Seat No.

M.C.A. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (New)
Introduction to Computers

Day and Date : Friday, 14-11-2014   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) Mouse is _____ device.

        A) Input   B) Output

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

    2) A device that enables a computer to communicate over telephone lines.

        A) Repeater   B) Modem

        C) Switch   D) Wireless access point

    3) Internet Explorer comes along with _____

        A) Linux   B) Windows

        C) MAC   D) Android

    4) Which browser comes with Linux by default ?

        A) Mozilla Firebox   B) IE

        C) Opera   D) None of these

    5) Light sensitive device that converts drawing, printed text or other images into digital form

        A) Keyboard   B) Plotter

        C) Scanner   D) OMR

    6) Fifth generation computers are based on

        A) Transistor   B) Diode

        C) Vacuum tubes   D) Artificial intelligence

P.T.O.

7) Which of the following memory is non-volatile ?

   A) SRAM   B) ROM

   C) DRAM   D) All of these

8) Memory size in mainframe computer and advanced technologies microcomputer are expressed as

   A) Bytes   B) Kilobytes

   C) Bits   D) Megabytes

9) Who invented the super computer ?

   A) PT Fransworth   B) JH van Tassel

   C) Charles Babbage   D) Charles Ginsberg

10) Which one of the these is not input device

   A) Speaker   B) Mouse

   C) Scanner   D) Keyboard

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

   1) Unix is an open source operating system

   2) C language is system software

   3) The binary number system has base 10

   4) CTRL+O is used for open a page.

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

   i) VDU   ii) Compiler

B) Answer the following :   **6**

   i) What is output device ? Explain with example.

   ii) Give the features of mainframe computer.

3. Answer the following :

A) Explain classification of computers on the basis of generation.   **7**

B) Explain VI-Editor in Unix Operating System.   **7**

4. Answer the following :

   A) Explain the different types of computers. **6**

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

     i) $(11001)_2$

     ii) $(101)_2$

     iii) $(1111)_2$

     iv) $(1101)_2$

5. Answer the following :

   A) What is High Level Language ? Explain advantages and disadvantages of High level language. **7**

   B) What is Operating System ? Give the functions of operating system. **7**

6. Answer the following :

   A) Explain following Unix commands with suitable examples : **8**

     i) cp

     ii) mv

     iii) pwd

     iv) rmdir

   B) What is Internet ? Explain various uses of Internet. **6**

7. Answer the following :

   A) Explain various Formatting commands on text in MS-Word. **7**

   B) Explain the uses of Power Point application. **7**

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Seat No.	

M.C.A. (Sem. – I) (Computer Science) Examination, 2014
MANAGEMENT – I (Old)

Day and Date : Monday, 24-11-2014   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** 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) _____ Accounts includes real and nominal account.
      a) Personal   b) Impersonal
      c) Both a) and b)   d) None of the above

   2) _____ Discount appears in the books of account.
      a) Trade   b) Bank   c) Cash   d) All the above

   3) _____ assumes finish-to-start relationship between two related activities.
      a) CPM   b) PERT   c) GNATT   d) All the above

   4) In the books of accounts owner and business are the _____ entity.
      a) Same   b) Separate   c) Similar   d) Only a) and c)

   5) _____ is an intangible asset.
      a) Cash   b) Land
      c) Investments   d) Goodwill

   6) HRD stands for _____
      a) Human Resource Department
      b) Human Resource Development
      c) Human Report Department
      d) Human Research Development

7) Free sample is an example of _____

   a) Direct selling   b) Personal selling

   c) Sales promotion   d) Charity activity

8) Land and building appears in _____ of balance sheet.

   a) Current Assets   b) Fixed Assets

   c) Current Liability   d) Only a) and b)

9) Performance appraisal is a process conducted by _____ department.

   a) Finance   b) Human Resource

   c) Operations   d) All the above

10) Marketing Department creates _____ for the business.

   a) Sales activity   b) Research activity

   c) Advertisements   d) All the above

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

  i) Accounting period starts and end at 31st March to 1st April per year respectively.

  ii) Application bank is the first step of selection process.

  iii) In HRD training provided for unemployed individuals.

  iv) Goodwill is a tangible asset.

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

  i) Recruitment and selection

  ii) Cost center.

  B) Answer the following :   **6**

  i) Sales promotion

  ii) Break-even point.

3. Answer the following :   **14**

  A) Explain the meaning, nature and features of human resource management.

  B) What is marketing research system and market research process ?

4. Answer the following : **14**

A) Journalize following transaction in the books of M/s Pradeep & Co.

   Date   **Transaction**

   Jan. 1   Commenced business with cash Rs. 90,000.

   Jan. 5   Furniture purchased for cash Rs. 10,000.

   Jan. 7   Goods purchased on credit from Madan Lal Rs. 5,000.

   Jan. 9   Goods sold of Rs. 1,600 to Dev Raj and collected cheque of Rs. 1,500 as selling price.

   Jan. 13 Commission received in cash 2,000.

   Jan. 18 Amount paid to Madan Lal Rs. 4,500 with full settlement.

   Jan. 31 Cash stolen from office Rs. 6,000.

B) Prepare Trial Balance from the following Ledger Accounts :

   Cash A/c Rs. 9,000; Creditors A/c Rs. 15,000; Debtors A/c Rs. 6,000; Machinery A/c Rs. 16,000; Capital A/c Rs. 50,000; Purchase A/c Rs. 40,000; Sales A/c Rs. 45,000; Mr Jay's A/c Rs. 15,000; Salaries A/c Rs. 18,000; Wages A/c Rs. 12,000; Discount Received A/c Rs. 1,500; Mr. Vijay's A/c Rs. 10,000; Drawing A/c Rs. 5,000; Discount Allowed A/c Rs. 500.

5. Answer the following : **14**

A) The following information extracted from the books of Deepali Trading Co.

Fixed cost	26,000
Variable cost	30,000
Total cost	56,000
Net sales	60,000

   Find out **any two** :

   a) Break-even point

   b) Profit for sales volume Rs. 1,00,000

   c) Margin of safety..

B) From the following information you are required to calculate :

   a) P. V. Ratio

   b) Break-even point (Sales and Unit)

   Actual sales Rs. 3,000 units

   Selling price per unit Rs. 20

   Variable cost per unit Rs. 12

   Fixed cost per month Rs. 10,000.

6. Answer the following : **14**

   A) Explain methods of performance appraisal.

   B) What is marketing ? Explain its importance in business.

7. Answer the following : **14**

   A) Explain rules of accounting with suitable examples.

   B) From the following trial balance of Viraj Ltd. Prepare trading and Profit and Loss Account for the year 2011 and Balance Sheet as on that date :

   Trial Balance of Viraj Ltd. As on 31st March 2011

Particulars	Debit Rs.	Credit Rs.
Building	50,000	–
Capital	–	96,000
Purchases and sales	15,000	40,450
Opening stock	8,000	–
Debtors and Creditors	10,000	5,000
Drawing	3,500	–
Sales returns and purchase returns	1,000	500
Freight	3,250	–
Office Salary	10,000	–
Wages	1,200	–
Postage and telegram	1,000	–
Machinery	20,000	–
Bills receivable and Bills payable	9,000	3,000
Advertisement	4,000	–
Cash in hand	5,000	–
Loose tool	4,000	–
Total	**1,44,950**	**1,44,950**

   Additional Information :

   1) Closing stock was valued at Rs. 10,000.

   2) Depreciate building by 5% and Loose tools are revalued at Rs. 350.

   3) Interest on capital is at 5% and on drawings is at 10%.

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Seat
No.

M.C.A. (Semester – II) Examination, 2014
COMPUTER SCIENCE
Object Oriented Programming Using C++

Day and Date : Saturday, 15-11-2014   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** questions) :   **10**

     1) C++ was originally developed by

         a) Nicholas Wirth   b) Donald Knuth

         c) Bjarne Stroustrup   d) Ken Thompson

     2) The standard C++ comment

         a) /   b) //

         c) /* and */   d) None of these

     3) The preprocessor directive #include is required if

         a) Console output is used   b) Console input is used

         c) Both a) and b)   d) None of these

     4) When a language has the capability to produce new data type, it is called

         a) Extensible   b) Overloaded

         c) Encapsulated   d) Reprehensible

     5) State the object oriented languages

         a) C++   b) Java

         c) Eiffel   d) All the above

     6) The value of EOF is _____

         a) 1   b) 0

         c) Infinity   d) –1

P.T.O.

7) What is the notation used to place block of statements in a looping structure in C++ ?

   a) %%   b) ( )

   c) { }   d) None of the above

8) Which of the following language given below uses the concepts of OOPs ?

   a) C++   b) Java

   c) C#   d) All the above

9) Which of the following denotes feature of OOPS ? :

   a) Inheritance   b) Encapsulation

   c) Polymorphism   d) All the above

10) Objects have

   a) Behavior   b) State

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

B) Fill in the blanks or **true/false** (**04** questions) :   **4**

   1) _____ used to convert C++ source code into object modules.

   2) The first fully object-oriented language is _____

   3) _____ of the following remains static in a C++ program.

   4) The isolation of data from direct access by a C++ program is called as _____

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

   i) Constructor and destructor.

   ii) Exceptional handling in C++

  B) Answer the following :   **6**

   i) Explain the static data members with suitable example.

   ii) What is meant by Pointer to Derived Types ?

3. Answer the following : **14**

   A) Difference between procedures oriented and object oriented programming.

   B) With a neat diagram, explain the organization of the data and functions in OOP.

4. Answer the following : **14**

   A) Explain the cascading of I/O operators with examples.

   B) Explain various operators in C++.

5. Answer the following : **14**

   A) What is operator overloading ? What are the rules to be followed to overload operator ?

   B) What is virtual base class ? Write a C++ program for student results processing system by using the concept of virtual base class.

6. Answer the following : **14**

   A) What is Template ? Explain function template with suitable example.

   B) Write a program to sort an array using pointers. Use bubble sort method.

7. Answer the following : **14**

   A) Why is Manipulator ? Explain the use of any two built in manipulators.

   B) Write C++ program to study the sue of Single Inheritance (assume your own data).

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Seat
No.

M.C.A. (Semester – II) Examination, 2014
COMPUTER SCIENCE
Data Structures

Day and Date : Tuesday, 18-11-2014   Total 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** 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 data structures are indexed structures ?

  a) linear arrays   b) linked lists

  c) both of above   d) none of above

2) 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

3) Which of the following is not a limitation of binary search algorithm ?

  a) must use a sorted array

  b) requirement of sorted array is expensive when a lot of insertion and deletions are needed

  c) there must be a mechanism to access middle element directly

  d) binary search algorithm is not efficient when the data elements are more tha 1000

4) A variable P is called pointer if

  a) P contains the address of an element in DATA

  b) P points to the address of first element in DATA

  c) P can store only memory addresses

  d) P contain the DATA and the address of DATA

5) Which of the following data structure can't store the non-homogeneous data elements ?

a) Arrays   b) Records

c) Pointers   d) None

6) The difference between linear array and a record is

a) An array is suitable for homogeneous data but hte data items in a record may have different data type

b) In a record, there may not be a natural ordering in opposed to linear array

c) A record form a hierarchical structure but a linear array does not

d) All of above

7) Which of the following statement is false ?

a) arrays are dense lists and static data structure

b) data elements in linked list need not be stored in adjacent space in memory

c) pointers store the next data element of a list

d) linked lists are collection of the nodes that contain information part and next pointer

8) Binary search algorithm can bot be applied to

a) sorted linked list   b) sorted binary trees

c) sorted linear array   d) pointer array

9) The situation when in a linked list START = NULL is

a) underflow   b) overflow

c) housefull   d) saturated

10) Which of the following name does not relate to stacks ?

a) FIFO lists   b) LIFO list

c) Piles   d) Push-down lists

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

1) A data structure is a logical method of representing _____

2) In the _____ , the deletion procedure is complex.

3) When an element needs to be removed from the stack, the pop operation is performed ?

4) In a preorder traversal, the root node is visited first.

2. A) Write short notes on the following :   **8**
      i) Complexity of algorithm.
      ii) What is linear search ? Discuss its advantage and disadvantage

   B) i) Define pointer variable
      ii) Discuss dynamic memory allocation of array of pointers.

3. a) Define binary tree. Explain threaded binary tree.   **14**

   b) Describe the structure of linear linked list. Write algorithm to insert and remove nodes from a list.

4. a) Define queue. Explain different types of queue in detail.   **14**

   b) Explain DFS.

5. a) Explain how two stack can be implemented using single array.   **14**

   b) Discuss linked and array representation of binary trees.

