Seat No.

M.C.A. – I (Semester – I) Examination, 2015
COMPUTER SCIENCE (New)
Introduction to Computers

Day and Date : Wednesday, 15-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

1) Printer is _____ device.

   A) Input   B) Output

   C) Both A) and B)   D) None of these

2) Which of the following is not a computer functional block ?

   A) Analog to digital converter

   B) CPU

   C) Memory

   D) Input/output device

3) Which of the following is not a computer bus ?

   A) Data bus   B) Control bus

   C) Address bus   D) Timer bus

4) DMA is particularly suited for data transfer between the _____

   A) Disk drive and CPU

   B) Disk drive and I/O

   C) Disk drive and RAM

   D) Disk drive and ROM

5) ALU stands for

   A) Arithmetic Logic Unit

   B) Array Logic Unit

   C) Application Logic Unit

   D) None of above

6) Which device is used as the standard pointing device in a Graphical User Environment ?

   A) Keyboard   B) Mouse   C) Joystick   D) Trackball

7) Which is the type of memory for information that does not change on your computer ?

   A) RAM   B) DRAM

   C) ERAM   D) RW/RAM

8) Keyboard converts typed in character to _____ code.

   A) EBCIDIC   B) ASCII

   C) Decimal   D) Binary

9) _____ unit control the operation of CPU.

   A) ALU   B) RAM   C) CU   D) BU

10) Which of the following is not OS ?

   A) Android   B) MAC   C) Samsung   D) LINUX

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

   1) An intranet is a public network and an extranet is a private network.

   2) These computers are arranged from least powerful to most powerful : microcomputer, minicomputer, mainframe and supercomputer.

   3) The octal number system has base 16.

   4) Unix is a single user operating system.

2. A) Write a short note on following :   8

   i) Storage device

   ii) Assembler

B) Answer the following :   6

   i) What is input device ? Explain with example.

   ii) Give the features of super computer.

3. Answer the following :

   A) What is software ? Explain different types of software with example. **7**

   B) What is computer network ? Explain LAN and WAN. **7**

4. Answer the following :

   A) Describe the architecture of computer system with well labeled diagram. **6**

   B) Convert the following decimal number into binary number : **8**

      i) 25

      ii) 42

      iii) 428

      iv) 100.

5. Answer the following :

   A) What is assembly language ? Explain advantages and disadvantages of assembly language. **7**

   B) Define operating system. Explain the need of operating system. **7**

6. Answer the following :

   A) Explain any four Internal DOS commands with suitable example. **8**

   B) What is internet ? Explain various applications of internet. **6**

7. Answer the following :

   A) Describe the features of MS-Word. **7**

   B) Explain the procedure of data sorting in Excel sheet with suitable example. **7**

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Seat No.

M.C.A. – I (Semester – I) Examination, 2015
COMPUTER SCIENCE (Old)
Management – I

Day and Date : Friday, 24-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.*

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

   1) Bank Account is a _____
      a) Personal Account   b) Real Account
      c) Nominal Account   d) Intangible Asset Account

   2) Nominal Account is relating to _____
      a) Total Liabilities   b) Total Assets
      c) Income and Expenditure   d) None of the above

   3) In a market skimming, price of the new product is
      a) high   b) low   c) average   d) discriminative

   4) Computer is a _____
      a) Current Asset   b) Fixed Asset
      c) Fictitious Asset   d) None of the above

   5) Contribution means _____
      a) Sales Plus Variable Cost b) Sales Minus Variable Cost
      c) Sales Plus Fixed Cost   d) Sales Minus Fixed Cost

   6) CPM stands for _____
      a) Correct Path Method   b) Correct Pay Method
      c) Critical Pay Method   d) Critical Path Method

P.T.O.

7) B.E.P. means
   a) Break Even Point
   b) Break Even Path
   c) Break Even Procedure
   d) Break Even Programme

8) Capital means _____
   a) Amount introduced in business to start the business
   b) Amount withdrawn from business
   c) Amount denoted to the outsiders
   d) None of the above

9) MIS stands for _____
   a) Monetary Information System
   b) Marketing Information System
   c) Machinery Information System
   d) None of the above

10) Profit and Loss Account shows _____
   a) Total Assets
   b) Total Liabilities
   c) Net Profit or Net Loss
   d) Total Capital

B) State the following statements **True** or **False** :   **4**

   i) Narration is compulsory in Ledger Account.

   ii) Petty Cash Book is maintained by main cashier.

   iii) Cost centre and cost units are the same.

   iv) Variable cost tends to increase or decrease as the output or volume of production changes.

2. A) Write short notes on the following :   **8**

   i) Product Life Cycle

   ii) Objectives of Advertising.

B) Answer the following :   **6**

   i) Four P's and four C's in marketing.

   ii) Selecting a pricing method in marketing.

3. Answer the following : **14**

   A) From the following particulars prepare Columner Petty Cash book of Mr. Suryakant for the period given below :
   2013
   Jan. 1   Petty Cash in hand Rs. 115. received cash from chief cashier to make up an imprest of Rs. 200.
   "   1   Bough postal stamps for Rs. 25.
   "   2   Paid for computer printer ribbon Rs. 30.
   "   3   Paid for railway fare Rs. 73 and gave Rs. 7 to proprietor for his personal use.
   "   4   Paid for tea Rs. 15, paid charity Rs. 11 and Stationery for Rs. 14.
   "   5   Paid cleaner's wages Rs. 20

   B) Define Journal and Ledger and its uses for the business.

4. Answer the following : **14**

   A) What is selection ? Explain the selection process generally adopted.

   B) Define training. Explain the need and advantages of training.

5. Answer the following : **14**

   A) The following information is obtained from SV Ltd. in a certain year :
   Sales 4.00 lacs
   Variable cost 2.40 lacs
   Fixed cost 1.20 lacs
   Calculate :
    i) P/V Ratio
   ii) What would be the sales volume to realise a profit of Rs. 80,000.

   B) MNO Co. producing single product has budgeted the following costs to make and sell over its normal operating range.

Unit Sold	Total Cost
10,000	Rs. 80,000
8,000	Rs. 68,000

   Sales price is Rs. 10 per unit.
   Determine :
    i) P/V Ratio
   ii) BEP in Sales Value.

6. Answer the following : **14**

A) Journalise the following transactions in the books of Mr. Pyarelal for the month of April 2013 :

   2013

   April 1   Started business with cash Rs. 50,000 and computer Rs. 35,000.

   "   3   Opened bank account with Rs. 10,000.

   "   4   Rent paid to Sunil (landlord) Rs. 4,000.

   "   10   Carriage paid for goods Rs. 2,700.

   "   18   Cash withdrawn from bank for personal use Rs. 1,500.

   "   22   Goods sold on credit to Mr. Anil for Rs. 8,000 allowing trade discount @ 3%.

   "   30   Cash received from Mr. Anil towards full settlement of transaction dated 22nd.

B) Following figures are extracted from the books of PQR Ltd. as on 31-3-2013. You are requested to prepare Balance Sheet as on 31-3-13 and determine the amount of capital.

	Rs.		Rs.
Cash in hand	1,400	Net Profit	18,400
Cash at Bank	3,000	Drawings	12,000
Closing Inventory	37,600	Bills Receivable	11,400
Debtors	20,000	Machinery	18,000
Furniture	12,000	Prepaid Insurance	200
Creditors	47,000		
Outstanding Expenses	200		

7. Answer the following : **14**

A) What is GAAP ? Explain consistency and conservatism in detail.

B) Explain the need for supply chain management.

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Seat No.

M.C.A. (Semester – II) (New) Examination, 2015
COMPUTER SCIENCE
Object Oriented Programming Using C++

Day and Date : Thursday, 16-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

   1) Which function is used to set the width of a variable ?
      a) width( )   b) weedth( )
      c) setwidth( )   d) setweedth( )

   2) The words which has predefined meaning are called as
      a) Reverse words   b) Predefined words
      c) Keywords   d) Winwords

   3) Strings are
      a) Set of characters   b) Set of Symbols
      c) Set of digits   d) None of these

   4) '>>' operator is called as
      a) Extraction operator   b) Insertor operator
      c) Relational operator   d) Arithmetic operator

   5) The _____ are the basic run time entities in an OOP.
      a) Class   b) Polymorphism
      c) Object   d) Inheritance

   6) Conditions are joined with the help of
      a) Logical operator   b) Relational operator
      c) Unary operator   d) Shift operator

7) In C++, Function should

   a) Return a value

   b) Not return a value

   c) Pass at least one argument

   d) None of these

8) How many types of inheritance is exist in C++ ?

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

9) Pointer variables are used to store the

   a) value   b) address

   c) key   d) none of these

10) In Multi level Inheritance, How many base and derived classes are created ?

   a) One base and one derived

   b) One base and more than one derived

   c) More than one base and only one derived

   d) More than one base and more than one derived

B) Fill in the blanks or **true/false** :   **4**

1) In C++, a function contained within a class is called a member function.

2) A function template can have more than one template argument.

3) In a class, we cannot have more than one constructors within the same class.

4) Data member in a class must be declared private.

2. A) Write short notes on the following :   **8**

  i) Friend function

  ii) Dynamic binding.

B) Answer the following : **6**

i) Describe briefly the concept of Template.

ii) List some special properties of Constructor.

3. Answer the following : **14**

A) Write a program in C++ to demonstrate static data member.

B) What is Manipulator ? Discuss the manipulators used in C++ with example.

4. Answer the following : **14**

A) Define a class Library with Accno, Bookname, Author, pub as data members and libinfo as member function. Write a code to accept book information and display that information.

B) How does copy constructor works ? Explain.

5. Answer the following : **14**

A) Describe Function overloading with suitable example.

B) Explain unformatted I/O functions used in C++.

6. Answer the following : **14**

A) How exceptions are handled in C++ ? Discuss.

B) Describe the Basic concepts of object oriented programming.

7. Answer the following : **14**

A) Write a program in C++ to demonstrate Multilevel Inheritance.

B) What is virtual function ? Explain with suitable example.

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Seat	
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M.C.A. (Semester – II) (New) Examination, 2015
COMPUTER SCIENCE
Data Structures

Day and Date : Saturday, 18-4-2015   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.*

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

   1) Which are not primitive data types ?

     a) Float   b) Integer

     c) Arrays   d) All of the above

   2) Which data structure is used to store homogeneous types ?

     a) Stacks   b) Arrays

     c) Both a) and b)   d) None of the above

   3) What is the complexity of the following code expressed in O( ) notation ?
      If more than one answer is correct, choose the smallest one.

     for (int j = n; j > 0; j--) {

     for (int k = 1; k < j; k = k+k) {

     cout << j+k << " ";}

     cout << endl;}

     a) O(log n)   b) O(n)

     c) O(n log n)   d) O(n2)

4) Is this a binary search tree ?

```
      55
      / \
    17   60
    / \   / \
   5 20 42 105
   / \\
   3 9 55
```
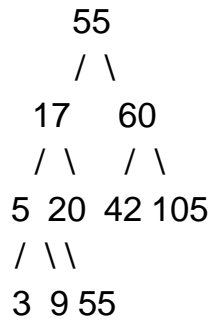
   a) Yes   b) No

5) How many times is the symbol '#' printed by the call foo(4) ?

   void foo (int i) {

   if (i > 1) {

   foo (i/2) ; foo (i/2);

   } cout << "#" ;

   }

   a) 3   b) 4   c) 7   d) 8

6) Which of the following statements about binary trees is NOT true ?

   a) Every binary tree has at least one node

   b) Every non-empty tree has exactly one root node

   c) Every node has at most two children

   d) Every non-root node has exactly one parent

7) Two dimensional arrays are also called

   a) Tables arrays   b) Matrix arrays

   c) Both of above   d) None of above

8) A data structure where elements can be added or removed at either end but not in the middle

   a) Linked lists   b) Stacks

   c) Queues   d) Deque

9) Binary search algorithm can not be applied to

   a) sorted linked list   b) sorted binary trees

   c) sorted linear array   d) pointer array

10) Which of the following is not the required condition for binary search algorithm ?

   a) The list must be sorted

   b) There should be the direct access to the middle element in any sublist

   c) There must be mechanism to delete and/or insert elements in list

   d) None of above

B) Fill in the blanks or **true/false** :   **4**

1) Step by step procedure used to solve problem is called _____

2) A list of elements is called as _____

3) Data structures are classified as _____ and _____ data structure.

