Seat
No.

M.C.A. – I (Semester – I) Examination, 2016
COMPUTER SCIENCE (New CBCS)
Introduction to Computers

Day and Date : Tuesday, 29-3-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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 correct alternatives :   **10**

    1) Keyboard is _____ device.
      A) Input   B) Output
      C) Both A) and B)   D) None of these

    2) Which of the following is not number system ?
      A) Uniary number system   B) Binary number system
      C) Octal number system   D) Hexadecimal number system

    3) The first generation computer were using
      A) Transistor   B) Vacuum tube
      C) IC   D) Silicon chip

    4) Which computer code is widely used ?
      A) EBCDIC   B) ASCII
      C) Both A) and B)   D) None of these

    5) Which of the following is not the basic gate ?
      A) OR   B) AND
      C) NOT   D) NAND

    6) What is the function of Program Control (PC) ?
      A) Holds address of the active memory location
      B) Holds information on its way to a from memory
      C) Holds address of the next instruction to be executed
      D) Holds an instruction while it is being executed

7) Magnetic disk belongs to

   A) Sequential Access Device   B) Direct Access Device

   C) Both A) and B)   D) None of the above

8) What is DVD-RW ?

   A) It is rewritable version of DVD-R

   B) It is readable version of DVR-R

   C) It is read and write application of PC

   D) It is mass distribution of pre-recorded software

9) Which of the following is not a output device ?

   A) Screen image projector   B) Voice response system

   C) Plotter   D) Vision based devices

10) Which of the following is not classified as computer languages ?

   A) Machine language   B) Assembly language

   C) Speech language   D) High-level language

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

1) High-level languages has enabled even non-expert user to use computer to solve problems.

2) Sequential file are stored randomly.

3) An Internet is a network of computers.

4) Hot Bot is a search engine.

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

   i) Compiler

   ii) Computer network.

B) Answer the following :   **6**

   i) What is output device ? Explain.

   ii) What are the features of mainframe computer ?

3. Answer the following :

A) Define operating system. Explain its needs.   **7**

B) Explain how FTP and Telenet services ensure that only authorized uses can access resources of remote computer.   **7**

4. Answer the following :

   A) What is an OCR device ? Write its advantages and limitations for inputting text document ? **6**

   B) Write the dual of following Boolean expression. **8**

   a) $\overline{A} + \overline{B}$

   b) $A + \overline{B} + \overline{C}$

   c) $\overline{A} \cdot B + A \cdot \overline{B}$

   d) $\overline{A + B}$

   e) $A \cdot (A + B)$

   f) $\overline{A} + A \cdot B$.

5. Answer the following :

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

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

6. Answer the following :

   A) What is debugger ? Explain how does it help in programming. **8**

   B) Explain DATA transmission modes. **6**

7. Answer the following :

   A) Explain the concept of spread sheet. **7**

   B) Describe the features of Power Point. **7**

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Seat No.	

M.C.A. – I (Sem. – I) (Computer Science) (New CBCS) Examination, 2016
PROGRAMMING USING C

Day and Date : Thursday, 31-3-2016   Total Marks : 70
Time : 10.30 a.m. to 1.00 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 maximum number of 'case' values in a switch statement ?
        a) 255   b) 127
        c) No specific limit   d) 128

    2) Where do we use a 'break' statement ?
        a) In 'while' statement   b) In 'switch' statement
        c) In 'do-while' statement   d) All of these (a), (b), (c)

    3) Predict the output of the following code.
        void main( )
        {
            float i = 1.5;
            switch(i)
             {
                case 1 : printf("one");
                case 2 : printf("two");
                default : printf("zero");
            }
        }
        a) zero   b) one   c) two   d) compiler error

4) If a is an integer variable, a = 5/2; will return a value

   a) 2.5   b) 3   c) 2   d) 0

5) The expression x = 4 + 2% – 8 evaluates to

   a) –6   b) 6

   c) 4   d) none of the above

6) A character variable can never store more than

   a) 32 characters   b) 8 characters

   c) 254 characters   d) 1 character

7) If an integer is to be entered through the keyboard, which function would you use ?

   a) scanf( )   b) gets( )   c) getche( )   d) getchar( )

8) What is the output of the following code ?

```
void main( )
{
        int num [26], temp;
        num[0] = 100;
        num[25] = 200;
        temp = num[25];
        num[25] = num[0];
        num[0] = temp;
        printf ("\n%d %d", num[0], num[25]);
}
```

   a) 200 100   b) 100 200   c) 0 25   d) compiler error

9) The default initial value of automatic variable is

   a) zero   b) NULL

   c) a garbage value   d) Nil

10) All macro substitutions in a program are done

   a) before compilation of the program

   b) after compilation

   c) during execution

   d) none of these

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

1) A do-while loop is useful when we want that the statements within the loop must be executed only once.

2) If a file is opened for reading it is necessary that the file must exist.

3) Array elements are stored in contiguous memory locations and so they can be accessed using pointers.

4) A function may contain more than one return statement.

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

   i) The C Character Set

   ii) Benefits of pointers.

B) Answer the following : **6**

   i) What are the rules for constructing variable names in C ?

   ii) What are escape sequences ?

3. Answer the following :

a) Write a program to find the number of and sum of all integers greater than 200 and less than 300 that are divisible by 5. **8**

b) Describe 'pointer to an array' and 'array of pointers'. **6**

4. Answer the following :

a) Write a program that will read a positive integer and determine and print its binary equivalent. **8**

b) Write any five strings handling functions with their syntax. **6**

5. Answer the following :

a) Write a program in c that would check whether a given string is a palindrome or not. The output of this program should be a 1 if the string is a palindrome and 0 otherwise. **6**

b) How does Switch statement differ from Nested if ? **8**

6. Answer the following :

a) Twenty-five numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive, how many are negative, how many are even and how many odd. **8**

b) State the difference between structure and union. **6**

7. Answer the following :

a) Describe any three file I/O functions. **8**

b) Explain recursive function with an example program. **6**

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Seat No.

M.C.A. (Part – I) (Semester – I) Examination, 2016
(New) (CBCS)
COMPUTER SCIENCE
Discrete Mathematical Structures

Day and Date : Saturday, 2-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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) Let L be a lattice. Then $\forall$ a and b in L, $a \vee b = b$ if and only if

     a) $a > b$ b) $a < b$ c) $a \leq b$ d) $a \geq b$

   ii) In propositional logic which of the following is equivalent to $\sim (p \rightarrow q)$

     a) $(\sim p \rightarrow \sim q)$ b) $(\sim p \wedge \sim q)$

     c) $(p \vee \sim q)$ d) $(p \wedge \sim q)$

   iii) In permutations nPr = ?

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

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

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

     a) non-regular graph   b) complete graph

     c) regular graph   d) multigraph

v) Let $A = \begin{bmatrix} 2 & 3 & -4 \\ 1 & 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 \\ -2 & 2 \\ 5 & -3 \end{bmatrix}$ the AB = ?

a) $\begin{bmatrix} -20 & 20 \\ 14 & -4 \end{bmatrix}$

b) $\begin{bmatrix} 20 & -20 \\ -4 & 14 \end{bmatrix}$

c) $\begin{bmatrix} -4 & 20 \\ -20 & 14 \end{bmatrix}$

d) $\begin{bmatrix} -14 & 20 \\ 20 & -4 \end{bmatrix}$

vi) If A and B are matrices, then which is true

a) $(A + B)^T = A^T B^T$

b) $(A + B)^T = (A \cdot B)^T$

c) $(A + B)^T = (A - B)^T$

d) $(A + B)^T = A^T + B^T$

vii) A vertex with degree 0 is called

a) null vertex

b) isolated vertex

c) zero vertex

d) none of these

viii) A group is basically

a) A lattice

b) Matrix

c) Set

d) None of these

ix) The proposition $q \rightarrow (p \vee q)$ is

a) tautology

b) contradiction

c) both a and b

d) none of these

x) A relation R on a set A is called equivalence if

a) Reflexive

b) Symmetric

c) Transitive

d) All of the above

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

i) In propositional calculus $\sim (p \rightarrow q) = $ _____

ii) If A and B are matrices then $(AB)^T = $ _____

iii) In sets $A \cup U = $ _____

iv) $(z, +)$ is a _____ group.

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

    i) Recursion

    ii) Group.

  B) Answer the following. **6**

    i) Explain the enumerators of the permutations

    ii) Explain matrices and determinant.