6. a) Compare and contrast merge sort and quick sort methods.   **14**

   b) Define array. Explain its types.

7. a) Explain the term polish notations with suitable example.   **14**

   b) Write a C/C++ program for transpose of matrix.

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Seat No.	

M.C.A. (Semester – II) Examination, 2014
COMPUTER SCIENCE
Numerical Techniques

Day and Date : Thursday, 20-11-2014　　　　　　　　　　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.
　　　　　　　　　iv) **Use** of simple or scientific calculator is **allowed**.

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

　　i) To apply Simpson's one third rule, the given interval must be divided into
　　　an _____ number of equal intervals.
　　　a) Odd　　　　　　　　　　　　b) Even
　　　c) Countable　　　　　　　　　d) Uncountable

　　ii) Simpsons one third rule is obtained by taking n = _____ in
　　　general quadrature formula.
　　　a) 1　　　　　　　　　　　　　b) 2
　　　c) 3　　　　　　　　　　　　　d) 4

　　iii) Process of estimating the value of dependent variable of an intermediate
　　　value is called _____
　　　a) Interpolation　　　　　　　　b) Extrapolation
　　　c) Estimation　　　　　　　　　d) Dependence

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

　　v) The convergence in modified Euler's method is _____ than
　　　that of Euler's method.
　　　a) Slower　　　　　　　　　　　b) Compatible
　　　c) Faster　　　　　　　　　　　d) One time more

P.T.O.

vi) Convergence is Gauss-Siedel method is a _____ as fast as Guass-Jacobi's method.
   a) One
   b) Twice
   c) Thrice
   d) Four times

vii) In which of the following methods proper choice of initial value is very important ?
   a) Bisection method
   b) False position
   c) Newton-Raphson
   d) Bairsto method

viii) _____ method is not convergent always.
   a) Bisection
   b) Regula Falsi method
   c) Secant method
   d) Simpson's rule

ix) A root of the equation $x^3 - x - 11 = 0$ correct to four decimals using bisection method is _____
   a) 2.4737
   b) 2.3838
   c) 2.3736
   d) 3.0000

x) In the Gauss-Elimination method for solving a system of linear algebraic equations, triangularization leads to
   a) Diagonal matrix
   b) Upper triangular matrix
   c) Lower triangular matrix
   d) Singular matrix

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

   i) Newton-Raphson method is applicable to solution of both algebraic and transcendental equations.

   ii) Simpson's rule is applicable for ordinary differential equations.

   iii) In Euler's method we approximate the curve of solution by the tangent in each interval.

   iv) In Secant method only one function evaluation per iteration.

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

   i) Regula-Falsi method.

   ii) Differential equation.

B) Solve the following equations by Cramer's rule :   **6**
   $2x + 2y + 2z = 2$
   $4x - 2y + 2z = 6$
   $2x + 4y - 2z = 4$

3. A) Solve $xe^x - 3 = 0$ by Regula-Falsi method to obtain a root lying in the interval (1, 1, 1) correct to 3 places of decimal. **7**

   B) Use the Secant method to estimate the root of the equation $x^2 - 4x - 10 = 0$ with the initial estimates of $x_1 = 4$ and $x_2 = 2$. **7**

4. A) Explain the LU decomposition method. **7**

   B) Use Gauss-Elimination method to solve : **7**
   $x + y + z = 6$
   $3x + 3y + 4z = 20$
   $2x + y + 3z = 13$

5. A) The following table gives the sales of Pentium of 'Info Tech. Company' for the last five years. Estimate the sales for year 1995 using Newton forward difference formula. **7**

Year (x)	1992	1994	1996	1998	2000
Sales (y) (in billions of Rs.)	40	48	52	65	84

   B) Explain the Trapezoidal rule. **7**

6. A) Apply Runge-Kutta second order formulae to estimate y(0.2) given
   $\frac{dy}{dx} = 1 + y^2$, y(0) = 0, h = 0.2. **7**

   B) Given $\frac{dy}{dx} = 1 + xy$, y(0) = 1 obtain the Taylor's series for y(x) and compute y (0.1) correct to four decimal. **7**

7. A) Using Simplex method solve the following L.P.P : **7**
   Maximize Z = 24x + 16y subject to
   $x \geq 0$, $y \geq 0$, $x + y \leq 5$, $3x + 4y \leq 24$, $2x + y \leq 6$.

   B) Solve $x^4 - x - 9 = 0$ by Newton Raphson method (Perform 3 iterations). **7**

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Seat No.	

M.C.A. (Part – I) (Semester – II) Examination, 2014
COMPUTER SCIENCE
Operating System

Day and Date : Saturday, 22-11-2014 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) Choose correct alternative : **10**

1) _____ increases CPU utilization by organizing jobs so that CPU always has one to execute.

   a) Batch system b) Multiprogramming

   c) Exception d) End User

2) _____ provides an interface to the services made available by operating system.

   a) System calls b) Intelligent calls

   c) Relocation registers d) Dispatcher

3) _____ scheduler is also known as CPU scheduler.

   a) Long term scheduler

   b) Job scheduler

   c) Medium term scheduler

   d) Short term scheduler

4) The time it takes for the dispatcher to stop one process and start executing another is called as _____

   a) Real time system b) Dispatch latency

   c) Thread d) Time sharing system

5) _____ Scheduling depends on the length of the next CPU burst of process, rather than its total length.

   a) Shortest job first

   b) First Come First Serve

   c) Priority scheduling

   d) Round Robin

6) The value of a _____ can range only between 0 and 1.

   a) Counting semaphore   b) Binary semaphore

   c) Virtual Memory   d) Relocation registers

7) The logical memory having blocks of same size _____

   a) ROM   b) Base register

   c) Frame   d) Page

8) A _____ defines a path from a current directory.

   a) Logical path   b) Relative path

   c) Absolute path   d) None of these

9) An address generated by the CPU is commonly referred to as _____

   a) Physical address

   b) Relocation register address

   c) Machine address

   d) Logical address

10) In _____, each file is linked list of disk blocks; these disk blocks may be scattered anywhere on the disk.

   a) Contiguous allocation   b) Linked allocation

   c) Indexed allocation   d) None of these

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

   1) A process is independent if it can affect or be affected by other processes executing in the system.

   2) It's a job of security mechanism to defend a system from external or internal attacks.

   3) Time sharing is a logical extension of multiprogramming.

   4) Best fit allocates first hole that is big enough.

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

   i) Fragmentation

   ii) File Attribute and Operations.

  B) Answer the following : **6**

   i) Briefly explain a concept of swapping.

   ii) What do you mean by thread ?

3. Answer the following : **14**

  A) State CPU scheduling criteria. Differentiate between Long term and Short term schedulers.

  B) Discuss inter process communication in detail.

4. Answer the following : **14**

  A) Define Deadlock. Discuss resource-allocation graph for deadlock avoidance.

  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) Define Process. Discuss various process states in detail.

6. Answer the following : **14**

  A) Discuss producer-consumer problem of synchronization.

  B) Define security. Explain the security problem in detail.

7. Answer the following : **14**

  A) State and explain various directory structures.

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

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SLR-E – 15

Seat No.	

M.C.A. (Semester – II) (Computer Science) Examination, 2014
MANAGEMENT – II

Day and Date : Tuesday, 25-11-2014   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** 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) Gross working capital means _____

       a) Total assets minus capital

       b) Total assets

       c) Total current assets

       d) Total current liabilities

    2) Budget is blue print of _____

       a) Project plan of action for a definite period

       b) Executed plan of last year

       c) Plan for current situations

       d) Plan for last year performance

    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) Working capital _____ of current assets over current liabilities.

       a) Is equal   b) Is lesser

       c) Is an excess   d) Option a) or b)

6) In funds flow statement, purchases of land and building means _____

   a) Sources of fund

   b) Increase in working capital

   c) Application of funds

   d) Forecasting of funds

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) The term goal signifies the general statement of direction in line with the _____

   a) Vision   b) Mission

   c) Objectives   d) Strategy

10) Management by objectives was first popularized by _____

   a) Henry Fayol

   b) Peter Drucker

   c) Devid McCleland

   d) Everett Hagen

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) Ratio analysis does not help to make inter-firm comparison.

   4) Strategic management analyzes the major initiatives taken by a company's top management on behalf of consumers.

2. A) Write short note on the following : **8**
   1) Account receivables
   2) Investment center.

   B) Answer the following : **6**
   1) SWOT analysis
   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) Define management report, why it is important in business ?

   B) Define working capital management.

7. Answer the following :   **14**

   A) From the following data calculate labour cost variance :

Particulars	Rs./Time
e) Standard rate of wage per hour	Rs. 5
f) Standard time set	500 hours
g) Actual rate of wage per hour	Rs. 6
h) Actual time taken	490 hours

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

———————————

SLR-E – 16

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

     1) Remote login requires

          a) Request – reply

          b) Acknowledge datagram

          c) Reliable message stream

          d) Reliable byte stream

     2) In layered network architecture how two consecutive layers are related ?

          a) Lower layer is service provider and upper layer is service user

          b) Lower layer is service user and upper layer is service provider

          c) Both a) and b)

          d) None of the above

     3) While creating sink tree for a sublet

          a) Certain unconnected nodes are connected

          b) Certain connected nodes are disconnected

          c) Certain new nodes are added

          d) a) and b)

4) Choose appropriate answer with respect to transparent fragmentation

   a) It limits the number of fragments

   b) It does not reassemble fragments

   c) It reassembles fragments

   d) Both a) and b)

5) The nesting of headers of different layers from inner-most to outer-most are in the following order

   a) Frame header, Packet header, TPDU header

   b) Packet header, TPDU header, Frame header

   c) Packet header, Frame header, TPDU header

   d) TPDU header, Packet header, Frame header

6) The IP address 01100010011110001110000100001001 belongs to

   a) Class A   b) Class B

   c) Class C   d) Class D

7) The equations feature was added in HTML version

   a) 1.0   b) 2.0

   c) 3.0   d) 4.0

8) I-mode established with new

   a) Transmission system

   b) Handsets

   c) Language for webpages design

   d) All the above

9) The key length of DES (Data Encryption Standard) algorithm is

   a) 32 bits   b) 56 bits

   c) 128 bits   d) 168 bits

10) Which of the following is not related to network security problem ?

   a) Secrecy   b) Authorization

   c) Non-repudiation   d) Integrity

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

1) The IP address 11101101101011010110101011010101 belongs to class _____ .

2) A 15 byte sized packet, with 1 byte of elementary data size pass through a network with maximum packet size of 10 bytes (excluding header part) and then in to a network with maximum packet size of 3 bytes (excluding header part). The number of fragments at the end of these two networks is _____ .

3) The _____ consists of three parts: the protocol, the DNS name of the host, and the file name, with certain punctuation separating the pieces.

4) The DES (Data Encryption Standard) was devised by _____ .

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

i) Briefly explain real time transfer protocol.

ii) Encode the following text using transposition cipher using key WHITECAR :
KEEPYOURTROOPSINALERTPOSITIONTOATTACKENEMYANYTIME

B) Answer the following : **6**

i) What are multipurpose internet mail extensions ? Discuss.

ii) The distances between different routers are given in the following subnet. Build the sink tree for router A using optimality principle :
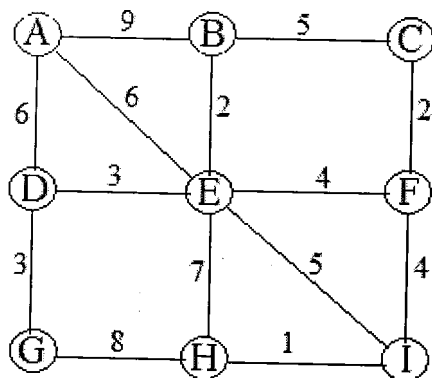
3. Answer the following : **14**

   A) What are service primitives ? Discuss use of service primitives to send packet in a sample client server interaction on a connected oriented network.