4) In Stack an insertion operation is called as _____

2. A) Write short notes on the following :   **8**

   i) Primitives and composite data types.

   ii) Explain the need of Structure with an example.

B) Answer the following :   **6**

   i) How does an array differ from an ordinary variable ?

   ii) Write a short note on abstract data type.

3. Answer the following :   **14**

A) Differentiate between linear and non-linear data structure.

B) Write a short note on asymptotic notations.

4. Answer the following : **14**

   A) Distinguish between best, worst and average case complexities of an algorithm.

   B) Write an algorithm for insert and delete operation in array.

5. Answer the following : **14**

   A) Explain sparse matrix. What are the benefits of the sparse matrix ?

   B) Write an algorithm to search element in array.

6. Answer the following : **14**

   A) Explain Stack with its example.

   B) Write short note on Priority Queue.

7. Answer the following : **14**

   A) Explain traversal technique of binary tree.

   B) Explain application of binary tree.

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Seat No.

M.C.A. – I (Semester – II) (Computer Science) Examination, 2015
NUMERICAL ANALYSIS (New)

Day and Date : Tuesday, 21-4-2015   Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

Instructions :   i) Questions No. **1** and **2** are **compulsory**.
ii) Attempt **any three** questions from Q. No. **3** to Q. No. **7**.
iii) Figures to the **right** side indicate the **full** marks.

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

    i) The relative error of the number 8.6 if both of its digits are correct
       a) 0.0058   b) 0.006   c) 0.0043   d) .005

    ii) The root of the equation x + logx = 2 lies between
       a) (1, 2)   b) (0, 1)   c) (2, 3)   d) None

    iii) Newton-Rapson's method is based on
       a) Rolle's theorem
       b) Cauchy mean value theorem
       c) Taylor's theorem
       d) None

    iv) Interpolation is technique to find out the value of f(x) at a point in between the points at which the value of a function
       a) is not given   b) have been given
       c) is zero   d) none

    v) Trapezoidal rule given correct value only if
       a) f(x) is a linear function   b) *h* is small
       c) both (a) and (b)   d) none

    vi) Gauss-Seidal method is an improvement over
       a) Gauss-elimination method   b) Crout's method
       c) Jacobi method   d) None

P.T.O.

vii) The matrices A and A' have the same eigen values with
   a) Same eigen vectors
   b) Different eigen vectors
   c) All positive vectors
   d) None

viii) In Simpson's $\frac{1}{3}$ rd rule number of intervals is
   a) odd
   b) even
   c) may be both (a) and (b)
   d) none

ix) The largest eigen value of the matrix $\begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ is
   a) 4
   b) 2
   c) 0
   d) 1

x) $\nabla^2 y_3$ is equal to
   a) $\nabla y_3 - \nabla y_2$
   b) $\nabla y_2 - \nabla y_3$
   c) $\nabla^2 y_2 - \nabla^2 y_3$
   d) none

B) State the following are **true** or **false** : **4**

   i) Newton's forward difference interpolation formula is according to the suitability lies in the middle.

   ii) Set of eigen values is called spectrum.

   iii) Trapezoidal rule is numerical integration formula for equidistant.

   iv) Finite difference are of two types.

2. A) Write a short note on the following : **8**

   i) Finite difference.

   ii) Newton's general interpolation formula.

   B) Answer the following : **6**

   i) Explain the method of false position.

   ii) Explain the power method for largest eigen value.

3. Answer the following : **14**

   A) Explain the error in series approximation.

   B) Find the root of the equation $x^3 - 2x - 5 = 0$ using Secant method.

4. Answer the following : **14**

    A) Describe Lagrange's interpolation formula.

    B) Using Newton's backward interpolation formula estimate f(7.5) for the following table :

x	1	2	3	4	5	6	7	8
y = f(x)	1	8	27	64	125	216	343	512

5. Answer the following : **14**

    A) Find the interpolating polynomial for the function f(x) given by

x	0	1	2	5
f(x)	2	3	12	147

    B) Using Lagrange's interpolation polynomial fitting the points $y(1) = -3$, $y(3) = 0$, $y(4) = 30$, $y(6) = 132$. Hence find $y(5)$.

6. Answer the following : **14**

    A) Describe the Gauss-Seidal method.

    B) Use the Gaussian-elimination method to find the inverse of the matrix

$$A = \begin{bmatrix} 1 & 1 & 1 \\ 4 & 3 & -1 \\ 3 & 5 & 3 \end{bmatrix}.$$

7. Answer the following : **14**

    A) Find the approximate value of $y = \int_0^\pi \sin x \, dx$ by using Trapezoidal rule. Calculate the percentage error from its true value.

    B) Using Taylor's series method, find the solution of the initial value problem $\frac{dy}{dx} = t + y, y(1) = 0$, at t = 1.2 with h = 0.1 and compute the result with the closed form solution.

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Seat No.

M.C.A. (Part – I) (Semester – II) (New) Examination, 2015
COMPUTER SCIENCE
Operating System

Day and Date : Thursday, 23-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

Instructions : I) Q. **1** and Q. **2** are **compulsory** questions.
       II) Attempt **any three** questions from Q. **3** to Q. **7**.
       III) Figures to the **right** indicate **full** marks.

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

    1) The _____ is responsible for resource allocation and de-allocation in a computer system.
      a) Resource supervisor   b) Operating system
      c) Allocation Algorithm   d) Compiler

    2) A _____ interface is a window system with a pointing device to direct I/O, choose from menus and make selections and a keyboard to enter the text.
      a) Batch   b) Fundamental
      c) Window server   d) Graphical user

    3) The list processes waiting for a particular I/O device is called a _____
      a) Running queue   b) System queue
      c) Device queue   d) Waiting queue

    4) The _____ buffer length is potentially infinite; thus, any number of messages can wait in it.
      a) Unbounded capacity   b) Single capacity
      c) Bounded capacity   d) Zero capacity

    5) The _____ is the module that gives control of the CPU to the process selected by the scheduler and it should be as fast as possible, since it is invoked during every process switch.
      a) Control system   b) Dispatcher
      c) I/O Event Wait   d) Memory Scheduler

6) _____ are also known as mutex locks.

   a) Counting   b) Monitor

   c) Decimal   d) Binary

7) A _____ algorithm is designed especially for time sharing systems and in which small unit of time slice is defined.

   a) Time sharing OS   b) Round Robin

   c) Shortest Job First   d) Priority

8) Path names can be of two types _____ and _____

   a) Absolute path and relative path   b) Directory path and File path

   c) Root path and Subdirectory path   d) Single path and Multiple path

9) The _____ is akin to reader lock in that several processes can acquire the lock concurrently and the _____ behaves like writer lock; only one process at a time can acquire such lock.

   a) Hardware Lock and Exclusive Lock

   b) Shared Lock and Exclusive Lock

   c) System Lock and Shared Lock

   d) Exclusive Lock and Shared Lock

10) A major problem with Priority algorithms is _____

   a) Disk storage   b) Page replacement

   c) Starvation   d) First Come First Serve

B) State **True** or **False** :   **4**

1) A domain is a collection of access rights, each of which is an ordered pair <object-name, rights-set>

2) The distributed system is tightly coupled software on the same loosely coupled hardware.

3) Security violations of the system can be categorized as internal and external fragmentation.

4) A logical memory divided into same sized blocks is called as frame.

2. A) Write a short note :   **8**

   i) Critical Region

   ii) Process Control Block

B) Answer the following :   **6**

   i) Define the term Swapping.

   ii) What do you mean by process suspend and resume ?

3. Answer the following :

A) What is meant by Deadlock ? Discuss in detail necessary conditions that result system caught in deadlock. **7**

B) Discuss in detail system call and components of computer system. **7**

4. Answer the following :

A) What do you mean by race condition ? Discuss in detail Readers-Writers problem. **7**

B) What are the various File Operations ? Explain in detail shortest Seek Time First method with suitable example. **7**

5. Answer the following :

A) Discuss multi-programmed systems and the various types of scheduler in detail. **7**

B) Define the term demand paging ? Discuss the steps to be taken to handle the page fault. **7**

6. Answer the following :

A) What do you mean Cooperative Process ? Discuss in detail how inter-process communication will be made between processes. **7**

B) Calculate the total number of page fault using First Come First Serve (FCFS) Page replacement on following reference string having maximum 03 frames-

1, 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 **7**

7. Answer the following :

A) What is meant by User ? Discuss in detail vital role of Operating System as being control program. **7**

B) Enlist and state various the CPU scheduling Criteria. Discuss working of Shortest Job First algorithm using following data : **7**

P_NAME   P_Burst Time

ABC   18

XYZ   9

PQR   16

LMN   13

STU   25

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Seat	
No.	

M.C.A. – I (Semester – II) (Computer Science) Examination, 2015
SOFTWARE ENGINEERING (New)

Day and Date : Saturday, 25-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

　　1) The first step in Software Development Life Cycle (SDLC)

　　　　A) Preliminary investigation and analysis

　　　　B) System Design

　　　　C) System Testing

　　　　D) Coding

　　2) The detailed study of existing system is referred to as

　　　　A) System Planning

　　　　B) System Analysis

　　　　C) Feasibility study

　　　　D) Design DFD

　　3) White box techniques are also classified as

　　　　A) Design based testing

　　　　B) Structural testing

　　　　C) Error guessing technique

　　　　D) None of above

4) The feature of the object oriented paradigm which helps code reuse is

   A) Object   B) Class

   C) Inheritance   D) Aggregation

5) All the modules of the system are integrated and tested as complete system in the case of

   A) Bottom up testing   B) Top-down testing

   C) Sandwich testing   D) Big-Bang testing

6) The model in which the requirements are implemented by category is

   A) Evolutionary Development Model

   B) Waterfall Model

   C) Prototyping

   D) Iterative Enhancement Model

7) SRD stands for

   A) Software Requirements Definition

   B) Structured Requirements Definition

   C) Software Requirements Diagram

   D) Structured Requirements Diagram

8) Which of the following statements is true

   A) Abstract data types are the same as classes

   B) Abstract data types do not allow inheritance

   C) Classes cannot inherit from the same base class

   D) Object have state and behavior

9) In design phase, which is the primary area of concern ?

   A) Architecture   B) Data

   C) Interface   D) All of the above

10) Purpose of process is to deliver software

    A) In time

    B) With acceptable quality

    C) That is cost efficient

    D) Both A) and B)

B) Fill in the blanks : **4**

1) Incremental model combines elements of _____ and parallel process flows.

2) _____ can be use as a stand-alone process model; it is more commonly used as a technique that can be implemented within the context of any one of the process models.

3) The user interface classes define all abstractions that are necessary for human computer _____

4) The data flow diagram enables you to develop models of the information domain and _____

2. A) Write a short note on the following : **8**

    i) Waterfall model

    ii) Software testing.

   B) Answer the following : **6**

    i) Explain various software components.

    ii) Explain evolving role of software.

3. Answer the following : **14**

   A) Discuss the behavioural model with state representation diagram for control state.

   B) Explain throw-away prototyping and evolutionary prototyping.

4. Answer the following : **14**

   A) What is documentation ? Explain the importance of documentation in systems design.

   B) Discuss the various strategies of design. Which design strategy is most popular and practical ?

5. Answer the following : **14**

   A) What do you mean by Black Box testing ? How you can perform it using boundary value analysis and equivalence partitioning ?

   B) Determine and describe the elements of objects model.

6. Answer the following : **14**

   A) Describe different advantages of interface design with example.

   B) Explain in detail the Process Metrics and Software Process Improvement.