3. A) Solve following equations by matrix inversion method : **7**

    $2x + 2y + 2z = 12$

    $4x - 2y + 2z = 6$

    $2x + 4y - 2z = 4$

  B) Let $Z = \{0, \pm 1, \pm 2, ...\}$. Then show that $(Z, +)$ is a group under addition. **7**

4. A) Explain generating functions for combinations with example. **7**

  B) Prove using truth table that $\sim (p \leftrightarrow q) \equiv ((p \wedge \sim q) \vee (q \wedge \sim p))$. **7**

5. A) Explain Di-graph representation of relations with example. **7**

  B) Let $(A, \leq)$ be a poset. Then prove that a subset B of A has at most one LUB and at most one GLB. **7**

6. A) Explain group codes with example. **7**

  B) Obtain the principle DNF and principle CNF of the following

    $(\sim P \vee \sim Q) \rightarrow (\sim P \wedge R)$. **7**

7. A) Explain the following terms with suitable example. **7**

    i) Complete graph

    ii) Bipartite graph.

  B) Explain central graphs with example. **7**

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Seat No.	

M.C.A. – I Science (Semester – I) (New-CBCS) Examination, 2016
COMPUTER SCIENCE
Digital Circuits and Microprocessors

Day and Date : Tuesday, 5-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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**
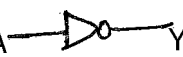
    i) NAND is a
        a) Basic logic gate   b) Universal logic gate
        c) Not a logic gate   d) None of these

    ii) AND is a
        a) Basic logic gate   b) Universal logic gate
        c) Not a logic gate   d) None

    iii) X ⟩ Z is symbol of
        a) NOT gate   b) OR gate
        c) AND gate   d) NAND gate

    iv) A ▷o Y indicates
        a) AND logic gate   b) OR logic gate
        c) NOT logic gate   d) NOR logic gate

    v)
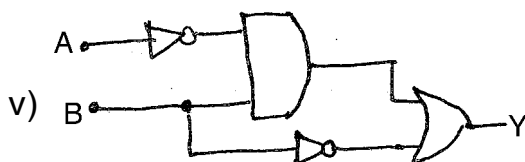
    a) $Y = \overline{A}.B + \overline{B}$ b) $Y = AB + \overline{B}$
    c) $Y = A.\overline{B} + A$ d) None

vi) OR logic gate can have

   a) One input   b) Two input

   c) Many inputs   d) None

vii) AND logic gate can be obtained by

   a) NAND   b) NOR

   c) Both a) and b)   d) Only (a)

viii) To communicate with a peripheral, the MPU needs to perform

   a) Identify the peripheral

   b) Transfer data

   c) Provide timing or sync signals

   d) All the above

ix) Which of the following statement does not describes a Stack Pointer (SP) ?

   a) It is a 8-bit register

   b) It is a 16-bit register

   c) It is used as memory pointer

   d) It points to a memory location in R/W memory

x) Which of the following statement is in-correct with respect to 8085 ?

   a) The address bus is unidirectional

   b) The data bus is bidirectional

   c) The data bus is unidirectional

   d) The control lines provide a pulse to indicate an MPU operation.

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

   i) The 8085 has a 8-bit accumulator

   ii) The 8085 has four flags to indicate data conditions.

   iii) One microsecond is represented as 10^{-6} second.

   iv) The microprocessor used Program Counter (PC) to sequence the execution of instructions.

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

    i) Function Execution UNIT (EU) in 8086.

    ii) Instruction fetch operation.

  B) Answer the following : **6**

    i) Draw the equivalent circuit diagram for the Boolean equation

     $\overline{A}.\overline{B} + (A + \overline{B}).C$

    ii) Explain types of counter.

3. A) Explain working of Half adder. **8**

  B) compare Half adder and Full adder circuit. **6**

4. A) Describe a multiplexer with a schematic diagram **6**

  B) Explain working of 2 to 4 decoder in detail. **8**

5. A) Define a Register. Mention the types of Register. **6**

  B) Explain with schematic diagram working of asynchronous counter. **8**

6. A) Write a note on instruction set of 8085. **7**

  B) Write a note on addressing mode of 8085. **7**

7. A) Write a note on instruction set of 8086. **7**

  B) Write a note on addressing mode of 8086. **7**

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Seat
No.

M.C.A. – I (Science) (Semester – I) (New-CBCS) Examination, 2016
COMPUTER SCIENCE
Management

Day and Date : Thursday, 7-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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 alternative :   **10**

    1) Goods or amount taken by proprietor for his personal use should be debited to
       a) Sales A/c
       b) Purchases A/c
       c) Cash A/c
       d) Drawings A/c

    2) Cash purchases of goods should be credited to
       a) Purchases A/c
       b) Sales A/c
       c) Cash A/c
       d) Goods A/c

    3) Cash column of cash book can never have _____ balance.
       a) Credit   b) Debit
       c) Zero   d) None of the above

    4) An entry recorded on both sides of cash book is known as _____ entry.
       a) Opening   b) Rectifying
       c) Transfer   d) Contra

    5) Entry for Bad debts is recorded in the
       a) Sales Book
       b) Purchase Book
       c) Cash Book
       d) Journal Proper

6) MIS means
   a) Management Intelligent System
   b) Main Information System
   c) More Intelligent System
   d) Marketing Information System

7) Strategy helps the organization to achieve its
   a) Plans   b) Targets
   c) Budgets   d) Goals

8) Budget is prepared by
   a) The top management
   b) The middle management
   c) The lower management
   d) None of the above

9) Net working capital means
   a) Total current assets
   b) Total current liabilities
   c) Current assets minus current liabilities
   d) None of the above

10) In inventory control management, re-order level is determined by
   a) Minimum usage × Maximum lead time
   b) Minimum usage × Minimum lead time
   c) Maximum usage × Minimum lead time
   d) Maximum usage × Maximum lead time

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

1) Cheque book facility is available for fixed deposit A/c.

2) Credit transactions are never recorded in cash book.

3) Budget is prepared by lower management level.

4) To select means to choose.

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

1) Cost unit

2) Flexible budget.

B) Answer the following :   **6**

1) KYC norms in banking transactions.

2) Importance of ratio analysis.

3. Answer the following :

Following information is available in respect of Product 'P' :

2015

Mar. 1   Purchased 100 units @ Rs. 10/- each

   2   Purchased 200 units @ Rs. 10.20 each

   5   Issued 250 units.

   7   Purchased 200 units @ Rs. 10.50 each

  10   Purchased 300 units @ Rs. 10.80 each

  13   Issued 200 units

  18   Issued 200 units

  20   Purchased 100 units @ Rs. 11/- each

  25   Issued 150 units

A) Prepare stores ledger account by using FIFO method.   **7**

B) Using the above information prepare stores ledger account by using weighted average method for Mar. 2015.   **7**

4. A) Enter the following transactions in an analytical petty cash book under imprest system for the month of June 2015. Imprest money was maintained at Rs. 1,000.   **7**

2015

June 1   Cash balance of Rs. 120

   5   Gift to clerk of Rs. 101

   8   Paid for register postal charges Rs. 50

  10   Washing charges paid to peon Rs. 10

  15   Paid lunch bill to travelling salesman Rs. 63

  20   Gave a loan to peon Rohit Rs. 400

  23   Paid for cartage Rs. 30

B) Journalise the following transactions in the books of Mr. Bahubali.   **7**

2015

Sept. 1   Bahubali started business with cash Rs. 71,000

   2   Deposited into Bank Rs. 30,000

   6   Purchased goods from Mahesh Rs. 20,000 on credit

  10   Sold goods to Dhananjay Rs. 25,000 on credit

  15   Purchased furniture of Rs. 10,000 for cash

  20   Paid to Manish by cheque Rs. 10,000

  30   Paid salary by cheque Rs. 4,000

5. A) From the following information, prepare Production Budget for the month of June 2015. **7**

Product	Estimated Stock as on 1st June 2015	Estimated Stock on 30th June 2015	Estimated Sales as per budget
A	9000	6000	54000
B	6000	3000	42000

B) Classify the following items of expenses into fixed, variable and semivariable expenses : **7**

	Rs.
Material cost	12,000
Plant maintenance	6,000
Rent, rates and taxes	5,000
Salesman's commission	12,000
Labour Cost	8,000
Depreciation of Machinery	8,000
Office Salaries	35,000

6. Answer the following :

   A) Explain the organisation of budget. **7**

   B) Factors determining the working capital. **7**

7. Answer the following :

   A) Explain the process of selection. **7**

   B) Advantages and characteristics of MIS. **7**

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Seat No.	