   B) Give routing table for routers A, D, E and G for the below virtual circuit subnet when processes in the hosts are started in the order of H1, H2 and H3 :
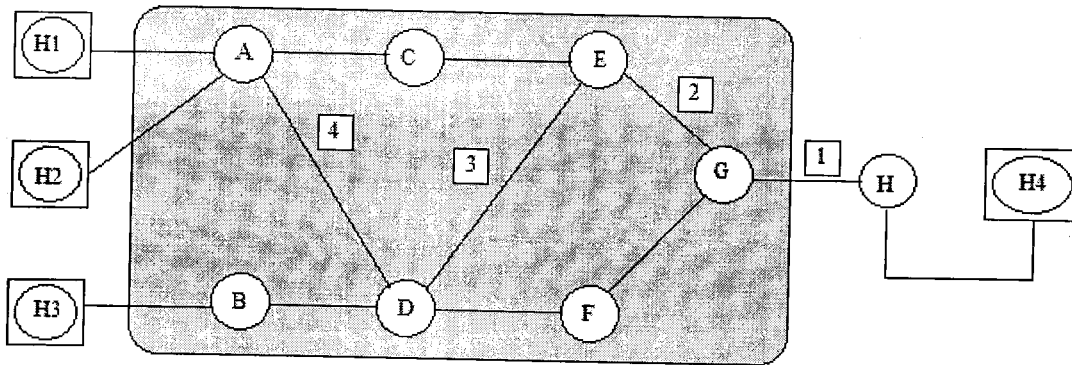
4. Answer the following : **14**

   A) What is NAT ? Why it is required ? How it works ? Explain.

   B) For the following network build full routing table and hierarchical routing table containing destination, line and hops details for router 1A based on hop count.
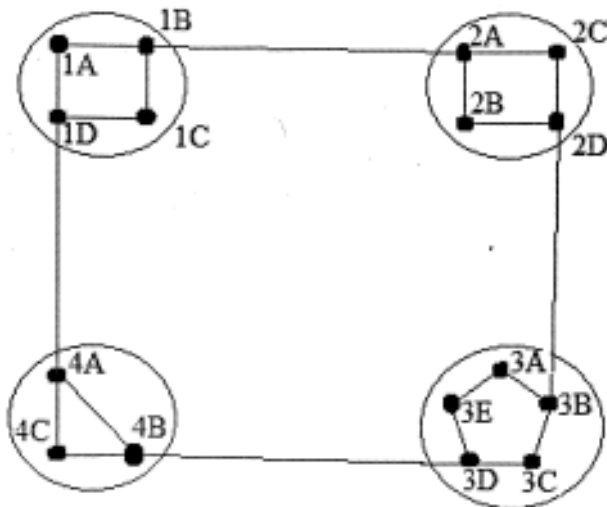
5. Answer the following : **14**

   A) Describe the TCP connection establishment and release mechanism.

   B) For the following subnet the delay vectors for the neighbors of router E are given in the below table. The new delays from E to its neighbors are also given. Compute the new routing table for the router E containing the new estimated delay from E to every other router using the distance vector routing algorithm :
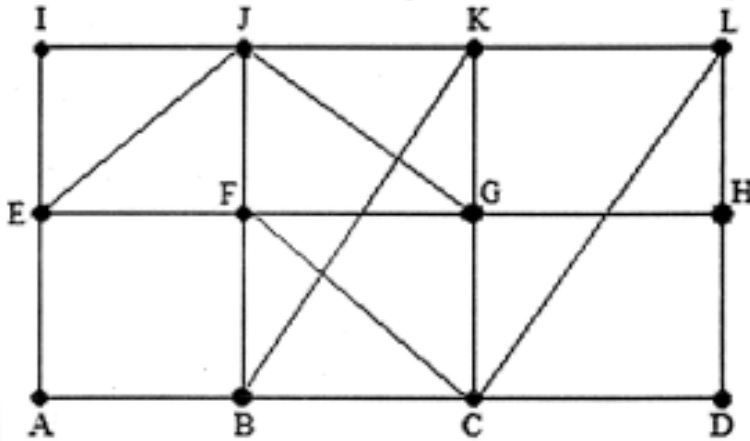
To	A	F	I	J
A	0	14	19	22
B	8	9	21	19
C	12	11	27	25
D	18	23	36	31
E	9	10	12	12
F	14	0	15	9
G	22	7	18	13
H	25	18	21	24
I	15	17	0	6
J	18	10	9	0
K	24	13	13	7
L	34	28	17	10
	EA delay is 7	EF delay is 9	EI delay is 11	EJ delay is 14

Vectors received from our neighbours of B

6. Answer the following : **14**

A) How dynamic web documents differ from static web documents ? Explain.

B) A set of IP addresses have to be assigned contiguously to different organization using classless inter domain routing. The organization names with their number of IP address requirements are given in the following table. The first address allocation starts with 175.212.0.0. Find out the last address and the IP address with/notation for each organization. Also provide the binary IP address and mask for each :

University	Required IP addresses
Nagpur	2048
Bangalore	2048
Mumbai	4096
Delhi	8192
Patna	1024

Also identify to which of the above University the following IP addresses belong by performing AND operation with each of the above given Universities :

  i) 175.212.19.133

 ii) 175.212.56.201

iii) 175.212.33.9

7. Answer the following : **14**

   A) What are the different approaches for digital signatures ? Briefly explain each.

   B) Explain count to infinity problem. Build link state packets for the following subnet.

_____

SLR-E – 17

M.C.A. – II (Semester – III) (Computer Science) Examination, 2014
JAVA PROGRAMMING

Day and Date : Monday, 17-11-2014   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**

   1) Which of the following is not primitive data type in Java ?

      a) boolean   b) byte

      c) string   d) double

   2) What is the output of the following program ?

      public class Test

      {

              Public static void main(String[ ] args)

              {

                      System.out.println((1==1) ? (7==8) ? 5 : 6 : 4);

              }

      }

      a) 4   b) 6   c) 5   d) 1

P.T.O.

3) What is the output of the following program ?

```
class TestApp {
    public int doIt(int m, int n) {
        m = m + n;
        n = m – n;
        m = m – n;
        return(10 * m + n);
    }
}
public class Test {
    public static void main(String[ ] args) {
        int[ ] myArr = {3, 6, 2};
        TestApp myObj = new TestApp( );
        System.out.println(myObj.doIt(myObj.doIt(myObj.doIt(
                        myArr[2],0), myObj.doIt(myArr[1],0)),0));
    }
}
```

a) 26   b) 62   c) 623   d) 0

4) The statement
       System.out.print((double) 7/4);
   Prints
   a) 1.75   b) 1   c) 1.0   d) 2.0

5) Garbage collector frees the programmer from worrying about
   a) memory leaks   b) dangling references
   c) creating new objects   d) recursion

6) The keywords – try, catch and finally are typically used in the sequence
   a) try, catch, finally   b) finally, try, catch
   c) catch, try, finally   d) try, finally, catch

7) What is the range of data type short in Java ?

   a) – 128 to 127   b) – 32768 to 32767

   c) – 2147483648 to 2147483647   d) None of the mentioned

8) Which of these packages contain all the Java's built in exceptions ?

   a) Java.io   b) java.util   c) java.lang   d) java.net

9) Thread priority in Java is ?

   a) Integer   b) Float   c) Double   d) Long

10) Which of these method of string class is used to obtain character at specified index ?

   a) char( )   b) Charat( )   c) charat( )   d) CharAt( )

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

1) Private members of a class cannot be inherited by a sub class.

2) Operator *'new'* dynamically allocates memory for an object and returns a reference to it.

3) Every class must contain a main( ) method.

4) When we assign an object to another object of same type, all the elements of right side object gets copied to object on left side of equal to, =, operator.

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

   i) Class FileWriter

   ii) Garbage Collector.

B) Answer the following :   **6**

   i) Describe : operator.

   ii) Explain *'break'* statement.

3. Answer the following :   **14**

A) What is method overloading ? Explain with example.

B) What is inheritance ? How to invoke the constructor method of a superclass ?

4. Answer the following : **14**

   A) Describe how to play a sound clip in a Java Program.

   B) Describe how radio button is put on applet ? Describe how an event generated by a radiobutton is handled.

5. Answer the following : **14**

   A) Write a program to determine whether a given number is a member of the Fibonacci sequence or not. Use method named isFibonacci( ) in this program that will accept an integer and return the Boolean value true (if integer is a member of the Fibonacci sequence) or false (if integer is not a member of the Fibonacci sequence).

   B) State the purpose of the following JDBC classes and interfaces :

      i) Driver manager

      ii) Connection

      iii) Statement.

6. Answer the following : **14**

   A) Write a program to compute the sum of the first N terms in the following series :

   $-1 + 2 - 3 + 4 - 5 + ...$

   B) Explain the life cycle of a thread.

7. Answer the following : **14**

   A) Write a program to input number and find a largest digit in a given number and print it in word with appropriate message. (e.g. n=5273 – "SEVEN is largest")

   B) What are the types of stream classes ? Explain Reader and Writer class.

_____

Seat
No.

M.C.A. (Semester – III) (Computer Science) Examination, 2014
SOFTWARE ENGINEERING

Day and Date : Wednesday, 19-11-2014   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) 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

6) Software consists of

   a) Set of instructions + Operating procedures

   b) Programs + documentation + operating procedures

   c) Programs + hardware manuals

   d) Set of programs

7) Which is not a step of requirement engineering ?

   a) Requirements elicitation   b) Requirements analysis

   c) Requirements design   d) Requirements documentation

8) For a function of two variables, boundary value analysis yields

   a) $4n + 3$ test cases   b) $4n + 1$ test cases

   c) $n + 4$ d) None of the above

9) Software deteriorates rather than wears out because

   a) Software suffers from exposure to hostile environments

   b) Defects are more likely to arise after software has been used often

   c) Multiple change requests introduce errors in component interactions

   d) Software spare parts become harder to order

10) What types of models are created during software requirements analysis ?

   a) Functional and behavioral

   b) Algorithmic and data structure

   c) Architectural and structural

   d) Usability and reliability

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

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

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

   3) The goal of quality assurance is to provide management with the data needed to determine which software engineers are producing the most defects.

   4) The ISO quality assurance standard that applies to software engineering is ISO9001.

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

    i) Control Structure Testing

    ii) Procedural Design.

  B) Answer the following : **6**

    i) List any three advantages of Water Model

    ii) List any three advantages of RAD Model.

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

  A) What is analysis modeling ? Explain any three elements of analysis model.

  B) Explain prototyping model with two advantages and disadvantages respectively.

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

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

  B) What is test case ? Explain any six elements present in a good test case design.

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

  A) What is white box testing ? Explain any three white box testing methods with example.

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

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

  A) What is myth ? Explain management myths, customer myths and practitioner's myths in brief.

  B) What is black box testing ? Explain equivalence partitioning and boundary value analysis with example.

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

  A) What is DFD ? Explain physical and logical DFD with example in brief.

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

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Seat No.

M.C.A. – II (Semester – III) Examination, 2014
COMPUTER SCIENCE
DBMS

Day and Date : Friday, 21-11-2014   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** indicates **full** marks.

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

    1) A query within a query is called as _____

       a) join   b) nested query

       c) view   d) trigger

    2) Between is a _____ operator.

       a) Range   b) List

       c) Comparison   d) None of these

    3) The default order in order by clause is _____

       a) ascending   b) descending

       c) a) and b) both   d) none of these

    4) A row with values is called as _____

       a) tuple   b) domain

       c) relation   d) attribute

    5) Do all or do none in transaction is known as

       a) atomicity   b) isolation

       c) consistency   d) durability

6) The number of occurrences of an association of one entity with respect to another entity is known as

   a) aggregation
   b) specialization
   c) cardinality
   d) generalization

7) _____ is a virtual table formed by subset of columns from one or more table.

   a) view
   b) trigger
   c) join
   d) cursor

8) Varying arrays are also known as _____

   a) VARRAYS
   b) ARRAYSV
   c) ARRAY G
   d) GARRAY

9) In transaction processing, the Two Phase Protocol (2PC) is a type of _____

   a) Atomic Commitment Protocol
   b) Atomic Rollback Protocol
   c) Atomic Sophisticated Protocol
   d) None of these

10) In immediate modification technique, data modifications written by active transactions are called as _____

   a) uncommitted modifications
   b) committed modifications
   c) a) and b) both
   d) idempotent

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

1) The savepoint statement is used to identify a point of transaction to which you later rollback.

2) The users who write specialized database applications that do not fit into traditional data processing frame work is known as naïve users.

3) The SQL distinct clause allows us to remove duplicates from the result.

4) The size of nested table can increase dynamically that is nested tables are unbounded.

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

   i) ACID properties

   ii) DML.

   B) Attempt the following : **6**

   i) List any three restrictions imposed on view.

   ii) List any three characteristics of Relational Database System.