7. Answer the following : **14**

   A) What is quality ? Describe the measures of software quality.

   B) Explain with example size oriented metrics.

_____

Seat
No.

M.C.A. – I (Semester – II) Examination, 2015
COMPUTER SCIENCE (Old)
Data Structures

Day and Date : Saturday, 18-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

   1) Which of the following case does not exist in complexity theory ?

     a) Best case   b) Worst case

     c) Average case   d) Null case

   2) The worst case occur in linear search algorithm when _____

     a) Item is somewhere in the middle of the array

     b) Item is not in the array at all

     c) Item is the last element in the array

     d) Either b) or c)

   3) Which of the following data structure is linear data structure ?

     a) Trees   b) Graphs

     c) Arrays   d) None of the above

   4) The operation of visiting each element in the linked list is known as _____

     a) sorting   b) merging   c) inserting   d) traversal

   5) To represent hierarchical relationship between elements, which datastructure is more suitable ?

     a) Hashing   b) Priority queue

     c) Tree   d) All the above

6) In a graph G = (V, E) if e = (a, b) where a & b ∈ V & e ∈ E, then a & b are called as _____

   a) end points of e   b) adjacent nodes

   c) neighbours   d) all the above

7) An adjacency matrix representation of a graph can not contain information of _____

   a) nodes   b) edges

   c) direction of edges   d) parallel edges

8) An algorithm is made up of two independent time complexities f(n) & g(n). Then the complexities of the algorithm is in the order of _____

   a) f(n) * g(n)   b) Max (f(n), g(n))

   c) Min (f(n), g(n))   d) f(n) + g(n)

9) Which data structure is needed to convert infix notation to postfix notation ?

   a) Branch   b) Queue   c) Tree   d) Stack

10) The goal of hashing is to produce a search that takes _____

   a) 0(1) time   b) $0(n^2)$ time

   c) 0(log n) time   d) 0(n log n) time

B) Fill in the blanks :   **4**

1) The list ( ) is graphically represented as _____

2) Consider that n elements are to be sorted. What is the worst case time complexity of Bubble sort ?

3) The postfix expression of (a + b * e)/f + c is _____

4) Stack operates in _____ manner.

2. A) Write short notes on the following :   **8**

   i) Garbage collection

   ii) Analysis of an algorithm.

B) Answer the following :   **6**

   i) Give a directed tree representation of the following formula :

   (a – b * c) / (d + e /f).

   ii) Define Boolean sum and Boolean product of two matrices with example.

3. Answer the following : **14**

   A) Explain DFS in detail.

   B) Explain different ways of traversing a binary tree with example.

4. Answer the following : **14**

   A) Write a program in C/C++ to implement circular queue using array.

   B) Explain list structures in detail.

5. Answer the following : **14**

   A) What are the different applications of stack ? Explain any one application of stack in detail.

   B) Write an algorithm to insert a new node into an ordered singly linked list.

6. Answer the following : **14**

   A) Define the following terms :

      i) Lexically ordered tree

      ii) Adjacency matrix

      iii) Reachability matrix

      iv) Two-way list

      v) Adjacency list

      vi) Edge list

      vii) Threads.

   B) Explain any one application of linked list in detail.

7. Answer the following : **14**

   A) Explain how two stack can be implemented using single array.

   B) Write an algorithm of linear search technique.

_____

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

   i) The rate of convergence of Bisection method is

      a) Linear b) Faster than linear but slower than quadratic

      c) Quadratic d) Cubic

   ii) Which of the following method is iterative for solving a system of linear algebraic equations ?

      a) Gauss elimination method b) Gauss-Jordan method

      c) Factorization method d) Gauss-Seidel method

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

      x : 2 1 –1

      f(x) : 12 16 24, is

      a) $4x - 20$ b) $x^2 - 2x + 12$ c) $-4x + 20$ d) $3x^2 - 2x + 4$

   iv) The Trapezoidal rule applied to $\int_{1}^{3} f(x)\,dx$ gives the value 8 and Simpson's

      rule gives the value 4. What is $f(2)$?

      a) 2 b) 0 c) 1 d) 3

   v) Which of the following is true for backward difference operator ?

      a) $\nabla^2 f(x) = f(x - 2h) - 2f(x - h) + f(x)$

      b) $\nabla^2 f(x) = f(x - 2h) + 2f(x - h) + f(x)$

      c) $\nabla^2 f(x) = f(x - 2h) - 2f(x - h) - f(x)$

      d) None of these

vi) Let h be the step size for evaluating $\dfrac{dy}{dx}$ = f(x, y) by Euler's method where f(x, y) has continuous derivative up to any order. Then the local truncation error of Euler's method is of the form

    a) $O(h)$ b) $O(h^2)$ c) $O(h^3)$ d) $O(h^4)$

vii) A simplex is an n-dimensional convex polyhedron having exactly

    a) n vertices   b) n + 1 vertices

    c) n+ 2 vertices   d) n^2 vertices

viii) For evaluating $\sqrt[3]{2}$ using Newton-Raphson method, the iterative procedure is

    a) $x_{k+1} = \dfrac{1}{3}\left[x_k + \dfrac{1}{x_k^2}\right], x_0 = 1.25$ b) $x_{k+1} = \dfrac{1}{3}\left[x_k + \dfrac{2}{x_k^2}\right], x_0 = 1.25$

    c) $x_{k+1} = \dfrac{2}{3}\left[x_k + \dfrac{1}{x_k^2}\right], x_0 = 1.25$ d) $x_{k+1} = \dfrac{1}{3}\left[2x_k + \dfrac{2}{x_k^2}\right], x_0 = 1.25$

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

    a) 2   b) –1   c) –2   d) 1

x) The value of f (1.2) using

x :	0	1	2	3
f(x) :	1	1.5	2.2	3.1, is

    a) 1.65   b) 1.52   c) 1.64   d) 1.6

B) Fill in the blanks :   **4**

   i) Degrees of precision of trapezoidal rule for numerical integration is

    _____

   ii) The fourth order divided difference of the polynomial $3x^3 + 11x^2 - 5x + 11$ over the points x = 0, 1, 4, 6 and 7 is _____

   iii) The first order Runge-Kutta method is known as _____

   iv) In dual simplex method, the starting solution of an LPP must be _____

2. A) Write short notes on the following : **8**
    i) Cramer's rule
    ii) Dual simplex method.

   B) i) Round off the number $\pi = 3.1415927$ to five significant figures and determine the associated absolute error, relative error and percentage error. **3**

   ii) Use the bisection method in three stages to find the real root of the equation $x\log_{10} x - 102 = 0$. **3**

3. A) Show that, the convergence of the Newton-Raphson iteration is of order 2. $\left(\text{i.e. } \in_{n+1} \alpha \in_n^2\right)$. **7**

   B) Solve the following system of equations by Gauss Seidel method to obtain the final solution correct to three places of decimals. **7**
   $x + y + 54z = 110$
   $27x + 6y - z = 85$
   $6x + 15y + 2z = 72$.

4. A) State and prove Newton's forward interpolation formula for equidistant arguments. **7**

   B) If $y(1) = 3$, $y(3) = 9$, $y(4) = 30$, $y(6) = 132$, find Lagrange's interpolation polynomial that takes on these values. **7**

5. A) Find the approximate value of $\int_0^{\pi/2} \sqrt{\cos\theta}\ d\theta$ by Simpson's $1/3^{rd}$ rule by dividing $[0,\ \pi/2]$ into 6 equal parts. **7**

   B) Given the data :

x	–2	–1	0	1	2	3
y	0	0	6	24	60	120

   Compute $\left(\dfrac{dy}{dx}\right)_{x=2}$ and $\left(\dfrac{d^2y}{dx^2}\right)_{x=4.5}$. **7**

6. A) Using Modified Euler's method find y at x = 0.2 given $\dfrac{dy}{dx} = 3x + \dfrac{1}{2}y$

   with y(0) = 1 taking h = 0.1. Perform three iterations at each step. **7**

   B) Given that $\dfrac{dy}{dx} = x - y^2$ and the data :

x	0	0.2	0.4	0.6
y	0	0.02	0.0795	0.1762

   Compute y at x = 0.8 by applying Adams-Bash fourth method. **7**

7. A) Use Simplex method to maximize P = 2x + 3y + z subject to the constraints **7**
   x + 3y + 2z ≤ 11
   x + 2y + 5z ≤ 19
   3x + y + 4z ≤ 25
   x ≥ 0, y ≥ 0, z ≥ 0.

   B) Find the dual of the following LPP, solve the dual and hence find the solution to the Primal.

   Minimize $Z = 2x_1 + 9x_2 + x_3$

   Subject to $x_1 + 4x_2 + 2x_3 \geq 5$

   $3x_1 + x_2 + 2x_3 \geq 4$

   $x_1, x_2, x_3 \geq 0.$ **7**

   _____

Seat No.

M.C.A. (Part – I) (Semester – II) Examination, 2015
COMPUTER SCIENCE
Operating System (Old)

Day and Date : Thursday, 23-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

Instructions *: 1) Question No. **1** and **2** are **compulsory.***

*2) Attempt **any 3** questions from Q. No. **3** to **7**.*

*3) Figures to the **right** indicate **full** marks.*

1. A) Fill in the blanks : **10**

1) The_____ controls and coordinates use of hardware among the various application programs for the various users.
   a) Deadlock   b) Instruction register
   c) Dispatcher   d) Operating system

2) As processes enter into system, they are put into a _____ queue, which consists of all processes in the system.
   a) Ready   b) Job
   c) Device   d) None of these

3) Co-operating process require_____ mechanism that will allow them to exchange data and information.
   a) Context switch   b) Process creation
   c) Inter process communication d) None of these

4) _____scheme states that the process that requests the CPU first is allocated the CPU first.
   a) Round Robin   b) First come first serve
   c) Priority scheduling   d) Shortest job first

5) A solution to a problem of indefinite blockage of low priority processes is
   _____

   a) Aging   b) Non preemption

   c) Starvation   d) None of these

6) A physical memory having fixed size blocks called _____

   a) Frame   b) RAM   c) Page   d) WORM

7) A _____ name begins at the root and follows a path down to
   the specified file, giving the directory names on the path.

   a) Relative path   b) Logical path

   c) Absolute path   d) None of these

8) A _____ is a named collection of related information that is
   recorded on secondary storage.

   a) Memory   b) CPU

   c) File   d) None of these

9) The high paging activity is called _____

   a) Dispatch latency   b) Paging

   c) Fragmentation   d) Thrashing

10) The first come, first served scheduling algorithm is _____

   a) Preemptive   b) Smallest next CPU burst

   c) Nonpreemptive   d) None of these

B) State **True** or **False** :   **4**

   1) Protection is a mechanism for controlling the access of processes or user
      to the resources defined by the system.

   2) A single threaded process has one program counter specifying the next
      instruction to execute.

   3) Worst fit allocates smallest hole and produces smallest leftover hole.

   4) Virtual memory involves the separation of logical memory as perceived by
      users from physical memory.

2. A) Write a short notes : **8**

   i) File Attribute and Operations.

   ii) Process Control Block (PCB).

   B) Answer the following : **6**

   i) Briefly explain a concept of swapping.

   ii) What do you mean by semaphore ?

3. Answer the following : **14**

   A) What do you mean by process ? State and explain process state in detail.

   B) State CPU scheduling criteria. Differentiate between Long Term and Short Term Schedulers.

4. Answer the following : **14**

   A) Define Deadlock. Discuss deadlock prevention in detail.

   B) Perform Least-Recently-Used (LRU) page replacement algorithm.

   Reference string : 5, 4, 1, 2, 4, 3, 4, 6, 2, 3, 4, 3, 2, 1.

5. Answer the following : **14**

   A) Define operating system. Explain briefly parallel, distributed and time sharing systems.

   B) Illustrate problem of fragmentation and solution for it.

6. Answer the following : **14**

   A) Discuss producer-consumer problem of synchronization.