M.C.A. – I (Semester – I) (Old – CGPA) Examination, 2016
COMPUTER SCIENCE
Introduction to Computers

Day and Date : Tuesday, 29-3-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

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

    1) Each model of computer has a unique

       a) Assembly Language   b) Machine Language

       c) High Level Language   d) None of the above

    2) The 2's complement of a number 1100/00 is

       a) 001101   b) 110011

       c) 010011   d) 001110

    3) Program designed to perform a specific task is called as

       a) System software   b) Application software

       c) Utility program   d) Operating system

    4) EBCDIC stands for

       a) Extended Bit Comparable to Digital Interface of Computer

       b) Extended Bootable Computerized Digital Interface Calculator

       c) Extended Binary Coded Decimal Interchange Code

       d) Extended Binary Coded Decimal Information Code

    5) A computer program that converts assembly language to machine language is

       a) Compiler   b) Assembler

       c) Interpreter   d) Linker

6) Which of the following is fastest ?

a) CPU   b) Magnetic tape and drive

c) Video terminal   d) None of the above

7) Which of the following is secondary memory device ?

a) Keyboard   b) Disk

c) ALU   d) All of the above

8) Which of the following is not an input device ?

a) Computer mouse   b) Light pen

c) Printer   d) Joystick

9) Which of the following is a multiuser and multitasking operating system ?

a) Unix   b) Windows-XP

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

10) Main memory consist of

a) Primary and secondary memory

b) RAM and ROM

c) Random and sequential

d) All of the above

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

1) An operating system is an interface between user and computer hardware.

2) A compiler is an application software.

3) Unix is multitasking and multiuser operating system.

4) Light pen is an output device.

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

1) Assembly language

2) Basic organization of computer.

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

1) Explain what is ASCII.

2) What is Linker ? Explain in detail.

3. Answer the following :

A) What is high level language ? Explain its advantages and disadvantages.   **7**

B) What is Internet ? Explain its uses.   **7**

4. Answer the following :

    A) What is spread sheet in MS-Excel ? Explain with example.   **7**

    B) What are different categories of the network ? Explain in detail.   **7**

5. Answer the following :

    A) What are different types of computers ? Explain in detail.   **7**

    B) Explain the architecture of Unix operating system.   **7**

6. Answer the following :

    A) Explain following DOS commands with example :   **8**

        1) DIR

        2) COPY

        3) MKDIR

        4) PROMPT.

    B) Explain structure of MS-Word document.   **6**

7. Answer the following :

    A) Convert the following Binary to decimal and then to hexadecimal :   **8**

        1) $111101_{(2)}$

        2) $101000111_{(2)}$.

    B) What is an operating system ? What are the functions of operating system ?   **6**

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Seat
No.

M.C.A. – I (Semester – I) Examination, 2016
COMPUTER SCIENCE (CGPA) (Old)
Discrete Mathematical Structures

Day and Date : Saturday, 2-04-2016   Max. Marks : 70

Time : 10.30 a.m. to 1.00 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) Select most correct alternatives.   **10**

    1) The negation of $p \rightarrow q$ is

      a) p and $\neg q$ b) $p \rightarrow \neg q$ c) $\neg p \rightarrow \neg q$ d) $\neg q \rightarrow \neg p$

    2) The graph in which multiple edges and loops exists is called

      a) Multigraph   b) Pseudograph

      c) Regular graph   d) Complete graph

    3) In combination $^{n}c_{r} =$

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

    4) In the set theory $A \cup \overline{A} =$

      a) $\cup$ b) ϕ c) A d) $\overline{A}$

    5) _____ is a rectangular array of numbers arranged in m horizontal rows and n vertical columns.

      a) Matrix   b) Symmetric matrix

      c) Boolean matrix   d) None of these

    6) The proposition $(p \vee q) \rightarrow q$ is a

      a) Contradiction   b) Tautology

      c) Logical equivalent of $p \vee q$ d) None of these

7) In a group G which of the law is called existence of inverse

   a) $a * b = b * a$ b) $a * e = e * a = a$

   c) $a * a^{-1} = a^{-1} * a = e$ d) None of these

8) Transitive closure of a relation R is the _____ transitive relation containing R.

   a) Largest   b) Smallest

   c) Biggest   d) None of these

9) The function $I_x : X \to X$ such that $I_x(x) = x$ for all $x \in X$ is called

   a) Identity   b) Composition

   c) Onto   d) None

10) A path that begins and ends with the same vertex is

   a) Circle   b) Circuit   c) Walk   d) None

B) Say **true** or **false**.   **4**

   1) A bounded poset is lattice.

   2) The relation R on a set A is called partial order if R is reflexive, transitive and symmetric.

   3) A group is a monoid in which every element has an inverse.

   4) In the set theory $\overline{A \cup B} = \overline{A} \cup \overline{B}$.

2. a) Define function and one-one function.   **3**

   b) Explain the walks and paths.   **4**

   c) Prove that $C(n, r) = \dfrac{n!}{r!(n-r)!}$.   **4**

   d) Define Group.   **3**

3. a) Show that

      $\sim (p \vee q) \vee (\sim p \wedge q) \vee p$ is tautologies.   **7**

   b) Find the transitive closure of the given relation using Warshall's algorithm

      $A = \{1, 2, 3, 4\}$ and $R = \{(1, 1), (1, 4), (2, 2), (2, 4), (3, 2), (3, 3), (4, 1), (4, 4)\}$ **7**

4. A) Check the validity of the following arguments.

Lions are dangerous animals. There are lions. Therefore, there are dangerous animals. **7**

B) Define Conjunctive Normal Form and obtain C.N.F. $\sim (p \vee q) \Leftrightarrow (p \wedge q)$. **7**

5. a) How many different seven person committees can be formed each containing 3 women from an available set of 20 women and 4 men from an available set of 30 men ? **7**

b) Solve the following equation by the method of reduction. **7**

$x + 3y + 3z = 12$

$x + 4y + 4z = 15$

$x + 3y + 4z = 13$

6. a) Explain bipartite and planar graph. **7**

b) Explain group code. **7**

7. a) Define a Lattice. Show that D_{30} i.e. all positive divisors of 30 form a Lattice. Draw Hasse Diagram of the same. **7**

b) Explain Boolean Matrices with example. **7**

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Seat No.	

M.C.A. – I (Science) (Semester – I) (Old) (CGPA) Examination, 2016
DIGITAL CIRCUITS AND MICROPROCESSORS

Day and Date : Tuesday, 5-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : 1) Question No. **1** and **2** are **compulsory**.

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

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

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

     1) Every logic gate has a _____ symbol.

       a) Different   b) Graphic

       c) Both a) and b)   d) None

     2) Operation of a logic gate can be described by _____ expression.

       a) Arithmetic   b) Algebraic

       c) Logic   d) None

     3) The digital computer is a _____ system.

       a) Digital   b) Analog   c) Hybrid   d) Hardware

     4) NOR function is the _____ of the OR function.

       a) Addition   b) Subtraction

       c) Complement   d) Both a) and b)

     5) Binary logic expression consists of binary variables and _____ operations.

       a) Logical   b) Arithmetical

       c) Algebraic   d) Mathematic

6) _____ is an example of combinational circuits.

    a) Adder   b) Subtractor

    c) Both a) and b)   d) Flip-flop

7) I.C. stands for _____

    a) Inside Chip   b) Integrated Chip

    c) Integrated Circuits   d) Inter Connection

8) The 8085 IC has _____ number of pins.

    a) 20   b) 40   c) 30   d) 50

9) The number of address lines in 8086 is _____

    a) 20   b) 25   c) 15   d) 28

10) Address of first memory location in 8086 (represented in hexadecimal) is _____ H.

    a) 0000   b) 000 D1   c) 10000   d) 00000

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

1) Operation of logic gate can be described by means of algebraic expression.

2) An analog computer performs a direct simulation of a physical system.

3) The 8085 has separate data and address lines.

4) Address of last memory location in 8086 (represented in hexadecimal) is FFFFFH.

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

    i) Uses of K-map

    ii) Operation of SR Flip-flop.

B) Answer the following :   **6**

    i) Obtain truth table of the function $F = xy + xy + xyz$.

    ii) Mention the addressing modes of 8086.

3. Answer the following :

A) Describe with suitable diagram, construction and working of Full adder. **7**

B) Describe realization of OR, AND and NOT logic gates using NAND logic gate. **7**

4. Answer the following :

A) Describe operation of JK Flip-flop. **7**

B) Explain Boolean laws and theorems. **7**

5. Answer the following :

A) Describe operation of 8 : 1 decoder. **7**

B) Describe working of asynchronous counter. **7**

6. Answer the following :

A) Describe various types of instructions used in 8085. **7**

B) Explain the timing diagrams used in 8085. **7**

7. Answer the following :

A) Explain types of flags used in 8086. **7**

B) Describe buffered system bus of 8086 in minimum mode. **7**

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Seat No.	