3. A) Define database. Explain any five limitations of traditional file processing
   system. **7**

   B) Explain the life cycle of database system development. **7**

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

   B) What is Distributed Database ? Explain its type. **7**

5. A) What is DDL ? Explain create, alter and drop command with example. **7**

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

6. A) What is Join ? Explain Inner Join and Outer Join with example. **7**

   B) Define Normalization. Explain 1 NF, 2 NF and 3 NF with example. **7**

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

   B) Explain the states for transaction execution with systematic diagram. **7**

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SLR-E – 2

M.C.A. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE
Programming using C (New)

Day and Date : Monday, 17-11-2014   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) What is the output of the program ?

        #include <stdio.h>

        #define sq(a) a * a

        void main( )

        {

            printf("%d", sq(3+2));

        }

        a) 25   b) 11

        c) 10   d) Compilation error

    2) void main ( ) {

        int a = 0 ;

        for (; a ;);

            a++; }

        What will be the value of the variable a, on the execution of the above program ?

        a) 1   b) 0

        c) –1   d) None of these

    3) A declaration float a, b; occupies _____ bits of memory.

        a) 4   b) 8   c) 16   d) 64

4) Which of the following loop structures is known as an exit-controlled ?

a) do... while loop   b) while loop

c) for loop   d) none of these

5) What is the output of the program ?

```
include <stdio.h>
void main( )
{
    char buffer[10] = {"Genesis"};
    printf("%d", &buffer[4]- (buffer));
}
```

a) 3

b) 4

c) 0

d) Illegal pointer subtraction

6) What will be the value of x after executing the program ?

```
void main ( ) {
    int x;
    x = printf ("I See, Sea in C");
    printf("\n x=% d", x); }
```

a) x = 15   b) x = 2

c) Garbage value   d) Error

7) What is the output of the program ?

```
#include <stdio.h>
    void main(int argc, char *argv [ ])
    {
        printf("%d", printf("Top Down"));
    }
```

a) Top Down   b) 8Top Down

c) Top Down8   d) None of these

8) What the following function call mean ?

strcpy (s1, s2);

a) copies s1 string into s2

b) copies s2 string into s1

c) copies both s1 and s2

d) None of these

9) Which of the following is not a relational operator ?

a) !   b) !=   c) >=   d) <

10) Continue statement is used

a) to go to the next iteration in a loop

b) come out of a loop

c) exit and return to the main function

d) restarts iterations from beginning of loop

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

1) In case of pseudo code a graphic representation of a program logic is not available.

2) Operators having equal precedence are evaluated using associativity.

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

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

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

i) Recursion

ii) *Continue* statement.

B) Answer the following : **6**

i) Write the algorithm to calculate sum of 1 to 10 numbers.

ii) Explain 'for' loop with example.

3. Answer the following :

a) Define structure and union. Explain the way of declaring and accessing them. **7**

b) Write a program to check whether given number is prime or not. **7**

4. Answer the following :

a) What is a flow chart ? What are the various symbols used to draw a flow chart ? **7**

b) What are the various types of operators in C ? **7**

5. Answer the following :

a) What do you mean by pre-processor directives ? List and explain its different categories. **7**

b) Write a program to create file "even" to store all even numbers between 1 and n. **7**

6. Answer the following :

a) State and explain various modes of opening a file. Which function is used to open a file ? **8**

b) What is meant by storage class of variable ? Explain automatic storage class specifier. **6**

7. Answer the following :

a) What is meant by function argument, function call and return value ? **7**

b) What is array ? How to declare array ? Explain with suitable example. **7**

_____

SLR-E – 20

Seat
No.

M.C.A. – II (Semester – III) (Computer Science) Examination, 2014
COMPUTER ORIENTED STATISTICS

Day and Date : Monday, 24-11-2014　　　　　　　　　　　　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 three** questions from Q. **3** to Q. **7**.
　　　　　　　　3) Figures to **right** indicate **full** marks.

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

　　1) The shoes manufacturing wishes to manufacture only the most popular size
　　　of shoes. Which measure of central for the shoes can help the manufacturer
　　　in arriving at desired size ?
　　　a) Median　　　　　　　　　　　　b) Mean
　　　c) Mode　　　　　　　　　　　　　d) Weighted mean

　　2) An unbiased coin is tossed. The probability of getting one head is _____

　　　a) 1　　　　　　　　　　　　　　　b) $\frac{1}{2}$

　　　c) $\frac{1}{4}$　　　　　　　　　　　　　d) $\frac{3}{4}$

　　3) Histogram is not constructed for _____
　　　a) Open end class
　　　b) Exclusive class interval
　　　c) Inclusive class interval
　　　d) Both b) and c)

　　4) Probability of two mutually exclusive events is always _____
　　　a) Zero　　　　　　　　　　　　　b) One
　　　c) ∞　　　　　　　　　　　　　　d) None of these

P.T.O.

5) For _____ distribution mean and variance are qual.

   a) Normal   b) Binomial

   c) Bernoulli   d) Poisson

6) Range of Karl Pearson's coefficient of correlation is _____

   a) $0 \leq r \leq 1$ b) $-1 \leq r \leq 1$

   c) $0 \leq r \leq \infty$ d) $-\infty \leq r \leq \infty$

7) The normal probability curve is _____

   a) Bell shaped   b) Symmetric

   c) Mesokurtic   d) All of the above

8) The mean of binomial distribution is _____

   a) Always more than its variance

   b) Always equal to variance

   c) Always less than its variance

   d) Always equal to standard deviation

9) If P(A) = P(B) then _____

   a) A and B are the independent events

   b) A and B must be same events

   c) A and B may be different events

   d) A and B are mutually exclusive events

10) Which measure of central tendency cannot be calculated graphically ?

   a) Mean   b) Mode

   c) Median   d) All of above

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

1) Probability of impossible event is always _____

2) The coefficient of variation is ratio of _____ to _____ expressed in percentages.

3) Using histogram _____ can be calculated graphically.

4) The sum of deviation taken from mean is always _____

2. A) 1) Explain the concept of normal distribution.   **4**

    2) Suppose coin is tossed five times. Find the probability of getting 3 heads.   **4**

B) 1) Explain the concept of Poisson distribution with real life example.   **3**

    2) Define probability.   **3**

3. A) Explain the concept of measures of dispersion with example. **7**

   B) What is Histogram ? Draw a Histogram from the following data and determine the mode value from it. **7**

Class	0 – 6	6 – 12	12 – 18	18 – 24	24 – 30	30 – 36
Frequency	4	8	15	20	12	6

4. A) The marketing manager of a company was studying the relationship between sales and amount sent on advertisement. The sales information is given below : **7**

Slaes (Rs.)	18	19	20	22	21	24	23	27	26	25
Advertisement (Rs.)	17	17	18	20	19	21	20	22	21	22

   Calculate Karl Pearson's coefficient of correlation between sales and amount sent on advertisement. Interpret your result.

   B) Calculate mean deviation and coefficient of mean deviation for following distribution. **7**

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	6	5	8	2	21	6

5. A) A discrete random variable X has the following distribution. **7**

X	– 2	– 1	0	1	2	3
P(x)	0.1	K	0.2	2k	0.3	k

   Find :
   i) Value of k
   ii) $P(|X| < 2)$.

B) Calculate median for following distribution : **7**

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	5	8	10	14	10	8	5

6. A) A bag contains 8 white balls and 12 pink balls. Two balls are drown on by one without replacement. Find the probability that : **7**

   i) Both are pink

   ii) One of each color.

   B) Explain the generation of random sample from exponential distribution. **7**

7. A) What do you understand by arithmetic mean ? Discuss its merits and demerits. **7**

   B) The efficacy rate of drug A is 75%. Suppose same drug is tested in 4 patients then find the probability that 2 patients will get cure. **7**

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Seat
No.

M.C.A. (Semester – IV) Examination, 2014
COMPUTER SCIENCE
Finite Automata

Day and Date : Saturday, 15-11-2014   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**

   1) Can a DFSA simulate a NFSA
      a) No   b) Yes
      c) Sometimes   d) Depends on NFA

   2) Basic limitations of finite state machine is
      a) It cannot remember arbitrarily large amount of information
      b) It cannot remember state transitions
      c) It cannot remember grammar for a language
      d) It cannot remember language generated from a grammar

   3) The transitional function of a DFA is
      a) $Q \times \Sigma \rightarrow Q$ b) $Q \times \Sigma \rightarrow 2^Q$
      c) $Q \times \Sigma \rightarrow 2^n$ d) $Q \times \Sigma \rightarrow Q^n$

   4) The concept of FSA is much used in this part of the compiler
      a) lexical analysis   b) parser
      c) code generation   d) code optimization

   5) R_1 and R_2 are regular sets. Which of the following is not true ?
      a) $R_1 \cap R_2$ need not be regular   b) $\Sigma^* - R_1$ is regular
      c) $R_1 \cup R_2$ is regular   d) None of the above

   6) The set of all strings over the alphabet Σ = {a, b} (including ε) is denoted by
      a) $(a + b)^*$ b) $(a + b)^+$
      c) a^+b^+ d) a^*b^*

7) Which of the following denotes Chomskian hierarchy ?
   a) REG ⊂ CFL ⊂ CSL ⊂ type0
   b) CFL ⊂ REG ⊂ type0 ⊂ CSL
   c) CSL ⊂ type0 ⊂ REG ⊂ CFL
   d) CSL ⊂ CFL ⊂ REG ⊂ type0

8) Recursively enumerable languages are not closed under
   a) union   b) homomorphism
   c) complementation   d) concatenation

9) Which of the following regular expression identity is true ?
   a) $r(*) = r^*$
   b) $(r^*s^*)^* = (r + s)^*$
   c) $(r + s)^* = r^* + s^*$
   d) $r^*s^* = r^* + s^*$

10) A language L from a grammar $G = \{V_N, \Sigma, P, S\}$ is
    a) Set of symbols over V_N
    b) Set of symbols over Σ
    c) Set of symbols over P
    d) Set of symbols over S

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

   1) For DFA the transitional function δ is represented by
      $Q \times \Sigma \rightarrow$ _____

   2) If input is given null for a state of Finite Automata, the machine goes to
      the _____

   3) Automata of all kinds define _____

   4) Finite control can be considered as a _____ unit of a Finite
      automation.

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

   i) Non-deterministic finite automata.

   ii) The Turing Machine.

   B) Answer the following :   **6**

   i) Convert the regular expression $(01 + 1)^*$ to •-NFA.

3. Answer the following :

   A) Compute •-closure for each state for the following •-NFA. **7**

	•	a	B
→ p	{r}	{q}	{p,r}
q	Φ	{p}	Φ
r	{p,q}	{r}	{p}
s	{p}	{p}	{p}

   B) Convert the following NFA to equivalent DFA. **7**

	a	B
→ q0	{q0,q1}	{q2}
q1	{q0}	{q1}
*q2	Φ	{q0,q1}

4. Answer the following :
   A) State and prove the Pumping Lemma for regular languages. **7**
   B) Prove that if L and M are regular languages then so is L∩M. **7**

5. Answer the following :
   A) Define CFG and construct CFG for regular expression r = (0 + 1)*00 (0 + 1)* over the alphabet (0, 1}. **7**
   B) Define PDA. Describe the language accepted by PDA. **7**

6. Answer the following :
   A) Define CNF. Convert the following Grammar to CNF. **7**

   S→aSb|ab|Aa

   A→aab.

   B) Design FA that accepts only those words with exactly four letters over alphabets {a, b}. **7**

7. Answer the following :
   A) Prove that the context free languages are closed under union and concatenation. **7**
   B) Design PDA for the grammar. **7**

   S→aSa

   S→bSb

   S→c

SLR-E – 22

M.C.A. – II (Semester – IV) (Computer Science) Examination, 2014
.NET

Day and Date : Tuesday, 18-11-2014   Max. Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions : I) Question 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 **full** marks.

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

    i) ASP.NET is

        a) Windows application   b) Web application

        c) Consol application   d) All the above

    ii) Master page is used to

        a) Display client server controls

        b) Display common controls to every page

        c) Communicate with different pages

        d) None of the above

    iii) In C#, by default structs are passed how ?

        a) By memory   b) By value

        c) By reference   d) By address

    iv) Which of the following object is not an ASP component ?

        a) LinkCounter   b) Counter

        c) AdRotator   d) File access

    v) Which of the following character ends every C# statement ?

        a) Period(.)   b) Colon(:)

        c) Semicolon(;)   d) Comma(,)

vi) We can manage states in ASP.NET application using

   a) Session Objects   b) Application Objects

   c) View State   d) All the above

vii) File extension used for ASP.NET files.

   a) .web   b) .ASP

   c) .ASPX   d) None of the above

viii) Default scripting language in ASP

   a) EcmaScript   b) VBScript

   c) PERL   d) JavaScript

ix) When does Garbage Collector run ?

   a) When application is running low memory

   b) It runs random

   c) When application is running for more than 15 min.

   d) None of the above

x) What is boxing ?

   a) Encapsulating an object in a value type

   b) Encapsulating a copy of an object in a value type

   c) Encapsulating a value type in an object

   d) Encapsulating a copy of a value in an object

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

   i) _____ is a property common in every validation control.

   ii) _____ is the data type return in IsPostback property.

   iii) _____ is the first method that is fired during the page load.

   iv) All comparison operators return _____ type values.