   B) Define demand paging. Discuss various steps involved in handling page fault.

7. Answer the following : **14**

   A) State and explain various directory structures.

   B) Perform Round-Robin CPU scheduling algorithm.

   Time quantum = 5 Milliseconds

Process	P_1	P_2	P_3	P_4	P_5
Burst time	7	4	15	3	10

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SLR-ST – 20

M.C.A. (Semester – II) (Computer Science) Examination, 2015
MANAGEMENT – II (Old)

Day and Date : Saturday, 25-4-2015   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

    1) Generally, a _____ ratio is considered as normal and it expresses the satisfactory liquidity position.
       a) 1 : 2   b) 1 : 1
       c) 2 : 1   d) 3 : 1

    2) Gross working capital means _____
       a) Total assets minus capital
       b) Total assets
       c) Total current assets
       d) Total current liabilities

    3) FIFO means _____
       a) First In Fast Out   b) First In First Out
       c) First In For Out   d) None of the above

    4) Material cost variance means _____
       a) SC + AC   b) AC – SC
       c) SC – AC   d) SC * AC

    5) _____ is the difference between a budgeted or standard amount and the actual amount during a given period.
       a) Standard cost   b) Actual cost
       c) Variance   d) Budget

P.T.O.

6) A _____ is prepared for overall control and all the departments of the concern are involved in this procedure.

   a) Business plan

   b) Master plan

   c) Production planning

   d) Sales planning

7) _____ management includes the formulation or determination, implementation and evaluation of strategy.

   a) Business

   b) Strategic

   c) Financial

   d) None of the above

8) Interest received on long term investments is shown under _____ activities.

   a) Operating   b) Financing

   c) Investing   d) Income

9) Ratio shows the _____ strength and weakness of organization.

   a) Financial   b) Marketing

   c) Product   d) All the above

10) SWOT is an acronym for _____

   a) Straight, Weak, Opportunity and Threats

   b) Short, Wide, Opposite and True

   c) Strength, Weakness, Opportunity and Threats

   d) Strengths, Weakness, Opportunities and Traits

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

   1) Goals are timeless in nature but it is futuristic.

   2) Management control requires emphasis both on the search for planning as well as control.

   3) Budgetary control is prepared in advance and is derived from the long-term strategy of the organization.

   4) MNCs tend to exert a low level of control over their foreign operations.

2. A) Write short note on the following : **8**

    1) Inventory management.

    2) Investment center.

  B) Answer the following : **6**

    1) Standard costing.

    2) Goals.

3. Answer the following : **14**

  A) From the following details calculate current ratio and acid test ratio :

Current Assets	Rs.	Current Liabilities	Rs.
Stock in trade	77,000	Sundry creditors	23,300
Sundry debtors	47,300	Acceptances	9,650
Cash in hand	6,700	Provision for tax	10,150
Short term investments	13,300		
Prepaid expenses	700		

  B) Explain in details elements of budget and functions of budget committee.

4. Answer the following : **14**

  A) For production of 10,000 electrical automatic irons the following are budgeted expenses :

Particulars	Rs. (per unit)
Direct material	60
Direct labour	30
Variable overheads	25
Fixed overheads (Rs. 1,50,000)	15
Variable expenses (Direct)	5
Selling expenses (10% fixed)	15
Administration expenses	
(Rs. 50,000 for all level of production)	5
Distribution expenses (20% fixed)	5

    Prepare a flexible budget for production of 6000, 7000 and 8000 iron units.

  B) Describe risk – return trade off.

5. Answer the following : **14**

   A) Explain the process of strategic planning.

   B) Define factors affecting to Working Capital Management.

6. Answer the following : **14**

   A) State the difference between funds flow statement and cash flow statement.

   B) What is responsibility center and transfer pricing ?

7. Answer the following : **14**

   A) From the following data calculate labour cost variance :

Particulars	Rs./Time
a) Standard rate of wage per hour	Rs. 5
b) Standard time set	500 hours
c) Actual rate of wage per hour	Rs. 6
d) Actual time taken	490 hours

   B) Explain different levels of management and role of top management.

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Seat
No.

M.C.A. – II (Semester – III) (Computer Science) Examination, 2015
COMPUTER COMMUNICATION NETWORK

Day and Date : Wednesday, 15-4-2015　　　　　　　　　　　Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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.

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

　　1)　Each IP packet must contains

　　　　A)　Only Source addresses

　　　　B)　Only Destination address

　　　　C)　Source and Destination address

　　　　D)　Source or Destination address

　　2)　Bridge works in which layer of the OSI model ?

　　　　A)　Application layer　　　　　　　B)　Transport layer

　　　　C)　Network layer　　　　　　　　D)　Data Link layer

　　3)　_____ provides a connection oriented reliable source for
　　　　sending message.

　　　　A)　TCP　　　　　　　　　　　　B)　IP

　　　　C)　UDP　　　　　　　　　　　　D)　All of the above

　　4)　Which layer of the OSI model are host to host layer ?

　　　　A)　Transport, Session, Presentation

　　　　B)　Network, Transport, Session, Presentation

　　　　C)　Datalink, Network, Transport, Session

　　　　D)　Physical, Datalink, Network, Transport

　　5)　Which of the following of IP address class is multicast ?

　　　　A)　Class-A　　　　　　　　　　B)　Class-B

　　　　C)　Class-C　　　　　　　　　　D)　Class-D

6) Which of the following is correct regarding class B address of IP address
   A) Network bit-14, Host bit-16
   B) Network bit-16, Host bit-14
   C) Networkbit-18, Host bit-16
   D) Network bit-12, Host bit-14

7) The last address of IP address represents
   A) Unicast address
   B) Network address
   C) Broadcast addresses
   D) None of the above

8) How many bits are there in the Ethernet address ?
   A) 64 bits
   B) 48 bits
   C) 32 bits
   D) 16 bits

9) How many layers in the TCP/IP model ?
   A) 4-layers
   B) 5-layers
   C) 6-layers
   D) 7-layers

10) Which of the following layers of OSI model also called end to end layers ?
   A) Presentation layer
   B) Network layer
   C) Session layer
   D) Transport layer

B) Fill in the blanks or **true/false** : **4**
   1) For large networks, _____ topology is used.
   2) _____ provides a connection oriented reliable source for sending message.
   3) SMTP is a protocol used in _____
   4) In a synchronous modem, the digital-to-analog converter transmits signal to the _____

2. A) Write a note on : **8**
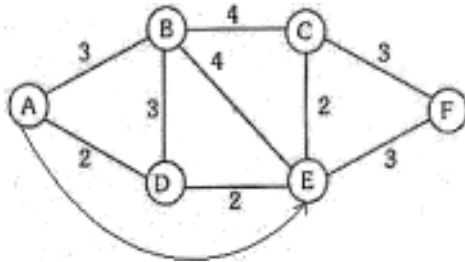   i) IP addresses
   ii) Resource reservation.

B)
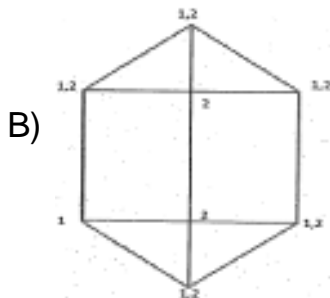
Draw a spanning tree, a multicast tree for group 1 and for group 2 of the above network. **6**

3. A) Explain routing for mobile hosts. **7**

   B) Consider the following network with the indicated link cost. Use Dijkstra's shortest-path algorithm to compute the shortest paths from A to C and F. **7**

4. A) Give comparison between leaky bucket and token bucket algorithms. **7**

   B) Using the RSA public key cryptosystem, if $p = 5$, $q = 13$, list five legal values for d. **7**

5. A) Why the protocol requirements are very essential in case of information security applications ? Discuss any two situations. **7**

   B) Define authentication. What are the methods of authentication ? Explain any one of them briefly. **7**

6. A) Describe address resolution protocol. **7**

   B) What are the differentiating features between static and dynamic web documents ? Discuss. **7**

7. A) Discuss the compression of image and video signals in lossy communication channel. **7**

   B) For given set of symbols of information source (a, b, c, d, e} the symbol properties (1/4, 1/4, 1/4, 1/8, 1/8}. From a binary tree with tree with terminal nodes as code word in Huffman coding technique. **7**

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Seat No.

M.C.A. – II (Semester – III) (Computer Science) Examination, 2015
JAVA PROGRAMMING

Day and Date : Friday, 17-4-2015   Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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.

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

   1) Which of the following option is not true about Java programming language ?
      a) Java is high level programming language
      b) Java is a platform
      c) Javac is compiler
      d) Byte code is executed by CPU

   2) Which of the following is correct about main method in Java ?
      a) Must be declared as public
      b) Must be declared as static
      c) Must accept string as a parameter
      d) All are compulsory

   3) Which one is a valid declaration of a boolean ?
      a) boolean b1 = 0;   b) boolean b2 = 'false';
      c) boolean b3 = false;   d) boolean b4 = Boolean.false ( );

   4) What is the value of k after the following code fragment ?
      int k = 0;
      int n = 12;
      while (k <= n)
      {
         k = k + 1;
      }
      a) 0   b) 11   c) 12   d) 13

P.T.O.

5) What is the purpose of this bit of code ?

```
void init( )
{
        ...
}
```

   a) a class that initializes the applet

   b) a required method in an applet

   c) a place to declare variables

   d) interacting with the user

6) _____ is used for multiline input of text.

   a) Scrollpane   b) Textfield   c) Label   d) TextArea

7) We can invoke the methods from Math class without creating an instance of class Math because these methods are _____

   a) final   b) abstract   c) static   d) none of these

8) A new thread can be created by extending the class _____

   a) Thread   b) Runnable   c) Scrollbar   d) ActionListener

9) A try-catch framework may consists of one or more _____ blocks.

   a) try   b) catch   c) finally   d) none of these

10) Which of the following is not access specifier ?

   a) public   b) private   c) protected   d) static

B) State whether **true** or **false** :   **4**

1) All objects of the same class share only one copy static variable.

2) Static methods can be accessed independent of objects.

3) super( ) is used to invoke the superclass constructor and also to pass the arguments to superclass constructor.

4) All methods in interface are abstract methods.

2. A) Write short notes on the following :   **8**

   i) Garbage collection

   ii) Constructor.

B) Answer the following :   **6**

   i) What is inheritance ? How a class is inherited in Java ?

   ii) What is automatic or implicit type conversion ?

3. Answer the following :

   A) Describe how an image can be displayed on applet using the class Image
      and ImageIcon. **6**

   B) Explain the life cycle of a thread. **8**

4. Answer the following :

   A) State features of BorderLayout and explain how to implement it. **6**

   B) Write a program which will read a string and rewrite it in the alphabetical
      order. For example the word "JAVA" should be written as "AAJV". **8**

5. Answer the following :

   A) Describe with suitable example, how the class FileReader is used for reading
      from a file. **6**

   B) State the purpose of the following JDBC classes and interface : **8**
      i) Driver Manager
      ii) Connection
      iii) Statement
      iv) Result set.

6. Answer the following :

   A) Explain with suitable example how to create a new thread using the interface
      Runnable. **7**

   B) Write a program to display first N prime numbers. **7**

7. Answer the following :

   A) What is exception ? Describe how exceptions are handled in Java. **8**

   B) What is package ? State the salient features of packages. **6**

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SLR-ST – 23

Seat No.	

M.C.A. – II (Semester – III) (Computer Science) Examination, 2015
SOFTWARE ENGINEERING

Day and Date : Monday, 20-4-2015   Total Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions : 1) Q. 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.

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

    1) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be

       a) correct   b) unambiguous

       c) consistent   d) verifiable

    2) If the objects focus on the problem domain, then we are concerned with

       a) Object Oriented Analysis

       b) Object Oriented Design

       c) Object Oriented Analysis and Design

       d) None of the above

    3) For a well understood data processing application it is best to use

       a) The waterfall model   b) Prototyping model

       c) The evolutionary model   d) The spiral model

    4) The feature of the object oriented paradigm which helps code reuse is

       a) object   b) class   c) inheritance   d) aggregation

    5) If a program in its functioning has not met user requirements is some way, then it is

       a) an error   b) a failure   c) a fault   d) a defect

P.T.O.