M.C.A. (Semester – I) (Old-CGPA) Examination, 2016
COMPUTER SCIENCE
Management

Day and Date : Thursday, 7-4-2016　　　　　　　　　　　　Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : 1) Question No. **1** and **2** are **compulsory**.

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

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

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

1) Outstanding salary is a _____
   a) Personal A/c　　　　　　　　b) Real A/c
   c) Nominal A/c　　　　　　　　d) Either b) or c)

2) HRD means _____
   a) Human Resource Department
   b) Human Research Development
   c) Human Resource Development
   d) Human Research Department

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

4) A trial balance is a list of _____ account.
   a) Personal　　　b) Real　　　c) Nominal　　　d) Ledger

5) Sales account always shows _____ balance.
   a) Debit　　　　b) Credit　　c) Adverse　　　d) Specific

6) _____ usually shows a debit balance.
   a) Real　　　　b) Personal　c) Nominal　　　d) Income

7) The goal of selection is to meet the _____ requirements.
   a) Employees　　b) Owners　　c) Job　　　d) Leaders

P.T.O.

8) A document issued for goods purchased for cash.
   a) Debit Note b) Credit Note
   c) Invoice d) Cash Memo

9) The cost unit for Power Industry is _____
   a) Kg./litres b) Tonnes c) Kilowatt hour d) Kilo-metre

10) Which of the following is the factor of working capital ?
   a) Building b) Plant and Machinery
   c) Computer Hardware d) Inventory

B) State the following statements are "**True**" or "**False**". **4**

   1) A trial balance may be prepared on any date.

   2) Businessman generally operates saving bank account.

   3) Credit transactions are never recorded in Cash Book.

   4) Cash Memo is used for credit purchase/sale.

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

   A) i) Prime Cost **8**

   ii) Fixed cost

   B) Answer the following : **6**
      i) On the Job Training
      ii) Off the Job Training

3. Answer the following : **14**

   A) Define selection ? Explain selection process. **(7+7)**

   B) Explain the need and benefits of Training.

4. Answer the following : **14**

   A) Explain the cost centre and cost unit.

   B) Explain cost classification according to **(7+7)**
      i) Element ii) Behaviour

5. Answer the following : **14**

   A) Classify the following expenses into Production, Administration, Selling, Distribution Department. **(7+7)**

   Advertisement

   Office rent and rates

   Depreciation on delivery van

   Salaries

   Rent of Warehouse

   Power

   Depreciation of Factory Furniture

   B) Enter the following transactions in the books of Mr. Sohan
   2015 June

   1. Started business with cash of Rs. 75,000/- and stock Rs. 25,000/- and furniture Rs. 50,000/-

   5. Borrowed from the bank Rs. 25,000/-

   8. Purchased goods worth Rs. 20,000 for cash less trade discount @ 25%

   10. Sold goods to Mr. Mohan Rs. 20,000/-

   15. Purchased goods from Tejashree worth Rs. 10,000/-

   18. Goods worth Rs. 1,000/- distributed as free samples.

   25. Paid to Tejashree 50% amount of purchases on 15th June 2015.

6. Answer the following : **14**

   A) Following information is available prepare Profit and Loss Account and ascertain the amount of Net profit. **(7+7)**

Advertisement	12,800	Gross profit	67,000
Salaries	4,200	Commission received	500
Rent and Taxes	1,200	Discount received	1,500
Bad Debts	1,800	Factory wages	3,000
Insurance	300		

B) Following information is available. Prepare Balance Sheet and ascertain the amount of capital.

Closing stock	40,000	Debtors	23,750
Creditors	12,000	Bills payable	5,000
Outstanding salaries	1,000	Machinery	27,000
Furniture	6,300	Bills Receivable	4,000
Cash in hand	6,200	Investments	11,000
		Net Profit	40,250

7. Answer the following : **(7+7 = 14)**

A) Explain the methods for collection of data regarding MIs.

B) Explain the steps involved in supply chain management.

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SLR-J – 11

Seat No.	

M.C.A. – I (Semester – II) (Computer Science) (New – CBCS) Examination, 2016
OBJECT ORIENTED PROGRAMMING USING C++

Day and Date : Wednesday, 30-3-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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) Operators such as _____ cannot be overloaded.

      a) +   b) ++   c) : :   d) = =

   2) Which of the following can be passed to a function ?

      a) Reference variable   b) Arrays

      c) Class objects   d) All of above

   3) Which of the following is true about the static member variable in C++ _____

      a) It is initialized to zero when the first object of its class is created

      b) Other initialization is also permitted

      c) It is visible only within the class, but its lifetime is the entire program

      d) a) and c)

   4) The major goal of inheritance in C++ is _____

      a) To facilitate the conversion of data types

      b) To help modular programming

      c) To facilitate the reusability of code

      d) To extend the capabilities of a class

5) A _____ function in a class will make the class abstract.

   a) Friend function   b) Pure virtual function

   c) Member function   d) None

6) By default, all C++ compilers provide a copy constructor, this is invoked when _____

   a) an argument is passed by reference to a function

   b) a function returns a value to an object

   c) a) and b) both

   d) None

7) _____ statement defines a block of statements to handle the exception appropriately.

   a) Catch   b) Try   c) Throw   d) None

8) C++ supports mechanism known as _____ to implement concept of generic programming.

   a) Exception   b) Files   c) Macros   d) Templates

9) The class _____ provides facilities for handling input and output streams.

   a) Istream   b) Ostream   c) Iostream   d) Strambase

10) _____ depicts the real – world entities more closely than functions do.

   a) Prototyping   b) Pointers

   c) Object modeling   d) Abstraction

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

   1) The overloaded operator must have at least one user defined type operand.

   2) Destructors can be virtual.

   3) A member function declared cost cannot modify any of its class's member data.

   4) A friend function can have access to only public members of class.

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

    i) Dynamic allocation operators

    ii) Function overloading.

  B) Answer the following : **6**

    i) Explain User defined manipulator.

    ii) Explain Function prototype.

3. Answer the following : **14**

  A) What is object oriented programming ? How it differs from procedural programming ?

  B) Explain pure virtual functions with examples.

4. Answer the following : **14**

  A) How an object is created within a function and returned to another function ?

  B) What is reusability ? How C++ supports this, comment.

5. Answer the following : **14**

  A) Can we have more than one constructor in a class ? Explain need for such situation.

  B) Write a program to overload shorthand operator +=,– =.

6. Answer the following : **14**

  A) Explain call by reference and return by reference with example.

  B) What is template ? Explain utility of function template with examples.

7. Answer the following : **14**

  A) Explain static data members and static member function with examples.

  B) What are exceptions ? How exceptions are handled in C++ ?

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Seat No.

M.C.A. – I (Semester – II) (Computer Science) Examination, 2016
DATA STRUCTURES (CBCS) (New)

Day and Date : Friday, 1-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

Instructions : 1) *Question No.* **1** *and Question No.* **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 alternatives :   **10**

   1) The memory address of the first element of an array is called
      a) floor address
      b) foundation address
      c) first address
      d) base address

   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) Trees are said _____ if they are similar and have same contents at corresponding nodes.
      a) Duplicate
      b) Carbon copy
      c) Replica
      d) Copies

   4) Which of the following data structure can't store the non-homogeneous data elements ?
      a) Arrays   b) Records   c) Pointers   d) None

5) A linear collection of data element the linear node is given by mean of pointer is called
   a) Linked list
   b) Node list
   c) Primitive list
   d) None of the above

6) The time factor when determining the efficiency of algorithm is measured by
   a) Counting microseconds
   b) Counting the number of key operations
   c) Counting the number of statements
   d) Counting the kilobytes of algorithm

7) Which of the following abstract data type can be used to represent a many to many relation ?
   a) Tree only
   b) Graph only
   c) Both a) and b)
   d) None of these

8) At level L, maximum number of nodes in complete binary tree is
   a) $2^L + 1$
   b) $2^L - 1$
   c) 2^L
   d) 2^{L+2}

9) TREE [1] = NULL indicates tree is
   a) Overflow
   b) Underflow
   c) Empty
   d) Full

10) Which of the following sorting technique is slowest ?
   a) Quick Sort
   b) Heap Sort
   c) Shell Sort
   d) Bubble Sort

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

1) O(log n) means we divide list half each time and traverse middle.

2) We can also implement recursion using Queue.