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

    i) What are the characteristics of c# ?

    ii) List and explain CTS data types.

  B) Explain briefly web architecture model. **6**

3. Answer the following : **14**

  A) Explain structure and function of .NET runtime(CLR).

  B) Explain briefly web architecture model.

4. Answer the following : **14**

  A) Briefly explain the ASP.NET page life cycle.

  B) What is validation ? Explain with an example.

5. Answer the following : **14**

  A) Explain turning off client side validation.

  B) What are difference between client side validation and server side validation ?

6. Answer the following : **14**

  A) What are the master page events ? Explain.

  B) What is nesting of master page and explain with an example ?

7. Answer the following : **14**

  A) Write a note on state management and explain any two briefly.

  B) How do you create HTTP session state object ?

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SLR-E – 23

Seat No.	

M.C.A. – II (Semester – IV) Examination, 2014
COMPUTER SCIENCE
UML

Day and Date : Thursday, 20-11-2014   Total Marks : 70
Time : 3.00 p.m. to 6.00 p.m.

Instructions : I) Question 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 **full** marks.

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

    1) Which of the following is organizational part of UML ?

      a) Structural Things   b) Behavioral Things

      c) Grouping Things   d) Annotational Things

    2) A _____ is a structural relationship that specifies one object is connected to other object.

      a) Association   b) Generalization

      c) Dependency   d) None of these

    3) Extension of semantics in UML is known as _____

      a) Stereotype   b) Constraints

      c) Tagged value   d) Note

    4) A _____ diagram is an interaction diagram that emphasizes time ordering.

      a) Sequence   b) Collaboration

      c) Component   d) Class

    5) Class diagrams are grouped under _____

      a) Structural modeling   b) Behavioral modeling

      c) Annotational modeling   d) Process modeling

P.T.O.

6) The collection of operation that is used to specify a service of a class is called as _____

   a) Subsystem
   b) Interface
   c) Signal
   d) Node

7) An _____ is ongoing non atomic execution within state-machine.

   a) Activity
   b) Entity
   c) Process
   d) None of these

8) _____ is the semantic connection among the objects.

   a) Message
   b) Sequence
   c) Link
   d) Context

9) A partition on an interaction diagram for organizing responsibilities for actions is known as _____

   a) Signature
   b) Substate
   c) Swimlane
   d) Stimulus

10) Which of the following is the extensibility mechanism in the UML ?

   a) Stereotype
   b) Tagged value
   c) Constraints
   d) All the above

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

   1) Sequence diagram can be broken up into chunks called fragments.

   2) An interface can be represented by rectangle having 3 compartments.

   3) UML is a modeling language.

   4) During design phase we should draw use case dia. and class dia.

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

   i) Aggregation

   ii) Packages in UML.

   B) Explain object diagram with example. **6**

3. Answer the following : **14**

   1) What is Association ? Explain its type with example.

   2) Explain Goal of UML.

4. Answer the following : **14**

   1) What is purpose of component and deployment diagram ?

   2) Explain guideline for identifying classes in the class diagram.

5. Answer the following : **14**

   1) Define the term event. Explain types of events.

   2) Explain collaboration diagram with example.

6. Answer the following : **14**

   1) Explain object oriented approach.

   2) Explain and draw the use case diagram for online book shopping system.

7. What is meant by activity ? Explain concept of forking, merging, branching joining with the help of example. **14**

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Seat
No.

M.C.A. – II (Semester – IV) Examination, 2014
COMPUTER SCIENCE
Data Mining and Warehouse

Day and Date : Saturday, 22-11-2014   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) An _____ system is market-oriented and used for data analysis by knowledge workers, including managers, executives and analysts.
      a) OLTP   b) OLAP
      c) OLAT   d) None of these

   2) The 0-D cuboid, which holds the highest level of summarization, is called the
      a) base cuboid   b) apex cuboid
      c) 3-D cuboid   d) none of these

   3) The snowflake schema is a variant of the _____ schema model, where some dimension tables are normalized, thereby further splitting the data into additional tables.
      a) star   b) snowflake
      c) fact constellations   d) none of these

   4) The fact constellation is also called a _____ schema.
      a) galaxy   b) star
      c) snowflake   d) none of these

   5) The roll-up operation is also called the _____
      a) drilling   b) drill-down
      c) drill-up   d) none of these

6) The _____ operation performs a selection on one dimension of the given cube, resulting in a subcube.
   a) dice
   b) slice
   c) roll-up
   d) none of these

7) A _____ warehouse is a set of views over operational databases.
   a) virtual
   b) data mart
   c) enterprise
   d) none of these

8) _____, which detects errors in the data and rectifies them when possible.
   a) Load
   b) Data extraction
   c) Data transformation
   d) Data cleaning

9) CBA stands for
   a) Classification-Based Association
   b) Class-Based Association
   c) Classification-Before Association
   d) None of these

10) A _____ resembles a categorical variable, except that the M states of the ordinal value.
   a) categorical variable
   b) ordinal variable
   c) binary variable
   d) none of these

B) **True/False** : **4**
   i) Back-end tools and utilities are used to feed data into the bottom tier from operational databases or other external sources.
   ii) A virtual warehouse is a set of views over operational databases.
   iii) OLTP is market-oriented and is used for data analysis by knowledge workers including managers, executives and analysts.
   iv) Correlation analysis can be used to identify whether any two given attributes are statistically related.

2. A) Write a short note on following : **8**
   i) Enterprise warehouse
   ii) DMQL.

   B) Attempt following questions : **6**
   i) Explain Data integration.
   ii) Explain various strategies for data reduction.

3. Answer the following : **14**

   A) What is data warehouse ? Explain the features of OLAP system.

   B) Explain multidimensional data model with diagram of data cube and example.

4. Answer the following : **14**

   A) Explain a three-tier data warehouse architecture with well labelled diagram.

   B) What is association rule ? Explain multilevel association rule from transaction databases.

5. Answer the following : **14**

   A) State and explain the decision tree induction algorithm.

   B) What is cluster analysis ? Explain typical requirements of clustering data mining.

6. Answer the following : **14**

   A) Explain Agglomerative hierarchical clustering.

   B) Explain new trends in data mining.

7. Answer the following : **14**

   A) Explain the visual and audio data mining.

   B) Explain the steps for Bayesian classification.

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M.C.A. (Part – II) (Semester – IV) Examination, 2014
COMPUTER SCIENCE
Distributed Operating System

Day and Date : Tuesday, 25-11-2014   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 three** questions from Q. No. **3** to Q. No. **7**.
               3) Figures to **right** indicate **full** marks.

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

    1) The _____ involves the separation of logical memory as perceived by users from physical memory.

       a) Group communication   b) Dispatcher activity

       c) Memory allocation   d) Virtual memory

    2) A _____ is tightly-coupled software on the same loosely-coupled hardware.

       a) True Distributed Systems

       b) Multiprocessor Time Sharing Systems

       c) Middleware Systems

       d) Network Operating Systems

    3) _____ refers to the fact that in true distributed systems, users cannot tell whether hardware and software resources are placed.

       a) Migration transparency   b) Remote procedure calls

       c) Location transparency   d) Election transparency

    4) With _____ protocols, before exchanging data, the sender and receiver first explicitly establish a connection and possibly negotiate the protocol they will use.

       a) Data link layer   b) Connection-oriented

       c) Standard Protocol   d) Connectionless

P.T.O.

5) The advantage of _____ scheme is that the sending process can continue computing in parallel with the message transmission, instead of having the CPU go idle.

   a) Buffered messaging
   b) Blocking primitive
   c) Extermination
   d) Non-blocking primitives

6) A technique which means that packets containing a certain address are delivered to all machines. This _____ technique can also be used to implement groups, but it is less efficient.

   a) Mutual Exclusion
   b) Unbuffered primitive
   c) Broadcasting
   d) Multicasting

7) In general, _____ attempt to locate the process with highest process number and designate it as coordinator.

   a) Priority scheduling algorithms
   b) Election algorithms
   c) Clock synchronization algorithms
   d) A registry based algorithm

8) In two phase locking, the process first acquires all the locks it needs during the (i) _____ phase and then releases them during (ii) _____ phase.

   a) (i) Acquisition and (ii) Commitment
   b) (i) Growing and (ii) Shrinking
   c) (i) Writehead log and (ii) Optimistic concurrency control
   d) (i) Reading and (ii) Writing

9) In distributed deadlock detection, generates a _____ message and sends it to all processes holding the needed resources.

   a) Special investigation
   b) Special activation
   c) Special probe
   d) Just blocked

10) In _____, as part of file service the transfer of an entire file from one of the file servers to the requesting client and then transfer of an entire file the other way, from client to server.

   a) Workstation model
   b) Remote access model
   c) Minicomputer model
   d) Upload/Download model

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

1) Cache memories are designed so that whenever a word is written to the cache, it is written through to memory as well. Such a cache is called a snoopy cache.

2) Some systems support closed groups, in which any process in the system can send messages to any group.

3) In pipeline model, one thread reads incoming requests for work from the system mailbox. After examining the request, it chooses an idle thread and hands it the request.

4) Subdirectories can contain their own subdirectories, and so on, leading to a tree of directories, often called a hierarchical file system.

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

1) Token ring algorithm for mutual exclusion.

2) Lamport's happens-before relation.

B) Answer the following : **6**

i) What do you mean by bus-based multicomputer ?

ii) Briefly explain the peer groups versus hierarchical groups design issue.

3. Answer the following :

A) What do you mean by Distributed Operating Systems ? State and explain in detail advantages of it over independent personal computers. **7**

B) Define Distributed File Systems. Discuss in detail a replication as the distributed file system implementation. **7**

4. Answer the following :

A) State and explain in detail the concept of client server model with reliable versus unreliable primitives. **7**

B) What do you mean by deadlock ? Discuss wait-die and wound-wait deadlock prevention algorithm. **7**

5. Answer the following :

   A) Discuss in detail workstation model and using ideal workstations as a system model. **7**

   B) What do you mean by Remote Procedure Call ? Explain in the detail the various steps and parameter passing in it. **7**

6. Answer the following :

   A) Discuss in detail bully and ring election algorithm. **7**

   B) Differentiate in between Novell Netware and MS-Windows NT. **7**

7. Answer the following :

   A) Define Threads. Discuss in detail graph theoretic determination algorithm for processor allocation. **7**

   B) Explain in detail the atomic transaction used in distributed systems. **7**

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Seat
No.

M.C.A. (Semester – V) (Computer Science) Examination, 2014
ARTIFICIAL INTELLIGENCE

Day and Date : Friday, 14-11-2014   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 the 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) Allpaths   b) Best path with Backtracking

        c) Best Path with Patchup   d) All of the above

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) A minimax search procedure is

a) Depth-first

b) Depth-limited

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 or **true/false** : **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 on 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) Explain in detail 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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Seat
No.

M.C.A. – III (Semester – V) (Computer Science) Examination, 2014
WEB TECHNOLOGY

Day and Date : Monday, 17-11-2014   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) HTTP is a _____ protocol.
      a) Stateless   b) State full   c) Session   d) None

   2) For posting a data on server side, _____ method is used.
      a) doGet   b) doDelete   c) doTrace   d) doPost

   3) How many ServletContext objects are available for an entire web application ?
      a) two   b) three   c) four   d) one

   4) To get the Servlet environment information _____ is used.
      a) ServletConfig   b) ServletException
      c) ServletContext   d) ServletContainer

   5) Servlet plays a role of _____ in MVC architecture.
      a) Model   b) View   c) Controller   d) Business logic

   6) What's the difference between servlets and applets ?
      a) Servlets executes on servers, whereas Applets executes on Browser
      b) Servlets have no GUI, whereas an Applet has GUI
      c) Servlets creates static web pages, whereas Applets creates dynamic web pages
      d) Servlets can handle only a single request, whereas Applet can handle multiple requests

P.T.O.