6) Which development techniques emphasize delivery speed rather than other characteristics such as performance, maintainability or reliability ?

   a) Dynamic prototyping techniques

   b) Interactive prototyping techniques

   c) Fast prototyping techniques

   d) Rapid prototyping techniques

7) Which requirement engineering process activity uses prototypes to check for errors and omissions in users requirements ?

   a) Requirement elicitation   b) Requirement gathering

   c) Requirement validation   d) Requirement analysis

8) _____ is not type of myths.

   a) Management myths   b) Customer myths

   c) Practitioner's myths   d) Developer's myths

9) What is an engineering discipline concerned with all aspects of S/W production from the early stage of system specification until maintenance ?

   a) Software maintenance   b) Software specification

   c) Software engineering   d) Software inspector

10) When a single data point has been collected a _____ has been established.

   a) Measurement   b) Metrics

   c) Indicator   d) Measure

B) Fill in the blanks or **True**/**False** :   **4**

1) The process dimension indicates the evolution of the design tasks are executed as part of the software process.

2) Condition testing is a test-case design method that exercises the logical conditions contained in a program module.

3) The software metrics chosen by an organization are driven by the business or technical goals an organization wishes to accomplish.

4) In the context of requirements analysis, partitioning results in the elaboration of data, function or behavior.

2. A) Write short notes on the following : **8**

    i) Design Principles.

    ii) Software Quality Assurance.

  B) Answer the following : **6**

    i) List any three limitations of testing.

    ii) List any three advantages of Water Fall Model.

3. Answer the following : **(7×2=14)**

  A) What is analysis modeling ? Explain data, behavior and functional modeling in brief.

  B) What is architecture design ? Explain Data-centered, Data-flow and object oriented architectures in brief.

4. Answer the following : **(7×2=14)**

  A) What is myth ? Explain Management myths, Customer myths and Practitioner's myths in brief.

  B) Define Software Engineering. Explain any three characteristics of software.

5. Answer the following : **(7×2=14)**

  A) Write a test case design for addition of two integer numbers.

  B) What is communication ? Explain any three communication techniques with examples.

6. Answer the following : **(7×2=14)**

  A) What is object oriented approach ? Explain object oriented analysis, design and testing in brief.

  B) What is interface design ? Explain Theo Mandel's three golden rules in brief.

7. Answer the following : **(7×2=14)**

  A) Explain Software prototyping and specification in brief.

  B) What is metric ? Explain any three metrics of software quality.

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Seat No.	

M.C.A. – II (Semester – III) Examination, 2015
COMPUTER SCIENCE
Database Management System

Day and Date : Wednesday, 22-4-2015   Total Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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.

1. A) Select the correct alternative :   **10**

1) Grant and Revoke command falls under the category of _____
   a) Authorization   b) Authentication
   c) DML   d) None of these

2) Not between is a _____operator.
   a) Range   b) List
   c) Comparison   d) None of these

3) The users who invoke one of the permanent application programs that have been written previously is known as _____user.
   a) Naive   b) Application Programmer
   c) Specialized   d) Sophisticated

4) A _____ or iterator variable is typically used to loop over the tuples in query of a result.
   a) Cursor   b) View
   c) Constraint   d) None of these

5) SQL allows the use of_____ values to indicate the absence of information about the value of an attribute.

   a) Null   b) Nothing

   c) Space   d) None of these

6) The _____ is the process of defining a set of subclasses of entity type; this entity type is called the superclass of the _____

   a) Aggregation   b) Specialization

   c) Cardinality   d) Generalization

7) Inner, Self and Outer are types of_____

   a) View   b) Trigger   c) Join   d) Cursor

8) The logical structure of the database is_____

   a) Schema   b) Instance

   c) Data   d) None of these

9) In levels of abstraction, application programs hide details of data types and also information for security purposes (e.g. Salary) is in _____

   a) Physical   b) Logical

   c) View   d) None of these

10) The language for accessing and manipulating the data organized by the appropriate data model is

   a) DDL   b) DML   c) DCL   d) TCL

B) State **true** or **false** :   **4**

1) Replication is the process of copying and maintaining database objects in multiple databases that make up a distributed database system.

2) The two major techniques for recovery from non-catastrophic failure are deferred updates and immediate updates.

3) Concurrency control manager controls the interaction among the concurrent transactions to ensure the consistency of the database.

4) The rollback statement is the inverse of the commit statement. It undoes the database changes made during the current transaction.

2. A) Write notes on : **8**

     i) DML   ii) Functions of DBMS.

    B) Attempt the following : **6**

     i) Distinguish between Stand-alone and Distributed system.

     ii) List any three limitations of traditional file processing system.

3. A) Define ERD. Explain any five notations used in ERD with example. **7**

    B) What is relational calculus ? Explain tuple relational calculus with example. **7**

4. A) Define trigger. Explain its type with example. **7**

    B) What is relational algebra ? Explain select, project, rename, union,
Except (–) and intersection operation with example in relational algebra. **7**

5. A) What is transaction ? Explain ACID properties with example. **7**

    B) What is optimization ? Explain the advantages of optimization with example. **7**

6. A) Define view. Explain create, alter and drop command on view with example. **7**

    B) Define normalization. Explain 3NF, BCNF and 4NF with example. **7**

7. A) Explain the steps in query processing with systematic diagram. **7**

    B) What is join ? Explain inner and outer join with example. **7**

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Seat No.	

M.C.A. (Semester – IV) (Computer Science) Examination, 2015
UML

Day and Date : Tuesday, 21-4-2015　　　　　　　　　　　Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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.

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

　　1) The collaboration is rendered using

　　　　a) Circle　　　　　　　　　b) Ellipse

　　　　c) Both a) and b)　　　　　d) None of the above

　　2) An instance of an object is created by a

　　　　a) query operation　　　　b) update operation

　　　　c) constructor operation　　d) open operation

　　3) Which one is not a relationship in a UML ?

　　　　a) Dependency　　　　　　b) Assertion

　　　　c) Association　　　　　　d) Realization

　　4) Which content is not a part of interaction diagram ?

　　　　a) Objects　　　　　　　　b) Classes

　　　　c) Links　　　　　　　　　d) Messages

　　5) A signal represents what type of objects that are dispatched
　　　 asynchronously by one object and then received by another ?

　　　　a) Data Objects

　　　　b) Named Objects

　　　　c) Class Objects

　　　　d) None of the above

6) A note is a graphical symbol for rendering

   a) Constraints or comments

   b) Tagged values or constraints

   c) Both a) and b)

   d) None of the above

7) Deployment diagrams shows a set of nodes and their

   a) Relationship   b) Aggregation

   c) Both a) and b)   d) None of the above

8) Interactive diagram is the collective name given to sequence diagrams and

   a) Collaborations   b) Interrogations

   c) Both a) and b)   d) None of the above

9) An interface is a named collection of operations used to specify a service of a

   a) Class   b) Association

   c) Both a) and b)   d) None of the above

10) An activity diagram shows the flow from activity to

   a) Beam   b) Activity

   c) Both a) and b)   d) None of the above

B) Fill in the blanks :   **4**

   1) The UML is a language for _____

   2) A use case is rendered as an _____

   3) A message is rendered as dashed line is _____

   4) A time event is an event that represents _____

2. A) Write short notes on the following :   **8**

   i) Class and events

   ii) Synchronization.

   B) Answer the following :   **6**

   i) Explain trigger less transition.

   ii) Explain the need of branching.

3. Answer the following : **14**

   A) Explain different types of relationships.

   B) Explain different levels of abstraction.

4. Answer the following : **14**

   A) Explain class diagram with an example.

   B) Explain modeling simple collaborations.

5. Answer the following : **14**

   A) Justify the need of realization of an interface.

   B) Explain simple and extended packages.

6. Answer the following : **14**

   A) Explain the modeling groups of elements.

   B) Explain the need of messages with a neat diagram.

7. Answer the following : **14**

   A) Explain sequence diagram.

   B) Explain modeling flows of control by organization.

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Seat
No.

M.C.A. – II (Semester – IV) (Computer Science) Examination, 2015
DATA MINING AND WAREHOUSE

Day and Date : Thursday, 23-4-2015   Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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.

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

   1) The cuboid that holds the lowest level of summarization is called the
     _____

    A) Apex Cuboid   B) Base Cuboid

    C) Latex Cuboid   D) Linear Cuboid

   2) The _____ schema is a variant of the star schema model, where
    some dimension tables are normalized, thereby further splitting the data
    into additional tables.

    A) Star   B) Snowflake

    C) Fact constellation   D) None of these

   3) _____ refers to *extracting or "mining"* knowledge from large
    amounts of data.

    A) Data Mining   B) Data warehouse

    C) Data marts   D) Data binding

   4) _____ supports knowledge discovery by finding hidden patterns
    and associations, constructing analytical models, performing classification
    and prediction and presenting the mining results using visualization tools.

    A) Analytical processing   B) Information processing

    C) Data mining   D) Data binding

5) _____ is a comparison of the general features of the target class data objects against the general features of objects for one or more multiple contrasting classes.

   A) Data characterization   B) Data Classification

   C) Data selection   D) Data discrimination

6) The _____, also called the top down approach.

   A) Density based   B) Divisive approach

   C) Agglomerative approach   D) None of these

7) A _____ feed forward neural network consists of an input layer, one or more hidden layers and an output layer.

   A) Multilayer   B) Single layer

   C) One layer   D) None of these

8) Baysian classification is

   A) A class of learning algorithm that tries to find an optimum classification of a set of examples using the probabilistic theory

   B) Any mechanism employed by a learning system to constrain the search space of a hypothesis

   C) An approach to the design of learning algorithms that is inspired by the fact that when people encounter new situations, they often explain them by reference to familiar experiences, adapting, the explanation to fit the new situation

   D) None of these

9) _____ is a repository of information gathered from multiple sources stored under a unified schema at a single site.

   A) Data mining   B) Data warehouse

   C) Web server   D) None of these

   10) The task of correcting and preprocessing data is called _____

      A) Data analysis

      B) Data processing

      C) Data cleaning

      D) Data mining

   B) State whether **True/False** : **4**

      1) Drill down navigates from less detailed data to more detailed data.

      2) Data mart collects all of the information about subject spanning the entire organization.

      3) Dimensionality reduction where encoding mechanism are used to reduce the data set size.

      4) An OLAP system typically adopts either a star or snowflake model and a subject oriented database design.

2. A) Write a short notes on the following : **8**

      i) DMQL

      ii) Data warehouse applications.

   B) Answer the following questions : **6**

      i) What is enterprise warehouse ? Explain in short.

      ii) Explain in short data cleaning.

3. Answer the following : **14**

   A) What is data warehouse ? Explain the difference between OLTP and OLAP.

   B) What is interestingness measures ? Explain various measures of pattern interestingness.

4. Answer the following : **14**

   A) How can mine the frequent pattern by using FP-tree ? Explain in detail.

   B) Explain Bayesian classification method with example.

5. Answer the following : **14**

   A) Explain with example multilevel association rule in detail.

   B) What is cluster analysis ? Explain binary variable as type of data in cluster analysis.

6. Answer the following : **14**

   A) Explain Hierarchical method of cluster analysis in detail.

   B) Describe the architecture of data warehouse with well labeled diagram.

7. Attempt the following : **14**

   A) Explain various OLAP operations with suitable examples.

   B) Explain various data mining applications

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Seat
No.

M.C.A. (Part – I) (Semester – I) Examination, 2015
COMPUTER SCIENCE
Discrete Mathematical Structures (New)

Day and Date : Monday, 20-4-2015   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

Instructions : i) Question Nos. **1** and **2** are **compulsory**.
              ii) Attempt **any three** questions from Q. No. **3** to Q. No. **7**.
              iii) Figures to the **right** indicate **full** marks.