3) Num[4][4] is an example of multidimensional array.

4) if top == max then we can conclude that stack is full.

2. a) What is graph ? Explain directed, undirected and weighted graph with maximum number of edges. **6**

   b) Sort following data using insertion Sort :
   13, 32, 20, 62, 68, 52, 38, 46. Give analysis. **8**

3. a) Explain complexity of an algorithm with different cases. **6**

   b) What is a linked list ? Explain circular linked list with appropriate diagram and node structure. **8**

4. a) What is stack ? Explain basic operation on dynamic stack using appropriate function. **6**

   b) Explain process of creating binary tree form following postorder and inorder traversal. **8**

   Postorder : HIDJEBKFGCA

   Inorder : HDIBEJAKFCG.

5. a) Define binary search tree. Explain process of inserting and deleting node from BST. **6**

   b) Write an algorithm to evaluate postfix expression. Using this algorithm solve expression 4, 5, 4, 2, ^, +, *, 2, 2, ^, 9, 3, /, *, -. **8**

6. a) What is Hashing ? Explain hash function for floating point number and string with example. **6**

   b) State the relationship between regular graph and complete graph. Explain with example planner graph, multigraph and cyclic graph. **8**

7. a) Explain with function deletion of node from all possible position in doubly linked list. **6**

   b) What is tree traversing ? Explain different tree traversing technique with suitable example. **8**

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Seat No.

M.C.A. – I (Semester – II) (CBCS) (New) Examination 2016
COMPUTER SCIENCE
Numerical Analysis

Day and Date : Monday, 4-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : 1) Q. No. **1** and Q. No. **2** are **compulsory**.
     2) Attempt **any three** question from Q. No. **3** to Q. No. **7**.
     3) Figures to the **right** indicate **full** marks.
     4) Use of calculator is **allowed**.

1. A) Choose the correct alternative :   **5**

   i) The real root of the equation $x^3 - 9x + 1 = 0$ lies between
     a) 0 & 1   b) 1 & 2   c) 2 & 3   d) 3 & 4

   ii) In Composite Trapezoidal rule the no. of segments n must be
     a) multiple of   b) an odd number
     c) an even number   d) any positive integer

   iii) The convergence in bisection method is
     a) very slow   b) quadratic
     c) cubic   d) none of these

   iv) $(y''')^2 + 5y' = 0$ is a _____ differential equation.
     a) First-degree, third order   b) Third-degree, second order
     c) Second-degree, third order   d) None of these

   v) The secant method of finding roots of nonlinear equation falls under the category of _____ method.
     a) bracketing   b) graphical   c) open   d) none

B) State **True** or **False** :   **5**

   1) Secant method is also called "Regula Falsi" method.

   2) Gaussian elimination method is used to reduce the given system to upper triangular system.

P.T.O.

3) If there is two or more independent variables then the Differential Equation is called partial Differential Equation.

4) $\Delta\nabla = \Delta - \nabla$.

5) Newton-Raphson method is also called method of tangent.

C) Define following : **4**

   i) Rate of convergence.

   ii) Relative error and percentage error.

2. A) i) Define an absolute error. Given $X_1 = 3.14285$ and $X = 3.141592$. Find absolute error. **3**

   ii) What is an order of Differential Equation ? **3**

   B) i) Prove that :

   a) $\mu^2 = 1 + \left(\dfrac{1}{4}\right)\delta^2$

   b) $\nabla - \Delta = \Delta\nabla$. **4**

   ii) State Newton's forward and backward difference interpolation formula. **4**

3. A) Write a note on Euler's method. **7**

   B) Given that equation $x^{2.2} = 69$ has a root between 5 & 8. Use the method of Regula-Falsi to determine it correct to four decimal places. **7**

4. A) Determine the value of y using Modified Euler method when $x = 0.1$ given that $y(0) = 1$, $h = 0.05$ and $y' = x^2 + y$. **7**

   B) Find the cubic polynomial for the values $y(1) = 24$, $y(3) = 120$, $y(5) = 336$ and $y(7) = 720$ also find the value of $y(8)$ by using Lagranges Interpolation. **7**

5. A) Find the root of equation $x^3 - 2x - 5 = 0$ using Newton-Raphson method. **7**

   B) Use Trapezoidal rule with $n = 6$ estimate $\displaystyle\int_0^1 \dfrac{dx}{1 + x^2}$ correct to five decimal places. **7**

6. A) Solve the system of equation by L.U. decomposition method **7**

$5x - 2y + z = 4$

$7x + y - 5z = 8$

$3x + 7y + 4z = 10$

B) Write an algorithm of finding the root of $f(x) = 0$ by Secant method. **7**

7. A) Given the following information : **7**

x	0	1	2	4	5	6
y	1	14	15	5	6	19

Use of Newton's divided difference formula calculate $f(3)$ = ?

B) Solve the system : **7**

$3x_1 + 6x_2 + x_3 = 16$

$2x_1 + 4x_2 + 3x_3 = 13$

$x_1 + 3x_2 + 2x_3 = 9$

Using Gauss elimination method.

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Seat No.	

M.C.A. (Science) (Part – I) (Semester – II) (New) (CBCS) Examination, 2016
COMPUTER SCIENCE
Operating System

Day and Date : Wednesday, 6-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

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

   1) A _____ is a sequence of bits, bytes, lines or records, the meaning of which is defined by its creator and user.

      a) Segmentation   b) File

      c) Device   d) None of these

   2) A _____ page replacement algorithm requires that the page with the smallest count be replaced.

      a) Most Frequently Used   b) FIFO

      c) Least Frequently Used   d) Least Recently Used

   3) The _____ on multi-CPU machines increases concurrency.

      a) Multichannel   b) Multisystem

      c) Multithreading   d) Multisource

   4) When process P_i terminates, P_{i+1} can obtain its needed resources and so on. If no such sequence exists, then the system state is said to be _____

      a) Unsafe   b) Safe   c) Both a) and b)   d) Ready

   5) In page table, when a bit is set to _____, the page is not in the process's logical address space.

      a) 14 bit   b) Valid   c) Invalid   d) 16 bit

6) It is the job of the _____ mechanism to defend a system from external and internal attacks.

   a) Security   b) Resource utilization

   c) Error detection   d) Protection

7) The _____ is the additional time for the disk to rotate the desired sector to the disk head.

   a) Seek Time   b) Dispatch latency

   c) Mount Time   d) Rotational latency

8) A logical address space is a collection of _____

   a) Memory Support System   b) Segment

   c) Offset   d) Swapping

9) _____ system requires an interactive computer system, which provides direct communication between the user and the system.

   a) Clustered   b) Handheld   c) Time Sharing   d) None of these

10) A process includes the process _____, which contains temporary data.

   a) Program Section   b) Queue

   c) Program Counter   d) Stack

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

1) Priority scheduling algorithm can be preemptive or non-preemptive.

2) Multiprogramming decreases CPU utilization by organizing jobs so that the CPU always has one to execute.

3) A contiguous allocation memory is a technique that allows the execution of a process that is not completely in memory.

4) User-level threads are managed by thread library and the kernel is unaware of them.

2. A) Answer the following :   **6**

   i) What do you mean by Semaphore ?

   ii) Briefly explain Process Control Block.

B) Write a short note on the following :   **8**

   i) CPU Scheduling Criteria

   ii) System Calls.

3. Answer the following :

   A) What do you mean by File ? Discuss in detail various allocation methods for organizing file on a disk. **7**

   B) Define the term Process. Explain in detail communication models to do Inter Process Communication for the purpose of Process Management. **7**

4. Answer the following :

   A) What do you mean by Operating System ? Discuss in detail different types of Operating System. **7**

   B) State the principle of First in First Out (FIFO) page replacement algorithm. Perform FIFO page replacement algorithm and calculate the page fault rate on following String :

   Number of frames – 03

   Reference string – 4, 1, 4, 3, 2, 3, 1, 2, 9, 1, 2, 9, 1, 2, 3, 1, 4, 1, 5, 3. **7**

5. Answer the following :

   A) Define the term Deadlock. Discuss in detail deadlock recovery with possible solution steps. **7**

   B) State and describe the principle of SCAN disk scheduling algorithm. Perform SCAN with a disk queue requests are as follows : **7**

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

   Head starts at 50.

6. Answer the following :

   A) What do you mean by Non-preemptive Scheduling ? Explain in detail mechanism of multilevel feedback queue scheduling with suitable example. **7**

   B) What do you mean by Demand Paging ? Explain detail various steps involved in handling a page fault with respect to demand paging. **7**

7. Answer the following :

   A) Discuss in detail forms of accidental and malicious security violations and various security measures to protect the system against it. **7**

   B) What do you mean by Distributed Operating System (DOS) ? Elaborate DOS as CASE study and related analysis. **7**

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Seat
No.