7) What is the limit of data to be passed from HTML when doGet() method is used ?

   a) 4k   b) 8k   c) 2k   d) 1k

8) Which method is used to specify before any lines that uses the PintWriter ?

   a) setPageType()   b) setContextType()

   c) setContentType()   d) setResponseType()

9) RequestDispatcher object is used

   a) to include other resources   b) to include an image

   c) to include xml object   d) to include e-mailing response

10) A deployment descriptor describes

   a) web component response settings

   b) web component settings

   c) web component request objects

   d) all of the above

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

1) Servlet mapping defines an association between a URL pattern and a Servlet.

2) Javascript is a default language of Internet Explorer.

3) The values of <servlet-name> and <servlet-class> in web.xml file is always same.

4) The JSP container is responsible for intercepting requests for JSP pages.

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

1) List and describe implicit objects in JSP.

2) Write a program in javascript to compute the area of circle from radius.

B) Answer the following :   **6**

1) Explain the table tag of HTML with the help of the example.

2) Generate the alert box in javascript if the user tries to change the text in the text input field.

3. Answer the following :   **14**

a) How to create a custom tag in jsp ? Explain with example.

b) Explain the MVC architecture in detail.

4. Answer the following : **14**

   a) Write JSP code to count total number of hits made to website.

   b) Explain in detail HTTP status code.

5. Answer the following : **14**

   a) Explain the form data with the help of the example in servlet.

   b) Write a program in servlet to manage the session tracking.

6. Answer the following : **14**

   a) Explain in detail JSP Actions.

   b) Explain the Expression Language with its implicit object and operators.

7. Answer the following : **14**

   a) Create a Servlet to accept a number from client and a 3 radio buttons to check the number of Armstrong, Prime or palindrome as on the radio button clicked.

   b) Explain the servlet life cycle.

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SLR-E – 28

Seat No.	

M.C.A. – III (Semester – V) Examination, 2014
COMPUTER SCIENCE
Network Security

Day and Date : Wednesday, 19-11-2014   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) The _____ prevents or inhibits the normal use or management of communications facilities.

      A) Masquerade   B) Replay

      C) Modification of message   D) Denial of service

   2) _____ simply means that some portion of a legitimate message is altered, or that messages are delayed or reordered, to produce an unauthorized effect.

      A) Masquerade   B) Replay

      C) Modification of message   D) Denial of service

   3) _____ is the ability to limit and control the access to host systems and applications via communications links.

      A) Authentication   B) Access control

      C) Confidentiality   D) Data integrity

   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

P.T.O.

5) Pretty Good Privacy (PGP) is used in

   A) Browser security   B) E-mail security

   C) FTP security   D) None of these

6) Message means that the sender and receiver expect privacy.

   A) Confidentiality   B) Integrity

   C) Authentication   D) None of these

7) SSL stands for _____

   A) Secure Serial Layer   B) Socket Serial Layer

   C) Secure Socket Leased   D) Secure Socket Layer

8) Passive entity or resource in a computer system.

   A) Subject   B) Object

   C) Response   D) None of these

9) IPSec is designed to provide the security at the

   A) Transport Layer   B) Network Layer

   C) Application Layer   D) Session Layer

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) Larger key size means greater security.

   2) Passive attacks are very difficult to detect because they do not involve
      any alternation of the data.

   3) Plaintext is the scrambled message produced as output.

   4) A stream Cipher process the input one block of elements at a time,
      producing an output block for each input block.

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

    1) Confidentiality

    2) Firewall applications.

  B) Answer the following : **6**

    1) Explain in short a model for network security.

    2) Explain common techniques for guessing password.

3. Answer the following :

  A) What is Attack ? Explain in short types of Active attacks. **7**

  B) Define Access Matrix. Explain Access Control Model. **7**

4. Answer the following :

  A) Explain DES algorithm with example. **7**

  B) Explain IP Encapsulating Security Protocol. **7**

5. Answer the following :

  A) What is PGP ? Explain application area of PGP in detail. **7**

  B) What is Biometrics ? Explain behavioral characteristics of individuals in biometric. **7**

6. Answer the following :

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

  B) What is Intruder ? Explain Masquerader, Misfeasor, and clandestine user. **7**

7. Answer the following :

  A) Explain BellLapadula (BLP) Model. **7**

  B) Explain various characteristics of firewall. **7**

_____

Seat No.

M.C.A. (Semester – V) Examination, 2014
COMPUTER SCIENCE
Digital Image Processing

Day and Date : Friday, 21-11-2014   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) For wavelets and multi resolution processing the output is generally _____
      a) Images
      b) Attributes of images
      c) Both images and attributes of images
      d) Either images or attributes of images

   2) An image of size 5 X 10 pixels formed with 16 gray levels need _____ bytes of storage space.
      a) 25   b) 100   c) 200   d) 800

   3) D_4 distance between (7, 3) and (5, 8) is _____
      a) 3   b) 1   c) 5   d) $\sqrt{13}$

   4) Histogram equalization _____ determines a transformation.
      a) Manually
      b) Automatically
      c) Semi automatically
      d) Either manually or automatically

   5) The Fourier transformed image contains _____
      a) Intensities of input image
      b) Frequencies of input image
      c) Intensities of input image in certain order.
      d) Spatial information of input image.

6) Which of the following statement is true ?
   a) Noise and degradation are additive
   b) Noise and degradation are multiplicative
   c) Noise is additive and degradation multiplicative
   d) Noise is multiplicative and degradation additive.

7) In case of watersheds the set of points at which a drop of water has every chance to fall in any one minima are called _____
   a) Catchment area   b) Crest lines
   c) Watershed region   d) Regional minima

8) To detect the line in an image in left, right, upward and downward directions the number of line detection masks required is/are _____
   a) 1   b) 2
   c) 4   d) None of the above

9) The four directional chain code of an object is 0003232121. Its shape number is _____
   a) 0003313313   b) 0003133133
   c) 0033133131   d) 0033133133

10) Shape numbers are invariant to _____
   a) Translation   b) Rotation
   c) Translation and rotation d) Translation, rotation and scaling

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

   1) Nearest neighbor interpolation is one of the image _____ technique.

   2) Gaussian filter for sharpening is given by _____

   3) $(A \ominus X) \cap [A^c \ominus (W - X)]$ is the equation for _____

   4) A region contains 3 faces, 4 holes, 5 edges and 8 connected components. The numbers of vertices are _____

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

   i) What are the other imaging modalities other than imaging in electromagnetic spectrum ? Briefly explain them.

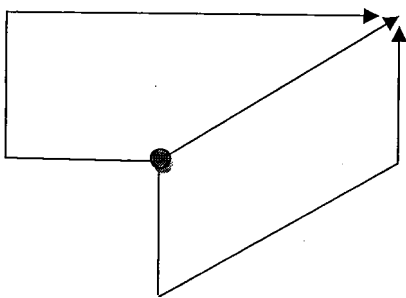   ii) How are the different basic gray level transforms interrelated ? Discuss.

B) Answer the following : **6**

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

1	0	1	0	1	0	Q	1
1	1	1	1	0	1	0	1
0	1	0	1	1	1	1	0
0	1	1	1	0	0	0	1
1	1	1	0	1	0	1	1
1	0	0	1	0	1	1	0
0	P	1	0	1	0	1	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) Give comparison between different histogram processing techniques.

   B) Perform opening of following structure using a circle of 1 cm radius.
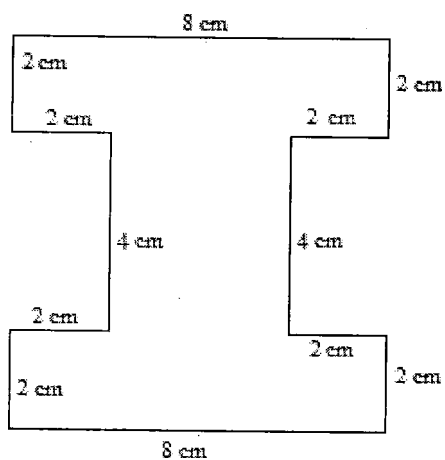
4. Answer the following : **14**
   A) How to enhance image using first order derivatives ? Discuss.
   B) Fill the following region using morphological region filling algorithms.
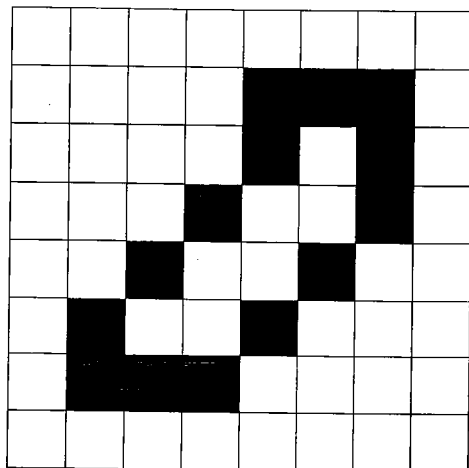
5. Answer the following : **14**
   A) Derive illumination and reflectance function in homomorphic filtering ? What are its advantages ?
   B) Compute the covariance matrix for the following vectors.
      $(1, 1, 0, 1)^T$, $(1, 0, 0, 1)^T$, $(1, 1, 1, 0)^T$ and $(1, 1, 1, 0)^T$.

6. Answer the following : **14**
   A) Discuss periodic noise reduction by frequency domain filtering.
   B) The three classes of objects denoted by ω_1, and ω_1 have sample mean vectors $m_1 = (2, 4, 5)$, and $m_2 = (7, 9, 6)$ respectively. Compute decision boundary between these two objects.

7. Answer the following : **14**
   A) Explain morphological thinning algorithm with an example.
   B) Compute the distances between following objects and find out which of them are nearest.

(a)   (b)   (c)   (d)

_____
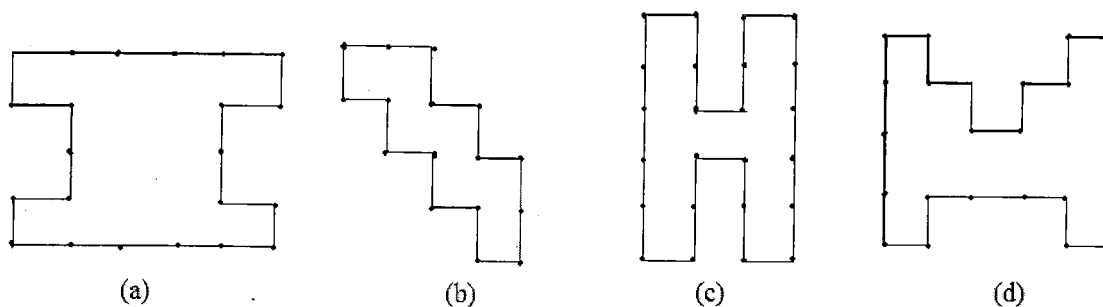
Seat No.

M.C.A. (Part – I) (Semester – I) Examination, 2014
COMPUTER SCIENCE
Discrete Mathematical Structures (New)

Day and Date : Wednesday, 19-11-2014   Total Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

Instructions :   i) *Question No. **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) A graph with n vertices and n – 1 edges that is not a tree, is
     a) connected   b) disconnected
     c) Euler   d) a circuit

   ii) The length of Hamiltonian path (if exists) in a connected graph of n vertices is
     a) n – 1   b) n   c) n + 1   d) n – 2

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

   iv) The number of ways to arrange the letters of the word CHEESE are
     a) 240   b) 720   c) 120   d) 6

   v) If sets A and B have 6 and 3 elements each, then minimum number of elements in A ∪ B is
     a) 3   b) 6   c) 9   d) 18

   vi) If | A | = m and | B | = n, then number of possible relations R : A → B is
     a) mn   b) $(mn)^2$ c) $2^{(m+n)}$ d) 2^{mn}

   vii) The domain and range are same for
     a) constant function   b) identity function
     c) absolute value function   d) greatest integer function

viii) Which of the following is declarative statement ?

    a) It is beautiful   b) He say " It is correct"

    c) Two may not be an even integer d) I love you

ix) Eigen values of a square symmetric matrix are always.

    a) Positive   b) Real and imaginary

    c) Negative   d) Real

x) If A and B are non zero square matrices, then AB = 0 implies

    a) A and B are orthogonal   b) A and B are singular

    c) B is singular   d) A is singular

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

    i) Any m x 1 matrix which has m rows and only one column is a _____

    ii) The propositions that are assumed to be true are called _____

    iii) If every element of group G is its own inverse, then G is _____

    iv) _____ is the technique of defining a function, a set or an algorithm in terms of itself. That is, definition will be in terms of previous values.

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

    i) Normal forms

    ii) Eulerian graph.