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

   i) Every finite subset of a lattice has

      a) a LUB and a GLB

      b) many LUBs and a GLB

      c) many LUBs and many GLBs

      d) either some LUBs and some GLBs

   ii) In propositional logic, which of the following is equivalent to $\sim (P \vee Q)$

      a) $P \vee Q$ b) $\sim P \vee \sim Q$

      c) $\sim P \wedge \sim Q$ d) $\sim P \wedge Q$

   iii) The number of permutations of 'n' dissimilar things, taken r at a time, when
        the repetition of thing is allowed any number of times, is

      a) n^r b) r^n c) $(n-1)!$ d) $\dfrac{n!}{(n-r)!}$

   iv) A graph in which all nodes are of equal degree is called

      a) multi graph   b) non regular graph

      c) regular graph   d) complete graph

   v) The domain and range are same for

      a) constant function   b) identity function

      c) absolute value function   d) greatest integer function

vi) The number of functions from an m element set to an n element set is
    a) $m + n$ b) n^m c) m^n d) all of these

vii) Find the cofactor, A_{23} of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

    a) -6 b) 6   c) -12 d) -3

viii) A square matrix in which $a_{ij} = a_{ji}$ for all i, j is called
    a) Inverse matrix   b) Symmetric matrix
    c) Hermitian matrix   d) Orthogonal matrix

ix) The proposition $p \vee (p \rightarrow q)$ is
    a) a tautology   b) a contradiction
    c) logically equivalent to $p \wedge q$ d) none of these

x) If sets A and B have 9 and 5 elements each, then minimum number of elements in $A \cup B$ is
    a) 3   b) 6   c) 9   d) 18

B) Fill in the blanks : **4**

i) Number of combination of n dissimilar things, taken r at a time is
$^nC_r = $ _____

ii) Maximum degree of any node in a simple graph with n vertices is _____

iii) _____ matrix contain all diagonal elements are equal.

iv) If $f : A \rightarrow B$ is a function, then set of all images of the elements of A is called _____ of f.

2. A) Write short notes on : **8**
i) Recursion
ii) Determinant.

B) Answer the following : **6**
i) Explain the product sets with the help of suitable example.
ii) Explain the enumerators of the permutations.

3. A) Solve following equations by matrix inversion method : **7**
   2x + 2y + 2z = 12
   4x – 2y + 2z = 6
   2x + 4y – 2z = 4.

   B) Find the transitive closure of the given relation using Warshall's algorithm
   A = { 1, 2, 3, 4} and R = {(1, 1), (1, 3), (2, 2), (2, 3), (3, 2), (3, 1), (4, 2)}. **7**

4. A) Let G = {1, – 1, i, – i} where i^2 = – 1. Show that G is a finite abelian group
   under multiplications of complex numbers. **7**

   B) Define permutation. In how many ways can the letters of English alphabet be
   arranged so that there are exactly 5 letters between the letters a and b. **7**

5. A) Check the validity of the following arguments :

   If Rahul has completed B.E. Computer Science or M.C.A., then he is assured
   of good job. If Rahul is assured of a good job, he is happy. So Rahul has not
   completed M.C.A. **7**

   B) Define a Lattice. Show that D_{42} i.e. all positive divisors of 42 form a lattice.
   Draw Hasse Diagram of the same. **7**

6. A) Obtain the principle DNF (Disjunctive Normal Form) and principle
   CNF (Conjunctive Normal Form) of the following formula : **7**

   $(\sim P \vee \sim Q) \rightarrow (\sim P \wedge R)$.

   B) Prove that the following equivalence : **7**
   $(P \rightarrow Q) \wedge (R \rightarrow Q) \Leftrightarrow (P \vee R) \rightarrow Q$.

7. A) Explain the following term with the help of suitable example : **7**
   i) Planar graph   ii) Hamiltonian graph.

   B) Let A = {1, 2, 3, 4, 5} and let R be a relation on A, such that matrix relation **7**

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

   Construct a linked list representation, VERT, TAIL, HEAD, NEXT, for the relation R.

   _____

Seat No.

M.C.A. (Semester – IV) (Computer Science) Examination, 2015
DISTRIBUTED OPERATING SYSTEMS

Day and Date : Saturday, 25-4-2015　　　　　　　　　　　　Total Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

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*.

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

   i) Which of the following is not a guideline to design better scalable distributed system ?

   　　a) Avoid centralized entities

   　　b) Avoid centralized algorithms

   　　c) Perform most operations on client workstation

   　　d) None of these

   ii) A program at the time of executing is called

   　　a) Dynamic program　　　　　　b) Static program

   　　c) Binded program　　　　　　　d) A Process

   iii) _____ is a high speed cache used to hold recently referenced page table entries a part of paged virtual memory.

   　　a) Translation Lookaside buffer　b) Inverse page table

   　　c) Segmented page table　　　　d) All the above

   iv) _____ begins at the root and follows a path down to the specified file.

   　　a) Relative path name　　　　　b) Absolute path name

   　　c) Standalone name　　　　　　d) All of the above

v) Virtual Memory is commonly implemented by _____

    a) Segmentation   b) Swapping

    c) Demand Paging   d) None of these

vi) A process said to be in _____ state if it was waiting for an event that will never occur.

    a) Safe   b) Unsafe

    c) Starvation   d) Dead lock

vii) The Hardware mechanism that enables a device to notify the CPU is called _____

    a) Polling   b) Interrupt

    c) System Call   d) None of these

viii) Process state is a part of

    a) Process Control Block   b) Inode

    c) File Allocation Table   d) None of these

ix) Which of the following are not components of RPC mechanism ?

    a) The client stub   b) The server stub

    c) The RPC run time   d) None of these

x) Which amongst the following is not an advantage of Distributed systems ?

    a) Reliability   b) Incremental growth

    c) Resource sharing   d) None of these

B) Fill in the blanks or tick **true** or **false** :   **4**

i) The primary job of the operating system of a computer is to _____

ii) The removal of process from active contention of CPU and reintroduce them into memory later is known as _____

iii) IPC stands for _____

iv) Distributed computing and parallel computing use two or more computers communicating over a network to accomplish a common objective or task. **True/False**.

2. A) Write short notes on the following :

    i) Layered protocol. **4**

    ii) Group communication. **4**

  B) Answer the following :

    i) List the essential properties of the Distributed Operating. **3**

    ii) Briefly explain atomic transactions ? **3**

3. A) Briefly explain demand paging. **7**

  B) Explain processor pool model in detail. **7**

4. A) What are the design issues in distributed systems ? Explain. **7**

  B) With a neat diagram, explain remote procedure call. **7**

5. A) Explain any one algorithm for distributed mutual exclusion. **7**

  B) What is a distributed deadlock and why are they hard to detect ? **7**

6. A) Compare file system of desktop machine with file system followed in distributed system. **7**

  B) Discuss about SUN NFS. **7**

7. A) Explain in detail hardware concepts of distributed systems. **7**

  B) Compare MS-Windows NT and Novel Netware. **7**

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SLR-ST – 31

M.C.A. (Semester – V) Examination, 2015
COMPUTER SCIENCE
Artificial Intelligence

Day and Date : Wednesday, 15-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

   1) DAG stands for
      a) Directed Area Graph   b) Distributed Acyclic Graph
      c) Directed Acyclic Graph   d) All of the above

   2) LISP stands for
      a) List Processing   b) Line Setup Processing
      c) Both a) and b)   d) None of the above

   3) In predicate logic, we can represent real-world facts as statements
      written as
      a) Aff's   b) Wff's   c) Cff's   d) All the above

   4) Which predicate logic is correct for following sentence ?
      Marcus was a man.
      a) Man (Marcus)   b) Marcus (Man)
      c) Both a) and b)   d) All the above

   5) Different ways of handling sentences such as
      a) All paths   b) Best Path with Backtracking
      c) Best Path with Patchup   d) All of the above

P.T.O.

6) Iterative deepening is meant for

   a) Single-Agent heuristic search   b) A* algorithm

   c) Both a) and b)   d) All of the above

7) Reference markers are used in

   a) Syntactic analysis   b) Code optimization

   c) Both a) and b)   d) None of the above

8) Symbols that correspond directly to strings that must be found in an input sentence are called as

   a) Pre symbols   b) Post symbols

   c) Terminal symbols   d) All of the above

9) Horn Clause is a clause that as

   a) At most one positive literal   b) At most one negative literal

   c) Both a) and b)   d) None of the above

10) Linear sequences of words are transformed into structures called

   a) Semantic analysis   b) Syntactic analysis

   c) Shell processing   d) All of the above

B) Fill in the blanks.   **4**

1) _____ Algorithm is used to find a minimal-cost overall path.

2) The first AI programs to exploit means-ends analysis was_____

3) A _____ is one in which knowledge is specified, but the use to which that knowledge is to be put is not given.

4) _____ are natural way to represent relationships that would appear as ground instances of binary predicate logic.

2. A) Write short notes on the following :   **8**

   i) AI Problems and AI Techniques

   ii) Production System.

B) Answer the following :   **6**

   i) Explain the Best First Search.

   ii) Explain the predicate logic resolution algorithm.

3. Answer the following : **14**

   A) Explain Semantic Nets.

   B) Write Algorithm to convert to clause form.

4. Answer the following : **14**

   A) Explain the Bayes Theorem.

   B) Explain Iterative deepening.

5. Answer the following : **14**

   A) What is conceptual dependency and list its categories.

   B) Explain acquisition process in expert system.

6. Answer the following : **14**

   A) Explain the steps in natural language processing.

   B) Expert System Shells.

7. Answer the following : **14**

   A) Differentiate between Top-Down versus Bottom-Up Parsing.

   B) Explain sentence Level Processing.

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M.C.A. – III (Semester – V) Examination, 2015
COMPUTER SCIENCE
Network Security

Day and Date : Monday, 20-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

   1) _____ is essentially the encryption algorithm run in reverse.

     A) Encryption algorithm   B) Secret key

     C) Cipher text   D) Decryption algorithm

   2) A _____ encrypts plaintext one byte at a time.

     A) stream cipher   B) block cipher

     C) triple cipher   D) none of these

   3) _____ passive entity or resource in a computer system.

     A) Object   B) Subject   C) Response   D) Denial of service

   4) An individual who seizes supervisory control of the system and uses this control to evade auditing and access controls or to suppress audit collection.

     A) Misfeasor   B) Masquerader

     C) Clandestine user   D) None of these

   5) _____ provides authentication at the IP level.

     A) AH   B) ESP   C) PGP   D) SSL

   6) TLS stands for _____

     A) Telecommunication Layer Serial

     B) Transaction Layer Service

     C) Transport Lower Standard

     D) Transport Layer Security

7) A _____ attempts to learn or make use of information from the system but does not affect system resources.

A) passive attack B) active attack

C) threat D) None of these

8) A _____ takes place when one entity pretends to be a different entity.

A) Replay

B) Masquerade

C) Modification of message

D) Denial of service

9) The _____ service is concerned with assuring that a communication is authentic.

A) Confidentiality B) Access control

C) Authentication D) Data integrity

10) _____ responsible for technical management of IETF activities and the internet standards process.

A) IAB B) IETF

C) IESG D) None of these

B) State whether **true** or **false** : **4**

1) Passive attack affects the system resources.

2) Secure Electronic Transaction (SET) is an open encryption and security specification designed to protect credit card transactions on the internet.

3) Plaintext is the scrambled message produced as output.

4) Larger key size means greater security but may decrease encryption/ decryption speed.

2. A) Write short notes on the following : **8**

1) Authentication

2) Cryptanalysis.

B) Answer the following : **6**

1) Explain objectives of network security.

2) Explain various firewall applications.