M.C.A. (Science) – I (Semester – II) (New) (CBCS) Examination, 2016
Computer Science
SOFTWARE ENGINEERING

Day and Date : Saturday, 9-4-2016   Max. Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

N.B. : 1) *Question No.* **1** *and* **2** *are* **compulsory**.

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

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

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

   1) _____ testing is a case design method that exercises logical conditions contained in program module.
      a) Data flow   b) Condition   c) Loop   d) Graph-based

   2) The internal implementation details of data and procedures are hidden from outside world is called
      a) Visibility   b) Data hiding   c) Encapsulation   d) None of these

   3) The process defines framework for set of
      a) Key Process Areas   b) Umbrella Activities
      c) CASE Tools   d) All of these

   4) _____ is process of executing a program with intent of finding an error.
      a) Debugging   b) Testing
      c) Correctness   d) Perfectiveness

   5) The means by which objects interact are
      a) Methods   b) Operations   c) Messages   d) Relationship

   6) Additional information about control aspects of software contained in
      a) Project specification   b) Control specification
      c) Process specification   d) Product specification

7) Quality assurance activities performed by

   a) Software Engineering Team   b) SQA Group

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

8) _____ is a software engineering task that bridges the gap between system level requirement engineering and software design.

   a) Requirements analysis   b) Risk analysis

   c) Project planning   d) System design

9) Software is divided into separately named and addressable components, often called as _____, that are integrated to satisfy problem requirements.

   a) Fragments   b) Partitions

   c) Modules   d) Decompositions

10) Which of the following is not part of software engineering layered technology ?

   a) Process   b) Methods   c) Tools   d) Project

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

1) Software is manufactured ; it is not developed or engineered in classical sense.

2) At the core of analysis model, lies the data dictionary.

3) Software architecture represents the organization of program components and implies hierarchy of control.

4) Loop testing is black box testing technique.

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

  i) White box testing

  ii) Project metrics

B) Answer the following :   **6**

  i) Explain the management myths in detail.

  ii) What is measurement ? Describe about direct and indirect measures.

3. Answer the following :

A) Explain linear sequential model and prototyping model in detail.   **7**

B) Describe evolutionary software process models in brief.   **7**

4. Answer the following :

   A) What is metric ? Explain size oriented metrics, function oriented metrics and extended function point metrics in brief. **7**

   B) Explain basic path testing in brief. **7**

5. Answer the following :

   A) What is functional modeling ? Explain data dictionary with example. **7**

   B) What is software analysis ? Explain analysis principles in brief. **7**

6. Answer the following :

   A) Describe the elements of design model. **7**

   B) Describe the elements of analysis model. **7**

7. Answer the following :

   A) Explain the control structure testing in detail. **7**

   B) Explain the process of identifying elements of an object model. **7**

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Seat No.	

M.C.A. – I (Semester – II) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Numerical Analysis

Day and Date : Monday, 4-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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** side indicate full marks.

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

   I) The percentage error if 625.483 is approximated to 3 significant digits is _____

     a) 0.0662   b) 0.0772

     c) 0.0552   d) 0.0882

   II) The root of the equation $x\log_{10} x - 1.2 = 0$ lies between _____

     a) (0, 1)   b) (1, 2)   c) (2, 3)   d) (3, 4)

   III) The order of convergence in Newton-Raphson method is _____

     a) 2   b) 3

     c) 0   d) None of these

   IV) Process of estimating the value of dependent variable at an intermediate value is called _____

     a) Estimation   b) Interpolation

     c) Extrapolation   d) Dependency

V) Let f(0) = 1, f(1) = 2.72, then by trapezoidal rule, the approximation value

of $\int_{0}^{1} f(x)\,dx$ is _____

   a) 0.86   b) 1.72   c) 1.86   d) 3.72

VI) Gauss-Jacobi's method is a _____ method.
   a) Non-iteration   b) Iteration
   c) Infinite   d) Algebraic

VII) Convergence in the Gauss-Seidel method is_____ as fast on Gauss-Jacobi's method.
   a) Same   b) Thrice   c) Twice   d) Five times

VIII) The largest eigen value of the matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$ is _____

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

IX) The order of error in the Simpson's rule for numerical interpolation with a step size h is _____
   a) h   b) h^2 c) h^3 d) h^4

X) _____ method is used to solve the initial value problem.
   a) Lagranges method   b) Power method
   c) Secant method   d) Euler's method

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

   I) Approximate Value = True Value + Error.

   II) In the forward difference table, $\Delta x^{n-1} = nx^{n-1}$.

   III) Gauss-Seidel method is an improvement over Gauss-Elimination method.

   IV) Taylor's series method is a multistep method used to find the solution to initial value problem.

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

    i) Finite differences.

    ii) Eigen value of symmetric tridiagonal matrix.

  B) Answer the following :   **6**

    i) Absolute, relative and percentage errors.

    ii) Explain Trapezoidal rule to solve the initial value problems.

3. Answer the following :   **14**

  A) Explain one of the iteration methods for the solution of $f(x) = 0$.

  B) Use the method of Falsi-position to find the fourth root of 12 correct to three decimal places.

4. Answer the following :   **14**

  A) Describe Newton's forward difference interpolation formula.

  B) Use Newton's backward difference formula to extrapolate for 25.4 from the given data :

x	19	20	21	22	23
f(x)	91	100.25	110	120.25	131

5. Answer the following :   **14**

  A) Use Lagrange's interpolation formula to find f(4) from the given data :

x	0	2	3	6
f(x)	−4	2	14	158

B) For the following data find $f^1(1)$ and f^{11} (3). Verify your answer by fitting an interpolating polynomial.

x	0	2	4	6	8
F(x)	7	13	43	145	367

6. Answer the following : **14**

A) Solve the following system of equations :

$6x + y + z = 20$, $x + 4y - z = 6$, $x - y + 5z = 7$

By using Gauss Seidal method. Perform three iteration at each step.

B) Solve the following system using LU decomposition method.

$2x + 3y + z = 9$, $x + 2y + z = 6$, $3x + y + 2z = 8$

7. Answer the following : **14**

A) Evaluate $\int_0^1 \dfrac{dx}{1+x}$ by applying Simpson's $\frac{3}{8}$th rule. Hence deduce the value of $\log^2_e$.

B) Use Taylor's series method to find y at x = 0.1, 0.2, 0.3 constructing terms up to the third degree given that $\dfrac{dy}{dx} = x^2 + y^2$ and y(0) = 1.

Seat No.

M.C.A. (Science) (Part – I) (Semester – II) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Operating System

Day and Date : Wednesday, 6-4-2016
Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

Instructions : I) *Q.* **1** *and Q.* **2** *are* **compulsory** *questions.*

II) *Attempt* **any three** *questions from Q.* **3** *to Q.* **7**.

III) *Figures to* **right** *indicate* **full** *marks.*

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

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

2) The _____ buffer sometimes refers to as a message system with no buffering.
   a) Zero capacity
   b) Single capacity
   c) Double capacity
   d) Unbounded capacity

3) _____ provides basis for application programs that acts as an intermediary between the computer user and the computer hardware.
   a) Application software
   b) Operating system
   c) Shared libraries
   d) Linked list

4) The _____ is akin to reader lock in that several processes can acquire the lock concurrently and the _____ behaves like writer lock ; only one process at a time can acquire such lock.
   a) Hardware Lock and Exclusive Lock
   b) Shared Lock and Exclusive Lock
   c) System Lock and Shared Lock
   d) Exclusive Lock and Shared Lock

P.T.O.

5) A _____ interface which uses a text instruction and a method to entering them.

   a) Computer   b) Track ball   c) Flip Flop   d) Command

6) The _____ is the module that gives control of the CPU to the process selected by the scheduler and it should be as fast as possible, since it is invoked during every process switch.

   a) Control system   b) Dispatcher

   c) I/O Event Wait   d) Memory Scheduler

7) _____ are also known as mutex locks.

   a) Counting   b) Monitor   c) Decimal   d) Binary

8) In _____ algorithm, a small unit of time quantum or time slice is defined.

   a) Long term scheduler   b) Round Robin

   c) Most Recently Used   d) Priority

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

   a) Relative path   b) Directory path

   c) Absolute path   d) File-Directory path

10) A _____ is non-preemptive kind of scheduling algorithm.

   a) Disk storage   b) Page replacement

   c) Starvation   d) First Come First Serve

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

   1) A preemptive kernel allows a process to be preempted while it is running in kernel mode.