B) Answer the following : **6**

    i) Express the matrix A as sum of symmetric and a skew symmetric matrix where

$$A = \begin{bmatrix} 8 & 4 & -6 \\ 2 & 6 & -12 \\ -10 & 0 & -14 \end{bmatrix}$$

    ii) Explain the eccentricity of the vertex.

3. A) Check the validity of the following arguments. **7**

All educated persons are well behaved. Rita is educated. No well behaved person is quarrelsome. Therefore, Rita is not quarrelsome.

B) Obtain the DNF (disjunctive normal form) and CNF (conjunctive normal form) of the following formula $P \rightarrow (P \wedge (Q \rightarrow P))$. **7**

4. A) Find the transitive closure of the given relation using Warshall's algorithm. **7**

   A = {1, 2, 3, 4} and R = {(1, 1), (1, 2), (2, 1), (4, 1)}

   B) In a survey of 260 computer science students, the following data were obtained : **7**

   94 like to work in USA, 64 like to work in UK, 58 like to work in Singapore, 28 like UK and Singapore, 26 USA and UK, 22 USA and Singapore and 14 like all the three places. Find

   a) How many students like none of the three countries ?

   b) How many students like only USA ?

5. A) Define n! recursively and compute 5 ! recursively. **7**

   B) Explain the group code. Show that the (3, 7) encoding function defined by

   e(000)=0000000 e(001)=0011101 e(010)=0100011 e(011)=0111110

   e(100)=1000010 e(101)=1010001 e(110)=1100011 e(111)=1111001 **7**

6. A) Explain the term permutation and combination. Find the number of ways in which 7 boys and 7 girls can be seated in a row if the boys and girls are to have alternate seats. **7**

   B) If matrix A = $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$ find A^{-1}. **7**

7. A) If A = {p, q, r}, B = {2, 1, 0} and f : A → B, find whether it is one-one, onto or bijection ? **7**

   a) f = {(p, 2), (q, 0), (r, 2)}

   b) f = {(p, 1), (q, 0), (r, 2)}.

   B) Consider (Z, *) where * is defined by a*b=a + b – ab. Check whether (Z, *) is a group or monoid. **7**

   _____

Seat No.

M.C.A. – III (Semester – V) Examination, 2014
COMPUTER SCIENCE
Mobile Computing

Day and Date : Monday, 24-11-2014   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**

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

     a) BTS   b) BSC   c) MSC   d) MS

   ii) Real antennas behave like

     a) Isotropic radiator   b) Non-isotropic radiator

     c) Monotonic radiator   d) None of the above

   iii) Bluetooth is example of

     a) Infrastructure network   b) Ad-hoc network

     c) Streamed network   d) None of the above

   iv) 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) Visitors Location Registry of same MSC

   v) In a GSM system BTS and BSC together form _____

     a) Network stations   b) Base system subsystem

     c) Maintenance station   d) Operational subsystem

P.T.O.

vi) Cellular architecture is based on _____

   a) Hub network   b) Mobile networks

   c) Ad hoc network   d) ATM network

vii) Which of the following is not part of classical TCP ?

   a) Indirect TCP   b) Mobile TCP

   c) Snooping TCP   d) All of these

viii) What is Transceiver ?

   a) It is a combination of Transmitter and Receiver

   b) It is a another name of Transmitter

   c) It is a another name of Receiver

   d) It is a advanced form of Transmitter

ix) GSM is a digital cellular phone system which uses

   a) FDMA   b) TDMA

   c) CDMA   d) Both a) and b)

x) _____ protocol solves the problem of hidden and exposed terminals.

   a) PRMA   b) DAMA   c) TDMA   d) MACA

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

i) Authentication key is not information in SIM.

   A) True   B) False

ii) Control Channel (CCH) is not a logical channel in GSM.

   A) True   B) False

iii) Inter cell Intra BSC Handover is one of the four types of Handover available in GSM.

   A) True   B) False

iv) RSS is a subsystem in GSM system.

   A) True   B) False

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

   i) FHSS

   ii) Cellular System.

B) Answer the following :   **6**

   i) What is Spread Spectrum ? Explain it in detail.

   ii) What are the classifications of Spread Spectrum ?

3. Answer the following : **14**

   A) What is Modulation ? Discuss in brief Frequency Modulation.

   B) What is multipath propagation ? Explain its additional effects.

4. Answer the following : **14**

   A) Explain the Architecture of IEEE 802.11.

   B) Explain IEEE 802.11 Wireless LAN physical layer frame format using DSSS.

5. Answer the following : **14**

   A) Describe the Mobile IP in detail.

   B) Explain in brief DHCP.

6. Answer the following : **14**

   A) What is Congestion control ? Explain with an example.

   B) Explain the security in GSM with authentication and encryption.

7. Answer the following : **14**

   A) What is Handover ? What are the types of Handover ?

   B) Explain in brief Bluetooth Architecture.

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SLR-E – 4

M.C.A. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (New)
Digital Circuits and Microprocessors

Day and Date : Friday, 21-11-2014　　　　　　　　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 option among the choices given :　　　　　　**10**

　　1) Logic gate is an elementary building block of a
　　　　a) digital circuit　　　　　　　　b) analog circuit
　　　　c) electrical circuit　　　　　　d) mechanical circuit

　　2) Which of the following logic expression is incorrect ?
　　　　a) $1 \oplus 0 = 1$　　　　　　　　b) $1 \oplus 1 \oplus 0 = 1$
　　　　c) $1 \oplus 1 \oplus 1 = 1$　　　　d) $1 \oplus 1 = 0$

　　3) A small dot or circle printed on top of an IC indicates
　　　　a) V_{CC}　　　　b) G_{nd}　　　　c) Pin 14　　　　d) Pin 1

　　4) A toggle operation cannot be performed using a single
　　　　a) NOR gate　　b) AND gate　　c) NAND gate　　d) XOR gate

　　5) The no. of flip flops required in a decade counter is
　　　　a) 3　　　　　　b) 4　　　　　　c) 5　　　　　　d) 10

　　6) A shift register can be used for
　　　　a) parallel to serial conversion
　　　　b) serial to parallel conversion
　　　　c) digital delay time
　　　　d) all of these

P.T.O.

7) Flip flop outputs are always
   a) complementary   b) the same
   c) independent of each other d) same as inputs

8) The ring counter is analogous to
   a) Toggle switch   b) Latch
   c) Stepping switch   d) SR flip flop

9) The CPU of a computer takes instruction from the memory and executes them. This process is called
   a) load cycle   b) time sequence
   c) fetch execute cycle   d) clock cycle

10) To put µp in the wait state
    a) lower the HOLD input   b) lower the READY input
    c) raise the HOLD input   d) raise the READY input

1. B) Fill in the blanks with appropriate answer :   **4**

   1) A basic instruction that can be interpreted by a computer generally has _____

   2) The ALU of a computer normally contains a number of high speed storage elements called _____

   3) _____ circuit is used as parallel to serial converter.

   4) Parallel adders are _____

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

   i) Full adder

   ii) K-map.

   B) Answer the following :   **6**

   i) Explain working of SR flip flop.

   ii) Mention the types of addressing modes used in 8086 µp.

3. A) Explain Boolean algebra laws. **(7+7=14)**

   B) Explain working of full subtractor with a neat diagram.

4. A) Simplify Boolean function $f = \overline{A}\,\overline{B}\,\overline{C} + \overline{B}\,C\overline{D} + \overline{A}BC\overline{D} + A\overline{B}\,\overline{C}$. **(7+7=14)**

   B) Explain ring counters with a neat diagram.

5. A) What are encoders ? With a neat diagram explain working of decimal to BCD encoder. **(7+7=14)**

   B) Explain working of SISO registers.

6. A) Explain Arithmetic and logical instructions with suitable examples for 8085 μp. **(7+7=14)**

   B) Explain the segment registers of 8086 μp.

7. A) Explain the PSW of 8086 μp. **(7+7=14)**

   B) Explain with suitable examples the addressing modes of 8086 μp.

_____

SLR-E – 5

M.C.A. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (New)
Management

Day and Date : Monday, 24-11-2014   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) Select the correct alternative.   **5**

   1) Ledger is the book of
     a) Original entry   b) All cash transactions
     c) Secondary entry   d) Subsidiary entry

   2) Net profit is equal to
     a) Gross profit minus expenses
     b) Net sales plus purchases minus gross profit
     c) Expenses minus gross profit
     d) Gross profit minus net sales plus purchases

   3) Good will means
     a) Intangible asset   b) Current asset
     c) Current liabilities   d) Profit

   4) FIFO stands for
     a) First in find out   b) Found it found out
     c) First in first out   d) Find it find out

   5) The item closing inventory is shown in balance sheet under
     a) Fixed assets   b) Current assets
     c) Current liabilities   d) Miscellaneous expenditure

B) Match the following pairs : **5**

A	**B**
a) Cash book	i) Gain
b) Discount received	ii) Personal a/c
c) Bank a/c	iii) Ledger
d) Credit purchase	iv) Purchase book
e) Debit note	v) Outward Invoice
	vi) Return outward

C) Indicate whether the following statements are **true** or **false**. **4**

i) Trial balance agreement implies that books of accounts are correct.

ii) Current ratio and liquid ratio of a business firm are virtually the same, this implies that the firm has low investment in inventory.

iii) Budgets are an important tool of profit planning.

iv) Gross profit equals sales revenue minus cost of goods sold.

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

i) Supply chain management

ii) LIFO

b) Answer the following : **6**

i) Explain in brief soft skills

ii) Limitation of budgetary control

3. Answer the following : **8**

a) Compile a cash book with cash and bank column from the following transactions.

October 1	cash balance	Rs. 1,00,000
	Bank balance	3,50,000
October 5	Cash received from sale of shares	11,00,000
October 6	Paid Mr. Kiran by cheque	2,50,000
October 8	Paid into bank	10,00,000
October 25	Received from Sen by cheque for	
	Rs. and deposited the same in the bank	60,000

b) Explain types of budget. **6**

4. Answer the following : **14**

   a) What is meant by term 'Selection', explain the steps in selection procedure.

   b) In a Meenal factory, stores are issued and accounted for FIFO method. The stock on 1st Jan 2014 is 600 units valued at Rs. 3 per unit and the particulars of purchases and issues during the month of the Jan. 2014 are as follows. Using FIFO method prepare a statement showing how the values of issue should be :

Date	Particulars
Jan.4	Purchased 300 units at Rs.4
Jan.8	Issue 600 units
Jan.12	Purchase 800 units at Rs.6
Jan.17	Issue 600 units
Jan.22	Purchase 500 units at Rs.8
Jan.30	Issue 600 units

5. Answer the following :

   a) From the following trial balance prepare Trading, Profit and Loss account for the year ended 31-12-2013 and balance sheet as on that date. **10**

Particulars	Debit	Credit
Sales		3,00,000
Purchase	1,60,000	
Wages	20,000	
Printing and Stationary	2,000	
Postage	2,000	
Insurance	4,000	

Land and Building	80,000	
Plant and Machinery	1,20,000	
Cash	60,000	
Bank	60,000	
Capital		2,00,000
Sundry Creditors		88,000
Sundry Debtors	80,000	
	5,88,000	**5,88,000**

b) A company uses annually 50,000 units of an item each costing Rs.1.20. Each order costs Rs.45 and inventory carrying costs 15% of the annual inventory value. Find EOQ.   **4**

6. Write short note on :   **14**

   a) Current Ratio and Liquid ratio

   b) Functions of Controller

7. Answer the following :   **14**

   a) Write a note on Accounting Conventions.

   b) Write a note on Boundaries of Management Companies.

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M.C.A. (Computer Science) (Semester – I) Examination, 2014
INTRODUCTION TO COMPUTERS (Old)

Day and Date : Friday, 14-11-2014　　　　　　　　　　　　Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) Q. **1** and Q. **2** are **compulsory**.
　　　　　　　　 2) Solve **any 3** questions from Q. **3** to Q. **7**.
　　　　　　　　 3) To the point answers **carry** weightage.
　　　　　　　　 4) Figure to the **right** indicate **full** marks.

