and Simulation

Day & Date: Tuesday, 25-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

***Instructions :***

*1) Q.1 and Q.2 are compulsory*
*2) Attempt any Three Questions from Q.3 to Q.7*
*3) Figures to the right indicate full marks.*
*4) Use of simple or scientific calculator is allowed.*

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

1) In queue model completely specified in the symbolic form (a/b/c):(d/e), the third symbol 'c' specifies…..
   A) The number of customers arrive
   B) The number of servers
   C) The distribution of arrivals
   D) The distribution of departure

2) Repetition of n independent Bernoulli trial reduces to ….
   A) Poisson distribution
   B) Binomial distribution
   C) Hypergeometric distribution
   D) Geometric distribution

3) If small order are placed frequently (rather than placing large orders infrequently), then total inventory cost is……
   A) Reduced B) Increased
   C) Either reduced or increased D) Minimized

4) When there are more than one servers, customers behavior in which he moved from one queue to another is….
   A) Balking B) Jockeying
   C) Reneging D) Alternating

5) The abbreviation CPM stands for….
   A) Critical Path Method
   B) Crash Project Management
   C) Critical Project Management

D) Critical Path Management

6) Multiple servers may be…..
   A) In parallel
   B) In series
   C) In combination of parallel and series
   D) All of the above

7) For …… distribution, mean and variance are the same.
   A) Binomial distribution
   B) Bernoulli distribution
   C) Poisson distribution
   D) None of these

8) State j is accessible to state i, if there exists a finite positive integer n such that…
   A) $P_{ij}^{(n)} > 0$
   B) P ij (n)=0
   C) $P_{ij}^{(n)} < 0$
   D) None of these

9) Simulations of systems in which the state changes smoothly or continuously with time are called……
   A) Continuous systems
   B) Discrete systems
   C) Both (A) and (B)
   D) None of these

10) As simulation is not an analytical model, therefore result of simulation must be viewed as…..
   A) Unrealistic
   B) Exact
   C) Approximation
   D) Simplified

**B) State True of False** **04**

1) Arrival or departure of a customer in a queue is an event.
2) Deterministically generated numbers which appear to be random are called pseudorandom numbers.
3) Time gap between placing an order and its actual arrival in the inventory is known as lead time.
4) Bernoulli distribution is a particular case of Poisson distribution.

**Q.2 A) Answer the following** **08**

1) Define continuous uniform distribution. State its cumulative distribution function.
2) What are advantages and disadvantages of simulation?

**B) Answer the following:** **06**

1) Write a note on queue configuration.
2) Define geometric distribution and fine P(X=1) if X follows geometric distribution with parameter p=0.2

**Q.3 Answer the following** **7+7**

A) Explain the generation of a random sample from exponential

distribution.

B) The demand rate for a particular item is 12000units/year. The ordering cost of Rs.1000 per order and the holding cost is Rs.0.80 per month. If no shortage are allowed and the replacement is instantaneous, determine-
i) Economic Order Quantity
ii) Number of order per year

**Q.4 Answer the following** **7+7**

**A)** Explain the pure birth process.

**B)** A project schedule has the following activities and the time (in weeks) of completion of each activity is as follows :

| Activity | 1-2 | 2-3 | 2-5 | 3-4 | 3-5 | 4-5 |
|---|---|---|---|---|---|---|
| Time | 10 | 5 | 8 | 11 | 7 | 4 |

Draw the network diagram and find the minimum time of completion of the project, slack times for each activity and critical path.

**Q.5 Answer the following** **7+7**

A) Differentiate between PERT and CPM.

B) Give the steps of Monte-Carlo simulation technique.

**Q.6 Answer the following** **7+7**

A) Describe any two tests to check randomness of the numbers.

B) Describe briefly the EOQ concept.

**Q.7 Answer the following** **7+7**

A) Generate a random sample of size 5 from binomial distribution with parameters n=8, p=0.4 using the sequences of random numbers 0.2355, 0.3654, 0.9585, 0.6855, 0.4658.

B) Explain briefly the important characteristics of queuing system.