3. Answer the following :

   A) Define the term attack. List and briefly define categories of passive and active attack. **7**

   B) What is access matrix ? Explain access control model. **7**

4. Answer the following :

   A) What is cipher ? Explain the differences between block cipher and stream cipher. **7**

   B) Explain various services provided by IPSec. **7**

5. Answer the following :

   A) Explain features of Kerberos in detail. **7**

   B) Explain DES algorithm with suitable example. **7**

6. Answer the following :

   A) Explain the features of digital signature with example. **7**

   B) What is intruder ? Explain different types of intruders. **7**

7. Answer the following :

   A) Explain Chinese Wall model. **7**

   B) What is firewall ? Explain hardware and software firewall. **7**

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Seat No.

M.C.A. (Semester – V) (Computer Science) Examination, 2015
DIGITAL IMAGE PROCESSING

Day and Date : Wednesday, 22-4-2015   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

   1) Fluorescence microscopy uses_____

      a) X-ray   b) Ultra violet   c) Infrared   d) Micro wave

   2) An image of size 20×20 pixels formed with 64 gray levels need _____
      bytes of storage space.

      a) 25600   b) 3200   c) 2400   d) 300

   3) The D_8 distance between (10, 5) and (6, 8) is _____

      a) 7   b) 4   c) 5   d) 1

   4) Which of the following logical function(s) is/are functionally complete
      operation(s) for image enhancement ?

      a) AND   b) OR   c) NOT   d) All the above

   5) In the expression of power spectrum $P(u) = R^2(u) + I^2(u)$ the term
      I represents _____

      a) Imaginary part
      b) Intensity of input image
      c) Intensity of Fourier transferred image
      d) Intensity power spectrum image

   6) In case of an adaptive local noise reduction filter, if image variance is
      equal to local variance then the filter must be _____ filter.

      a) Mean   b) Median
      c) Mid point   d) Adaptive

7) $\cup \{(B)_z | (B)_z \subseteq A\}$ is expression for _____

    a) Dilation   b) Erosion   c) Opening   d) Closing

8) The adaptive thresholding is useful when input image is_____

    a) Very bright   b) Low contrast

    c) Non uniform histogram   d) Non uniform illumination

9. The four directional chain code of an object is 00032303222 10121. Its shape number is _____

    a) 0033003311331133   b) 0033113311330033

    c) 0033113300331133   d) 0033003311330033

10. If two objects are similar then the measure of similarity between these two objects is _____

    a) 0   b) 1

    c) Very large value   d) Infinity

B) Fill in the blanks :   **4**

    1) A method used for generation of a processed image which has a specified histogram is known as _____

    2) Harmonic mean filter is given by _____

    3) First- and second-order digital derivatives are used for _____

    4) The measure of compactness of a region as regional descriptor is given by _____

2. A) Write short notes on the following :   **8**

    i) Applications of imaging in ultra violet, visible and infra red band.

    ii) Adjacency and connectivity.
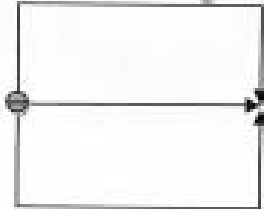
B) Answer the following :   **6**

    i) Find the shortest digital path between P and Q using m – adjacency.

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

ii) Use the specific primitives a, b, c and d given as ↘ , ↗ , ⟶ and ↓
respectively and build the following structure :

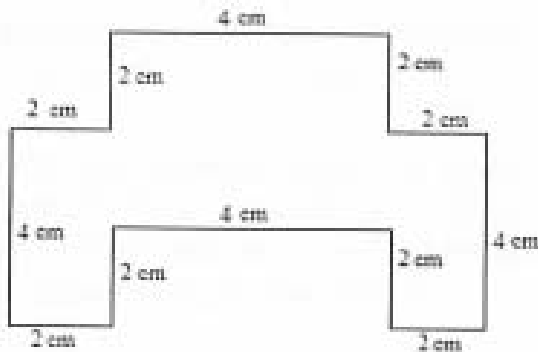3. Answer the following :   **14**
   A) Discuss use of second order derivatives for image enhancement.
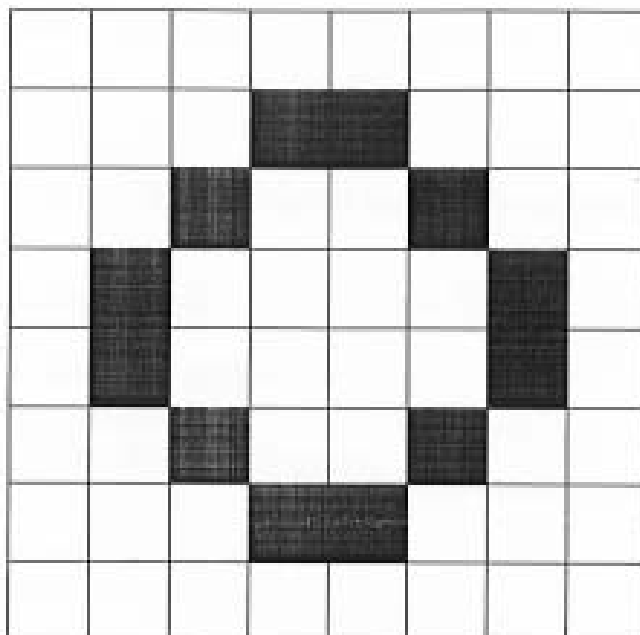   B) Perform closing of following structure using a circle of 1 cm radius :

4. Answer the following :   **14**
   A) Discuss one dimensional Fourier transform and its inverse.
   B) Fill the following region using morphological region filling algorithm :

5. Answer the following : **14**

   A) Describe smoothing frequency domain filters. Also give their comparison.

   B) Compute the covariance matrix for the following vectors :

   $(0, 1, 1, 0)^T$, $(0, 0, 1, 1)^T$, $(0, 1, 1, 1)^T$ and $(1, 0, 0, 1)^T$.

6. Answer the following : **14**

   A) Discuss different order statistics filters for image restoration.

   B) The three classes of objects denoted by ω_1 and ω_2 have sample mean vectors $m_1 = (7, 6, 9)$, and $m_2 = (3, 2, 5)$ respectively. Compute decision boundary between these two objects.

7. Answer the following : **14**

   A) How to detect lines from an image ? Discuss.

   B) Compute the distances between following objects and find out which of them are nearest :
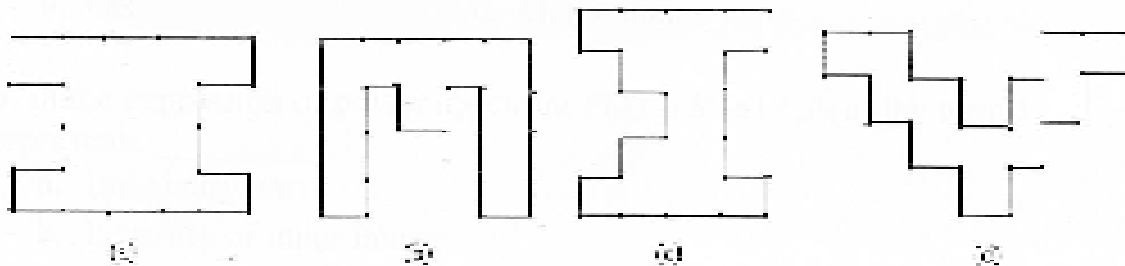
Seat No.	

M.C.A. (Semester – V) (Computer Science) Examination, 2015
MOBILE COMPUTING

Day and Date : Friday, 24-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

   i) In mobile IP, a tunnel usually ends at _____
   a) HA   b) FA
   c) CN   d) Router

   ii) The coverage and capacity of CDMA system is more than that of GSM system.
   a) True   b) False
   c) Equal   d) None of the above

   iii) In CDMA a channel is _____
   a) Time slot   b) Frequency slot
   c) Orthogonal code   d) All of the above

   iv) Which of these is not true for TDD ?
   a) TDD uses different time slots for transmission and reception paths
   b) Single radio frequency can be used
   c) Duplexer is required
   d) It increases the battery life of mobile phones

   v) Mobile phone in roaming is registered in
   a) Visitors Location Registry of another MSC
   b) Visitors Location Registry of same MSC
   c) Home Location Registry of another MSC
   d) Home Location Registry of same MSC

vi) The type of access used in GSM technology is _____

   a) FDMA/TDMA   b) CDMA

   c) OFDMA   d) None of the above

vii) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by

   a) BTS   b) BSC

   c) MSC   d) MS

viii) He cell having the same number in the adjacent cluster using the same set of RF channels are termed as _____

   a) Adjacent cell   b) Co channel cell

   c) Macro cell   d) Selective cell

ix) The technique adopted to increase the system capacity and reduce co-chl interference is

   a) High power BTS

   b) By installing the omnidirectional antenna

   c) Sectorisation

   d) None of the above

x) The uplink frequency of P-GSM system is

   a) 1850-1910 Mhz   b) 1710-1785 Mhz

   c) 890-915 Mhz   d) None of the above

B) State **true/false** :   **4**

   i) Flexibility and planning are advantages of wireless LAN.

   ii) SNIFF state is one of the three Low Power States provided by Bluetooth.

   iii) Inter BSC Intra MSC handover is not one of the four types of handover available in GSM.

   iv) Network and Switching Subsystem (NSS) is not a subsystems in GSM system.

2. A) Write short notes on the following :   **8**

   i) Bluetooth Architecture

   ii) Signal Propagation.

B) Answer the following :   **6**

   i) Explain the concept of roaming.

   ii) What is frequency reuse in cellular systems ? Explain.

3. Answer the following : **14**

   A) Explain the architecture of 802.11 WLAN.

   B) Describe the concept of indirect TCP with its advantages and disadvantages.

4. Answer the following : **14**

   A) Explain the entities and terminologies in Mobile IP.

   B) Explain in brief the components of Cellular System.

5. Answer the following : **14**

   A) Explain the various numbers required to locate an MS and to address MS.

   B) What is Handover ? Explain all possible handover scenarios in GSM.

6. Answer the following : **14**

   A) What are the security services offered by GSM ? Explain.

   B) Explain in brief the DHCP.

7. Answer the following : **14**

   A) What are the advantages and disadvantages of cellular system ?

   B) Explain the concept of DAMA, PRMA and reservation TDMA access scheme.

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Seat
No.

M.C.A. – I (Semester – I) Examination, 2015
COMPUTER SCIENCE (New)
Digital Circuits and Microprocessors

Day and Date : Wednesday, 22-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

   i) Which of the following interrupts are unmaskable interrupt ?
       a) RST 5.5   b) RST 7.5
       c) TRAP   d) INTR

   ii) Both the Arithmetic Logic Unit (ALU) and control section of CPU employ
        special purpose storage locations called
        a) decoders   b) buffers
        c) multiplexer   d) registers

   iii) The addressing mode used in the instruction PUSH B is
        a) direct   b) register
        c) register indirect   d) immediate

   iv) The function of Program Counter (PC) holds
        a) Temporary   b) Address for memory
        c) Memory operand   d) Address for instruction

   v) The register used as a working area in CPU is
        a) Program counter   b) Instruction register
        c) Instruction decoder   d) Accumulator

   vi) The operation which is commutative but not associative is
        a) AND   b) OR
        c) EX-OR   d) NAND

P.T.O.

vii) A graphical display of the fundamental products in a truth-table is known as

    a) Mapping   b) Graphing

    c) T-map   d) Karnaugh map

viii) An OR gate can be imagined as

    a) Switches connected in series

    b) Switches connected in parallel

    c) MOS transistors connected in series

    d) None of these

ix) The output of a sequential circuit depends on

    a) Present inputs only

    b) Past inputs only

    c) Both present and past inputs

    d) Present outputs only

x) A shift register can be used for

    a) Parallel to serial conversion

    b) Serial to parallel conversion

    c) Digital delay line

    d) All of these

B) Fill in the blanks :   **4**

  i) The master slave JK flip-flop is effectively a combination of _____

  ii) A combinational logic circuit which generates a particular binary word or number is _____

  iii) _____ full and _____ half adders required to add 16 bit numbers.

  iv) The TRAP interrupt mechanism of the 8085 micro-processor executes _____

2. A) Write short notes on : **8**
   a) Decoders
   b) Karnaugh map.

   B) Explain PSW (Program Status Word) of 8086 with suitable diagram. **6**

3. A) Explain architecture of 8085 in detail. **7**

   B) Write an assembly program to add two numbers. **7**

4. A) What is mean by shift register ? Explain PISO shift register. **7**

   B) Draw a neat diagram of 4 to 1 multiplexer using an AND and an OR gate. Explain its working. **7**

5. A) Explain segment registers of 8086 in detail. **7**

   B) Explain arithmetic and logical instructions with suitable example. **7**

6. A) Explain the working of full adder. **7**

   B) Explain the working of R-S flip flop using transistors. **7**

7. A) Use a Karnaugh map to simplify $f = \overline{A}C + \overline{A}B + A\overline{B}C + BC$. **7**

   B) What is mean by counter ? Explain ring counter with the help of diagram. **7**

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Seat
No.