1. A) Multiple choice question :　　　　　　　　　　　　　　　　　　**10**

　　1) The Mark I computer (1937-44) was designed by _____

　　　　a) Howard A. Aiken　　　　　　b) Berry Thomas

　　　　c) Tim Lee　　　　　　　　　　d) Rasmus Lerdorf

　　2) WWW stands for

　　　　a) World Wide Web　　　　　　b) World Wise Web

　　　　c) World Wide Wisdom　　　　d) Word Wide Wisdom

　　3) EBCDIC is developed by

　　　　a) Infosys　　　b) IBM　　　　c) Satyam　　　d) TCS

　　4) EBCDIC is an _____ bit code that represent 256 different characters.

　　　　a) 8　　　　　　b) 6　　　　　　c) 7　　　　　　d) None of these

　　5) A _____ package is a group of programs that solve a specific problem or a specific type of job.

　　　　a) Software　　　　　　　　　b) Hardware

　　　　c) a) and b) both　　　　　　d) None of these

　　6) C++ is a _____ level language.

　　　　a) High　　　　b) Low　　　　c) Assembly　　　d) All of these

　　7) _____ unit enables data and instructions to be fed to a computer system from outside world in computer acceptable form.

　　　　a) Input　　　　b) Output　　　c) Storage　　　d) All of these

8) _____ enables an internet user to move a file from one computer to another on internet.

   a) telnet   b) ftp

   c) http   d) None of these

9) Number systems are

   a) non-positional

   b) positional

   c) a) and b) both

   d) none of these

10) Super computers use _____ and _____ processing technologies to solve complex problems.

   a) multi and parallel   b) mini and single

   c) multi and simplex   d) none of these

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

1) Assembly language is also known as symbolic language.

2) Compiler is used to convert high level language program into machine language program.

3) HTML abbreviation stands for hypertext markup language.

4) Speech recognition devices are input devices that allow a person to input data to computer system by speaking to it.

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

1) Output devices

2) Two's complement.

B) Answer the following :   **6**

1) Find decimal equivalent of following binary numbers

   i) 110

   ii) 1111

   iiii) 1000.

2) Write the ASCII-8 coding for the word "John" in binary notation.

3. A) Draw a block diagram to illustrate the basic organization of computer system and explain the functions of various units. **7**

   B) What is a multimedia computer ? Explain any five uses of it. **7**

4. A) What is a computer language ? Explain high level and assembly level language in brief. **7**

   B) What is operating system ? Explain DOS and Windows operating system in brief. **7**

5. A) What is output device ? Explain any three output devices. **7**

   B) What is internet ? Explain any five uses of it. **7**

6. A) What is UNIX ? Explain date, mkdir, head, talk and tail commands with example. **7**

   B) What is word office tool ? List any five of its typical uses. **7**

7. A) What is a spread sheet package ? Explain any five features supported by modern spread sheet package. **7**

   B) What is a computer network ? Explain any five advantages of networking in brief. **7**

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Seat No.	

M.C.A. – I (Semester – I) (Computer Science) Examination, 2014
PROCEDURAL PROGRAMMING METHODOLOGY (Old)

Day and Date : Monday, 17-11-2014   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 the correct alternatives :   **10**

     1) Consider the following type definition.

         typedef char x[10];

         x myArray[5];

     What will *sizeof(myArray)* be ?

     (Assume one character occupies 1 byte)

     a) 15 bytes   b) 10 bytes

     c) 50 bytes   d) 30 bytes

     2) The default parameter passing mechanism is

     a) call by value   b) call by reference

     c) call by value result   d) none of these

     3) The statement *printf("%d", (a++))*; prints

     a) the current value of a

     b) the current value of a + 1

     c) an error message

     d) garbage

4) Which of the following is a invalid variable name ?

   a) _basic

   b) mindovermatter

   c) #mean

   d) group

5) The break statement is used to exit from :

   a) an if statement

   b) a for loop

   c) a program

   d) the main( ) function

6) Use _____ storage class for only those variables that are being used very often in a program.

   a) Auto   b) Static   c) Extern   d) Register

7) All macro substitutions in a program are done

   a) Before compilation of the program

   b) After compilation

   c) During execution

   d) None of the above

8) What is the difference between the 5's in these two expressions ?

   int num[5] ;

   num [5] = 11 ;

   a) first is particular element, second is type

   b) first is array size, second is particular element

   c) first is particular element, second is array size

   d) both specify array size

9) To receive the string "We have got the guts, you get the glory!!" in an array **char str[100];** which of the following functions would you use ?

   a) scanf ("%s", str) ;

   b) gets (str) ;

   c) getche (str) ;

   d) fgetchar (str) ;

10) A static variable by default gets initialized to

   a) 0

   b) blank space

   c) 1

   d) garbage value

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

1) The time for a sorting algorithm is measured in terms of number of comparisons.

2) Different programmers use their own style of writing pseudo code.

3) The top-down development process specifies a solution in terms of group of smaller individual subtask.

4) Operators having equal precedence are evaluated using associativity.

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

i) Register storage class

ii) **Continue** statement.

B) Answer the following : **6**

i) Draw a flow chart check whether a number is even or odd.

ii) What is pseudo code ? What are its limitations ?

3. Answer the following : **14**

A) If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is valid or not. The triangle is valid if the sum of two sides is greater than the largest of the three sides.

B) What are the advantages of Top-down design ?

4. Answer the following : **14**

A) Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

B) List and explain its different categories of preprocessor directives.

5. Answer the following : **14**

   A) Write a function which receives a **float** and an **int** from **main( )**, finds the product of these two and returns the product which is printed through **main( )**.

   B) What are the characteristics of structured programming ?

6. Answer the following : **14**

   A) Describe sequential/linear search algorithm.

   B) What is a flow chart ? What are the various symbols used to draw a flow chart ?

7. Answer the following : **14**

   A) What are the various types of operators in C ?

   B) Explain the following using general syntax and example :

   i) if-else

   ii) nested if-else.

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Seat No.	

M.C.A. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (Old)
Discrete Mathematical Structures

Day and Date : Wednesday, 19-11-2014   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 most correct alternative :   **10**

    1) If A = {x, y} then power set of A is

       a) {{x}, {y}}   b) $\{\{\phi\}, \{x, y\}\}$

       c) $\{\phi, \{x, y\}, \{y\}\}$ d) $\{\phi, \{x\}, \{y\}, \{x, y\}\}$

    2) The number of binary relations on a set with n elements is

       a) n^2 b) 2^n

       c) 2^{n^2} d) 2^{n+1}

    3) Let X = {2, 3, 6, 12} and $\leq$ be the partial order relations defined by X $\leq$ Y
       if X divides Y. Number of edges in the Hasse diagram of (X, $\leq$) is

       a) 3   b) 4

       c) 5   d) 2

    4) Hasse diagrams are drawn for

       a) Partially order sets

       b) Lattice

       c) Both a) and b)

       d) Boolean algebra

5) Every finite subset of a lattice has
   a) a LUB and a GLB
   b) many LUB$^{.5}$ and a GLB
   c) many LUB$^{.5}$ and many GLB$^{.5}$
   d) either some LUB$^{.5}$ or some GLB$^{.5}$

6) In the group $(G, \cdot)$, the value of $(a^{-1} b)^{-1}$ is
   a) ab^{-1} b) $b^{-1}a$
   c) $a^{-1}b$ d) ba^{-1}

7) Weight of the word 1110110 in B^7 is
   a) 5   b) 7   c) 2   d) 2^3

8) $(P \to Q) \wedge (Q \to R) \Rightarrow$
   a) $P \to Q$ b) $P \to R$
   c) $Q \to R$ d) $P \wedge Q$

9) $P \rightleftharpoons Q \Leftrightarrow$
   a) $P \to Q$ b) $Q \to P$
   c) $P \to Q$ and $Q \to P$ d) $\sim P \vee Q$

10) In how many ways 3 red and 2 white balls be drawn from a bag containing 10 red and 8 white balls ?
    a) $^3C_{10} \times {}^2C_8$ b) $^2C_{10} \times {}^3C_8$

    c) $^5C_{18}$ d) $^5C_{18} \times {}^2C_8$

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

1) For any two sets A and B $(A \cap B)' = A' \cup B'$.

2) $^nC_r = \dfrac{n!}{(n-r)!}$.

3) Total solution of a recurrence relation is the sum of the homogeneous and the particular solution.

4) A formula α is in principal conjunctive normal form if α is a product of max terms.

2. A) Let A = {1, 2, 3, 4, 5} and let R be the relation described by

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

Construct a linked list representation VERT, TAIL, HEAD and NEXT for the relation R. **8**

B) Explain the term logic. Prove that $((P \rightarrow R) \wedge (Q \rightarrow R)) \rightarrow ((P \vee Q) \rightarrow R)$ is a tautology. **6**

3. A) Sort the following data in ascending order using insertion sort. Give algorithm too.
14, 18, 08, 16, 70, 45, 05. **7**

B) Solve the following recurrence relation and obtain the total solution

$a_r - 4a_{r-1} + 4a_{r-2} = 2^r$. **7**

4. A) A multiple choice test has 15 questions and 4 choices for each answers. How many ways can the 15 questions be answered so that

a) Exactly 3 answers are correct.

b) At least 3 answers are correct. **7**

B) Find the transitive closure using Warshall's algorithm.

$$A = \{1, 2, 3, 4\} \text{ and } M_R = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix}. \quad \textbf{7}$$

5. A) Obtain the principal disjunctive normal form and principal conjunctive normal form of the following formula $P \vee (\sim P \wedge \sim Q \wedge R)$. **7**

B) How many ways can 3 integers be selected from the integers 1, 2, 3, ..., 50 so that their sum is even ? **7**

6. A) Let H be the parity check matrix

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

Determine the (3, 6) encoding function e_H. Decode the following words relative to a maximum likelihood decoding function associated with e_H.

   i) 101000

   ii) 011010

   iii) 110110. **7**

B) Check the validity of the following arguments : **7**

   I) All graduates are educated.

   II) Rita is graduate. Therefore,

   III) Rita is educated.

7. A) Find the number of permutations formed by using all the letters of the word 'ENGINEERING' when

   i) all E's come together.

   ii) all the N's and all the E's come together.

   iii) all N's come together and E's do not come together. **7**

B) Consider the function $h : N \times N \to N$, so that $h(a, b) = (2a + 1)2^b - 1$ where $N = \{1, 2, 3, ...\}$ is the set of natural numbers.
Prove that the function h is injection and surjection. **7**

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Seat
No.

M.C.A. (Part – I) (Semester – I) Examination, 2014
COMPUTER SCIENCE (Old)
Microprocessors

Day and Date : Friday, 21-11-2014   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 to a question or
              sub question.

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

     1) Any microprocessor must have
        a) only data bus   b) only address bus
        c) only control bus   d) all of these

     2) The flag of microprocessor indicates
        a) The number of registers   b) Word length of microprocessor
        c) Status of the accumulator   d) Location of stack pointer

     3) The cycle required to fetch and execute information is
        a) Clock cycle   b) Instruction cycle
        c) Memory cycle   d) None of these

     4) _____ is the valid for MVI instruction.
        a) MVI B, 00H   b) MVI B, 555H
        c) MVI B, A   d) MVI HL, SP

     5) Direction flag is used with
        a) String instructions   b) Stack instructions
        c) Arithmetic instructions   d) Branch instructions

     6) Ready pin of a microprocessor is used
        a) To indicate that the microprocessor is ready to receive inputs
        b) To indicate that the microprocessor is ready to receive outputs
        c) To introduce wait states
        d) To provide direct memory access

7) What do the symbols [ ] indicate ?
   a) Direct addressing   b) Register Addressing
   c) Indirect addressing   d) None of the above

8) Which interrupts has highest priority ?
   a) INTR   b) TRAP
   c) RST 7.5   d) RST 6.5

9) The memory data bus width in pentium is
   a) 16 bit   b) 32 bit
   c) 64 bit   d) 8 bit

10) 8051 has _____ parallel I/O ports.
    a) 2   b) 3
    c) 4   d) 5

B) State whether **True/False** :   **4**
   1) 8255 is designed to automatically manage the handshake operation.
   2) The size of each segment in 8086 is 40 kb.
   3) 8051 microcontroller has 8 byte processor.
   4) 8254 can operate 6 operating modes.

2. A) Answer the following :   **8**
   i) Draw and explain the timing diagram for the opcode fetch cycle.
   ii) Explain the data movement instructions of 8085 with suitable example.

   B) Explain the interrupt system of 8085 microprocessor.   **6**

3. A) Explain the concept of segmentation of memory in 8086.   **7**

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

4. A) Draw and explain internal architecture of 8085.   **7**

   B) Draw and explain flag register of 8086.   **7**

5. A) What is need of interfacing ? Explain different ports on the 8255.   **7**

   B) Explain the memory management unit of 80386.   **7**

6. A) Explain the general purpose registers of 8051 microcontroller.   **7**

   B) Draw and explain the block diagram of 8254 PIT.   **7**

7. A) Draw a schematic diagram for 8051 microcontroller.   **7**

   B) What are the different commands of the 8279 ? Explain them.   **7**

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