   2) Fragmentation is the violation of the system can be categorized as intentional and accidental.

   3) The rows of the access matrix represent domains and the columns represent objects.

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

2. A) Write a short note : **8**
   i) System Calls.
   ii) Virtual Memory.

   B) Answer the following : **6**
   i) What do you mean by Co-operative process ?
   ii) What do you mean by Monitors ?

3. Answer the following :
   A) Define the Deadlock. State and explain in detail necessary conditions to cause a Deadlock. **7**
   B) What is meant by Demand paging ? Discuss in detail the concept of demand paging. **7**

4. Answer the following :
   A) Discuss in detail process synchronization using Dining-Philosopher problem. **7**
   B) Calculate the total number of page fault using Least Recently Used (LRU) page replacement on following reference string having maximum 3 frames : **7**

   0, 3, 0, 4, 2, 2, 1, 2, 0, 1, 7, 0, 7, 0, 1, 2, 3, 0, 3, 1.

5. Answer the following :
   A) Discuss in detail how inter-process communication will be made between processes. **7**
   B) Define the term file. Discuss various C-SCAN Disk Scheduling method with suitable example. **7**

6. Answer the following :
   A) Describe CPU Scheduling Criteria. Discuss working of Priority Scheduling algorithm with suitable example. **7**
   B) Define the term Operating System. Explain in detail the role of Operating System as being resource allocator. **7**

7. Answer the following :
   A) Discuss in detail various memory allocation models with suitable example. **7**
   B) Define the term Process. Discuss in detail concept of Process Control Block and Process State with suitable example. **7**

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SLR-J – 20

M.C.A. (Semester – II) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Software Engineering

Day and Date : Saturday, 9-4-2016　　　　　　　　　　Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

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

　　1) The user system requirements are the parts of which document ?
　　　　A) SDD　　　　　　　　　　　　B) SRS
　　　　C) DDD　　　　　　　　　　　　D) None of the above

　　2) The most important feature of spiral model is
　　　　A) Requirement analysis　　　　B) Risk management
　　　　C) Quality management　　　　 D) Configuration management

　　3) What is a prototype ?
　　　　A) Mini-model of existing system
　　　　B) Mini-model of the proposed system
　　　　C) Working model of the existing system
　　　　D) None of the above

　　4) Which of the following is/are white box technique ?
　　　　A) Statement testing　　　　　B) Decision testing
　　　　C) Condition coverage　　　　 D) All of the above

　　5) 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

　　6) The desired level of coupling is
　　　　A) No coupling　　　　　　　　B) Control coupling
　　　　C) Common coupling　　　　　 D) Data coupling

P.T.O.

7) Modifying the software to match changes in the ever changing environment is called
   A) adaptive maintenance
   B) corrective maintenance
   C) perfective maintenance
   D) preventive maintenance

8) ER model shows the
   A) Static view
   B) Functional view
   C) Dynamic view
   D) All the above

9) Top down approach is used for
   A) development
   B) identification of faults
   C) testing and validation
   D) reverse engineering

10) In the analysis phase, which is a clear statement of the goals and objectives of the project
   A) documentation
   B) flowchart
   C) program specification
   D) design

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

1) _____ is the process of translating a task into a series of commands that a computer will use to perform that task.

2) _____ is an iterative process through which requirements are translated into a blueprint for constructing the software.

3) In _____ the data objects flow into the software, are transformed by processing elements and resultant data processing elements and resultant data objects flow out of the software.

4) Waterfall model sometimes called _____.

2. A) Write a short note on following : **8**
   i) Software engineering a layered technology.
   ii) Prototyping model.

   B) Answer the following : **6**
   i) Explain the need of software engineering for software projects.
   ii) Explain the behavioural model with sequence diagram of system.

3. Answer the following : **14**
   A) Explain the role of documentation in maintenance and types of documentation.
   B) Describe the phases of SDLC in detail.

4. Answer the following : **14**

   A) What do you mean by structural testing ? How you can perform it using statement, code and branch coverage ?

   B) Describe the various components of requirement analysis.

5. Answer the following : **14**

   A) Discuss the role of metrics in the process and project.

   B) Explain the advantages of linear sequential model.

6. Answer the following : **14**

   A) Explain the management of object-oriented software projects.

   B) Describe the various element of analysis modelling.

7. Answer the following : **14**

   A) Explain in detail defect removal efficiency.

   B) What do you mean by testing strategies ? Explain each strategy in detail.

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Seat No.	

M.C.A. – II (Semester – III) (Computer Science) (New) (CGPA) Examination, 2016
COMPUTER COMMUNICATION NETWORK

Day and Date : Tuesday, 29-3-2016   Max. Marks : 70

Time : 2.30 p.m. to 5.00 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 alternative :   **10**

    1) Well known port number for file transferring

       a) 25   b) 21   c) 69   d) 79

    2) E-mail can send messages in _____ Format.

       a) Binary   b) Octal   c) EBCDIC   d) ASCII

    3) _____ is based on binary division for error correction.

       a) Parity check   b) Checksum

       c) CRC   d) Redundant bit

    4) _____ is a message access protocol.

       a) MIME   b) SMTP   c) POP3   d) PPP

    5) _____ is a suitable transport protocol for multicasting.

       a) IP   b) TCP   c) UDP   d) ARP

    6) _____ primitives are widely used for internet programming.

       a) Listen   b) Berkley Sockets

       c) Send   d) Sockets

    7) Which quality of service is required in real time applications ?

       a) Jitter   b) Bandwidth

       c) Delay   d) Reliability

8) _____ is a static routing algorithm.

   a) Flooding   b) Link state routing

   c) Distance vector   d) None of the mentioned

9) _____ primitive blocks waiting for an incoming message.

   a) LISTEN   b) SEND   c) CONNECT   d) RECEIVE

10) _____ are distinguished from other kinds of networks by their size, transmission technology and topology.

   a) MANs   b) LANs   c) WANs   d) PANs

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

1) A set of layers and protocols is called _____.

2) In the original ARPANET, _____ were directly connected together.

3) _____ technique smoothes out the traffic on the server side than on the client side.

4) _____ is a stream oriented protocol.

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

1) Principles of network layer in Internet.

2) Web Documents.

B) Assuming even parity, find the parity bit for each of the following data units.   **6**

1) 1001011

2) 0001100

3) 1000000

4) 1110111

5) 0011010

6) 1110010

3. A) Discuss the techniques for Achieving Good Quality of Service.   **8**

B) Explain TCP segment format in detail.   **6**

4. A) Explain the architecture of WWW in detail.   **8**

B) Classify the computer network according to transmission technology.   **6**

5. A) Explain cyclic redundancy code with example. **8**

   B) The distances between different routers are given in the following subnet. Build the sink tree for router A using optimality principle. **6**
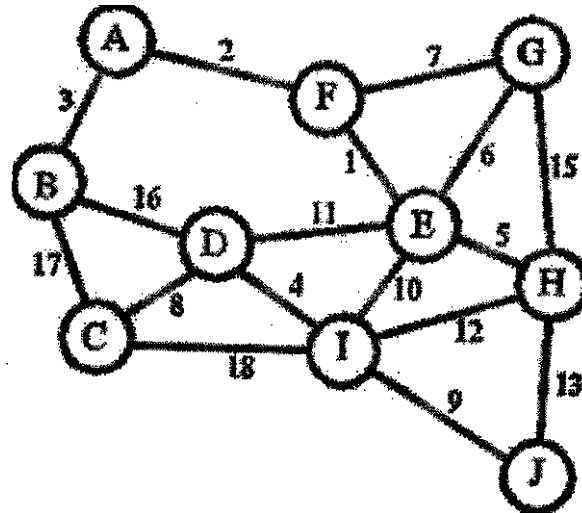
6. A) Explain Token Bucket algorithm in detail. **8**

   B) Explain services provided by User Agent of E-mail. **6**

7. A) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows :

   a) The first group has 64 customers ; each needs 256 addresses.

   b) The second group has 128 customers ; each needs 128 addresses.

   c) The third group has 128 customers ; each needs 64 addresses.

   Design the subblocks and find out how many addresses are still available after these allocations. **8**

   B) Explain Tunnelling mechanism in internetworking. **6**

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Seat No.	