M.C.A. – I (Semester – I) (Computer Science) Examination, 2015
PROCEDURAL PROGRAMMING METHODOLOGY (OLD)

Day and Date : Friday, 17-4-2015　　　　　　　　　　　　　　Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

　　1) The statement *printf("%d", ++5);* prints
　　　　a) 5　　　　　　　　　　　　b) 6
　　　　c) an error message　　　　d) garbage

　　2) If *p* is a pointer to an integer and *t* is a pointer to a character then *sizeof(p)*
　　　　will be _____
　　　　a) same as that of *sizeof(t)*　　b) greater than that of *sizeof(t)*
　　　　c) less than that of *sizeof(t)*　　d) none of the above

　　3) Which of the following is NOT a character constant ?
　　　　a) 'Thank You'　　　　　　　b) 'Enter values of P, N, R'
　　　　c) '23.56E-03'　　　　　　　d) All the above

　　4) A do-while loop is useful when we want that the statements within the loop
　　　　must be executed
　　　　a) Only once　　　　　　　　b) At least once
　　　　c) More than once　　　　　　d) None of the above

　　5) Use _____ storage class for only those variables that are being
　　　　used by almost all the functions in the program.
　　　　a) extern　　　　　　　　　　b) auto
　　　　c) static　　　　　　　　　　d) register

　　6) In a program the statement:
　　　　　　#include "filename"
　　　　is replaced by the contents of the file "filename"
　　　　a) Before compilation　　　　b) After compilation
　　　　c) During execution　　　　　d) None of the above

7) An array is a collection of _____

   a) different data types scattered throughout memory

   b) the same data type scattered throughout memory

   c) the same data type placed next to each other in memory

   d) different data types placed next to each other in memory

8) On opening a file for reading which of the following activities are performed

   a) The disk is searched for existence of the file

   b) The file is brought into memory

   c) A pointer is set up which points to the first character in the file

   d) All the above

9) The switch statement is similar to

   a) single if – else   b) do - while

   c) multiple if - else if - else   d) for

10) What is the output of this program ?

```
void main( ) {
    int a=b=c=10;
    a=b=c=50;
    print("\n %d %d %d",a,b,c): }
```

   a) 50 50 50   b) Compile Time Error

   c) 10 10 10   d) Three Garbage Value

B) State whether **true** or **false** :   **4**

1) Pseudo code uses a graphic representation.

2) Syntax error results when the rules or syntax of the programming languages are not followed.

3) Operators have hierarchy.

4) A *'break'* statement skips the execution of the statements after it and takes the control to the beginning of the loop.

2. A) Write short notes on the following :   **8**

   i) External storage class.

   ii) Increment and decrement operator.

B) Answer the following :   **6**

   i) What do you mean by Bottom-up design ?

   ii) Draw a flow chart of find greatest among three numbers.

3. Answer the following : **14**

   A) In a company, worker efficiency is determined on the basis of the time required for a worker to complete a particular job. If the time taken by the worker is between 2 – 3 hours, then the worker is said to be highly efficient. If the time required by the worker is between 3 – 4 hours, then the worker is ordered to improve speed. If the time taken is between 4 – 5 hours, the worker is given training to improve his speed, and if the time taken by the worker is more than 5 hours, then the worker has to leave the company. If the time taken by the worker is input through the keyboard, find the efficiency of the worker.

   B) What are the contents of user documentation ?

4. Answer the following : **14**

   A) Write a program to find the range of a set of numbers. Range is the different between the smallest and biggest number in the list.

   B) Explain nested structure and self referential structure with example.

5. Answer the following : **14**

   A) Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from **main( )** and print the results in **main( )**.

   B) Define structure and union. Explain the way of declaring and accessing them.

6. Answer the following : **14**

   A) Describe binary search algorithm.

   B) Explain in detail array of structure and pointer to structure.

7. Answer the following : **14**

   A) Explain the preprocessors simple macros and macros with arguments.

   B) Explain following with example :

   i) while   ii) do-while.

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Seat No.	

M.C.A. – I (Semester – I) Examination, 2015
COMPUTER SCIENCE (Old)
Discrete Mathematical Structures

Day and Date : Monday, 20-4-2015   Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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

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

   1) ~ Q ∧ (P → Q) ⇒

      a) P   b) Q   c) ~ P ∨ Q   d) ~P

   2) $^8P_5 =$

      a) 3 !   b) $\dfrac{5!}{8!}$ c) $\dfrac{8!}{3!}$ d) 120

   3) Number of subsets of order three is

      a) 4   b) 6   c) 3   d) 8

   4) Hasse diagrams are drawn for
      a) Partially ordered sets
      b) Boolean algebra
      c) Recurrence relation
      d) None of these

   5) Let D_{30} = {1, 2, 3, 5, 6, 10, 15, 30} and relation I be partially ordering on D_{30}. The all lower bounds of 10 and 15 respectively are
      a) 1, 3   b) 1, 5   c) 1, 3, 5   d) 10

   6) In the group (∈, .) the value of (a b)$^{-1}$ is
      a) ab^{-1} b) b^{-1} a^{-1} c) b a^{-1} d) (a^{-1} b)$^{-1}$

7) A relation R is defined on A is symmetric if and only if

   a) a R b $\Rightarrow$ b R a   b) a R b $\Rightarrow$ b $\not R$ a

   c) a R b b R c $\Rightarrow$ a R c   d) a R a $\Rightarrow$ a R c

8) Weight of the word 1100001 in B^7 is

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

9) Three persons enter a railway compartment. If there are 5 seats vacant. In how many ways can they take these seats ?

   a) 60   b) 20   c) 15   d) 125

10) $\sim (P \to Q)$ is equivalent to

   a) $P \wedge \sim Q$ b) $\sim P \wedge Q$ c) $\sim P \vee Q$ d) $P \vee Q$

B) State whether **true** or **false** :   **4**

1) $C(n, r) = \dfrac{n!}{r!(n-r)!}$.

2) An algebraic structure with a binary operation which is only associative property exist is called monoid.

3) Let $(\in, *)$ be a group. Each element in $\in$ has only one inverse.

4) $\sim P \wedge (P \vee Q) \Rightarrow Q$

   This rule is called hypothetical syllogism.

2. A) Find the transitive closure using Warshalls algorithm   **8**

   A = {1, 2, 3, 4}

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

  B) Check the validity of the following arguments.   **6**

   Lions are dangerous animals. There are lions. Therefore, there are dangerous animals.

3. A) Let H be the parity check matrix

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

Obtain the (2, 4) encoding function e and the associated maximum likelihood function d.

Decode the words

i) 0101

ii) 1010

iii) 1101

B) Prove that **7**

a) $P(n, r) = \dfrac{n!}{(n-r)!}$

b) $C(n, r) = \dfrac{n!}{r!\,(n-r)!}$.

4. A) Solve the following recurrence relation **7**

$a_r - 5a_{r-1} + 6a_{r-2} = 2^r + r$

B) Prove the following implication **7**

$(P \vee Q) \wedge (P \to R) \wedge (Q \to R) \Rightarrow R$

5. A) Determine the number of 5-digit decimal numbers that contain no repeated digits and does not have a leading 0. **7**

B) Define lattice, complementary lattice, distributive lattice. Illustrative with an example. **7**

6. A) Explain bubble sort with suitable example. **7**

   B) Define : **7**

$$f(x) = \begin{cases} \dfrac{x}{2} & \text{when x is even} \\ \dfrac{x-1}{2} & \text{when x is odd} \end{cases}$$

7. A) Let A = {1, 2, 3, 4, 5} and let R be a relation on A such that **7**

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

   Construct a linked list representation VERT, TAIL, HEAD, NEXT for relation R.

   B) In a survey of 60 people it is found that 25 like to drink milk, 26 coffee and 26 tea. Also 9 like both milk and tea, 11 like milk and coffee, 8 like coffee and tea and 8 like none of the three.

   a) Find the number of people who like all the three drinks.

   b) Find the number of people who like exactly one of the three drink. **7**

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Seat No.	

M.C.A. – I (Semester – I) (Computer Science) Examination, 2015
MICROPROCESSORS (Old)

Day and Date : Wednesday, 22-4-2015   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

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.

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

     i) MOV M A instruction uses_____ as memory address register.
        a) HL   b) DE   c) BC   d) SP

     ii) In 8051 microcontroller _____ interrupt has highest priority.
        a) IE0   b) TF0   c) IE1   d) TF1

     iii) BP is the base register used with the segment registered _____
        a) SS   b) ES   c) DS   d) CS

     iv) Address lines available for I/O in case of 8086 are _____
        a) 20   b) 8   c) 16   d) 21

     v) In 8086 BX register holds offset address of _____ segments.
        a) Data   b) Code   c) Extra   d) Stack

     vi) XRI instructions of 8085 can be used to_____ the bits selectively in 8 bits no.
        a) Invert   b) Set   c) Reset   d) OR

     vii) ALE signal of 8085 is used for _____ address/data bus.
        a) Demultiplexing   b) Multiplexing
        c) Decoding   d) Encoding

     viii) The IP of 8086 points to information in _____ memory.
        a) Stack segment   b) Data segment
        c) Code segment   d) Extra segment

     ix) QSO and QS1 lines of 8086 are used to interface _____
        a) Coprocessor   b) Closely coupled
        c) Loosely coupled   d) None of the above

     x) In 8255 PPI, port A can be programmed in _____ modes.
        a) 3   b) 2   c) 4   d) 5

B) Fill in the blanks/State **true** or **false** :   **4**

   i) In 8279 memory mapped I/O, Io/$\overline{M}$ signal is _____

   ii) In 8051 microcontroller data memory is of _____ bytes.

   iii) In 8279 PKDI16 × 8 RAM used to store the display codes for 16 digits.

   iv) In 8086 microprocessor ALU is 8 bit.

2. A) Write short notes on the following :   **8**

   i) Special Function Registers of 8051 microcontroller.

   ii) Encoded scan and decoded scan in 8279.

 B) Answer the following :   **6**

   i) How overflow flag is set by 8086 microprocessor ?

   ii) Explain demultiplexing of AD7-AD0.

3. A) Draw and explain buffered system bus of 8085 microprocessor.   **10**

 B) Identify opcodes and operands in following instructions and list the tasks
   performed after executing each instruction :   **4**

   i) INX H

   ii) MOV A M

   iii) ADI 55H

4. A) Describe EU & BIU of 8086. How the prefetch is used for instruction fetch ?   **10**

 B) Explain the following instructions of 8086 :   **4**

   i) DAA   ii) NEG

   iii) LEA   iv) IMUL.

5. A) Draw and explain block diagram of 8255 PPI. Draw an interfacing diagram
   with 8085.   **8**

 B) Explain various modes of operation of 8255 PPI.   **6**

6. A) Write an assembly program to convert unpacked BCD to packed BCD
   number and store it in same memory location (use 8086 instruction).   **10**

 B) With block diagram explain 8284 clock generator.   **4**

7. A) Explain architecture of 8051 microcontroller.   **8**

 B) Draw and explain block diagram of Intel 80286.   **6**

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