M.C.A. – II (Semester – III) (CGPA) (New) Examination, 2016
COMPUTER SCIENCE
Java Programming

Day and Date : Thursday, 31-3-2016   Total Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

   1) Which of the following feature is not supported by java ?

      a) Multiple inheritance   b) Pointers

      c) Destructor   d) All of these

   2) The variables in an interface are by default _____

      a) Static   b) Final

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

   3) The execution of an applet begins from _____ method.

      a) init ()   b) stop ()

      c) start ()   d) paint ()

   4) The run time error may occurs due to problems in _____

      a) Arithmetic calculations like dividing by zero

      b) Trying to access an out of bounds array elements

      c) Converting invalid string to numbers

      d) All of these

   5) Which of the following tool is used to compile java code ?

      a) java   b) javadoc

      c) javac   d) javadb

6) _____ keyword does not allow a method to be override in the subclass.

   a) public   b) final

   c) abstract   d) static

7) _____ is reserved keyword in java.

   a) Abstract   b) Extends

   c) Package   d) All of above

8) _____ method is used to register a keyboard event listener.

   a) KeyListener ()   b) addkistener ()

   c) addKeyListener ()   d) eventKeyboardListener ()

9) Which keyword is used to implement synchronization ?

   a) synchronized   b) Locksynch

   c) synch   d) Lock

10) Which of the following method will be invoked if a character is entered ?

   a) keyPressed ()   b) keyReleased ()

   c) keyTyped ()   d) keyEntered ()

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

   1) The PreparedStatement object allows you to execute parameterized queries.

   2) charat() method of String class is used to obtain character at specified index.

   3) Abstract class is superclass of every class in Java.

   4) Protected members of a class can be inherited by a sub class, and become private members of the sub class.

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

   i) Abstract class

   ii) Applet.

   B) Attempt the following :   **6**

   i) Give the use of super keyword.

   ii) List advantages of Wrapper classes.

3. A) Explain different steps to make connectivity in JDBC. **7**

   B) Explain Adapter Classes with its advantages. **7**

4. A) Explain the following methods. **7**

      i) wait ()

      ii) notify ()

      iii) notifyAll ().

   B) Explain the multiple catch block with suitable example. **7**

5. A) Explain different access specifiers in java. **7**

   B) What is Object class ? Explain different methods of object class. **7**

6. A) Explain different types of statements in JDBC. **7**

   B) Explain the term : **7**

      i) BufferedReader

      ii) InputStream

      iii) OutputStream.

7. A) Explain run-time polymorphism with example. **7**

   B) What are Event Listeners ? Explain any two Event Listeners. **7**

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

   1) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as

      a) Semantic analysis   b) Syntax analysis

      c) Lexical analysis   d) Both a and b

   2) Load address origin is the load address for the

      a) First word of a program   b) Whole program

      c) Last word of a program   d) None of these

   3) An imperative statement

      a) Reserves areas of memory and associates names with them

      b) Indicates an action to be performed during execution of assembled program

      c) Indicates an action to be performed during optimization

      d) All of these

   4) MS-DOS LINK is a

      a) linking loader   b) bootstrap loader

      c) both a and b   d) linkage editor

   5) The tokens of the most of programming language is recognized by

      a) Finite automata   b) push-down automata

      c) both a and b   d) none of these

6) The YACC is an example

    a) y-compiler   b) Interpreter

    c) p-code compiler   d) compiler-compiler

7) Pentium Pro processors is uses

    a) RISC approach   b) CISC approach

    c) Both a and b   d) None of these

8) MASM assembler designed for

    a) Pentium and other x86 family   b) SPARC architecture

    c) PowerPC architecture   d) None of these

9) Loaders that allow for program relocation is called

    a) absolute loaders   b) bootstrap loaders

    c) relocating loaders   d) direct loader

10) Which of the following are language processors ?

    a) Assembler   b) Compiler   c) Interpreter   d) All of these

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

1) The task of scanning the source statement, recognizing and classifying the tokens known as lexical analysis.

2) The new addresses given to the variables by the loader is called load-time address.

3) In parsing tokens are derived, recognized and classified

4) YACC is a software tool used for parser generator

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

    a) p-code compiler

    b) bootstrap loader

    c) macro assembler

B) Design flowchart for one pass assembler.   **6**

3. Answer the following :　　　　　　　　　　　　　　　　　　　　**14**

   A) Discuss in detail table management techniques used in Assembler.

   B) What is assembly language ? Explain different types of statements used in assembly language program.

4. Answer the following :　　　　　　　　　　　　　　　　　　　　**14**

   A) Explain the following terms

   　　I) Translation time address

   　II) Load time address

   　III) Link time address

   Explain the relationship among them.

   B) What is relocation ? Explain types of programs made depending on relocation.

5. Answer the following.　　　　　　　　　　　　　　　　　　　　**14**

   A) What is macro expansion ? Design a algorithm for macro expansion technique.

   B) What is macro assembler ? Design its algorithm and list out advantages and disadvantages of macro assembler.

6. Answer the following.　　　　　　　　　　　　　　　　　　　　**14**

   A) What is parsing ? Explain any two parsing techniques.

   B) Explain analysis and synthesis phases of a compiler.

7. Answer the following :　　　　　　　　　　　　　　　　　　　　**14**

   A) Design a flow chart for one-pass assembler.

   B) Define and explain the following

   　　I) Assembler

   　II) Interpreter

   　III) Compiler.

_____

Seat
No.

M.C.A. (Science) – II (Semester – III) (New) (CGPA) Examination, 2016
DATABASE MANAGEMENT SYSTEM

Day and Date : Tuesday, 5-4-2016

Max. Marks : 70

Time : 2.30 p.m. to 5.00 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) A compiler that converts embedded DML statements to normal procedure calls is called as
   a) SQL Compiler
   b) DML Compiler
   c) Embedded DML Pre-compiler
   d) Embedded DML Compiler

   ii) The process of compiling information on an object by abstracting a higher level object is
   a) Specialization
   b) Generalization
   c) Aggregation
   d) None of these

   iii) The overall description of database is known as
   a) Instance
   b) Schema
   c) Snapshot
   d) Desc

   iv) Relational calculus describes about
   a) 'how' to evaluate a query
   b) 'what' is to be retrieved
   c) 'when' to evaluate a query
   d) 'why' to evaluate a query

   v) Entities are nothing but
   a) Relations
   b) DBMS
   c) Tuples
   d) Attributes

   vi) A set of changes that must be all made together on database called as
   a) Atom
   b) Immediate update
   c) Transaction
   d) None of these

   vii) Shadowing maintains _____ tables.
   a) 2
   b) 3
   c) 4
   d) None of these

viii) The process of normalisation is
a) Reversible   b) Irreversible
c) Iterative   d) Recursive

ix) A phase during which all locks are requested is
a) Growing Phase   b) Shrinking Phase
c) Aborted Phase   d) Committed Phase

x) How many tables can be joined to create a view ?
a) 1   b) 2
c) Depends on DBMS   d) None of these

B) State whether **true/false** : **4**
i) CREATE and DROP are DML commands.
ii) Every conflict serializable schedule is view serializable too.
iii) PL-SQL supports procedural statements.
iv) 3rd Normal form removes partial dependency.

2. A) Write a short note on following : **8**
i) Users of DBMS.
ii) Abstract Data Types in ORDB.

B) Answer the following : **6**
i) What are the functions of DBMS ?
ii) Describe the checkpoint technique for recovery.

3. Answer the following :

A) Explain the life cycle of database system development in detail. **7**

B) A movie studio wishes to institute a database to manage their files of movies, actors and directors. The following facts are relevant. Each actor has appeared in many movies.

• Each director has directed many movies.

• Each movie has one director and one or more actors.

• Each actor and director may have several addresses and telephone numbers.

Identify entities and attributes. Draw E-R diagram. **7**

4. Answer the following :

A) Discuss about the 3rd Normal form and BCNF form with example. **7**

B) What is relational algebra ? Explain following operations of relational Algebra with example : natural join, left outer join and intersection. **7**

5. Answer the following :

A) What is query processing ? Explain the steps involved in it. **7**

B) Explain the concept of varying array. Describe how to insert data in varying array and how to retrieve from it. **7**

6. Answer the following :

A) What are the ACID properties ? Explain each one with example. **7**

B) Describe two phase commit protocol in detail. **7**

7. Answer the following :

A) What is distributed database ? Explain the concept of fragmentation and its types with example of each. **7**

B) Explain data models and its types in detail. **7**

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Seat
No.

M.C.A. – II (Semester – III) (New) (CGPA) Examination, 2016
COMPUTER SCIENCE
Computer Oriented Statistics

Day and Date : Thursday, 7-4-2016   Total Marks : 70
Time : 2.30 p.m. to 5.00 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.
           iv) **Use** of simple or scientific calculator is **allowed**.

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

   i) Drinking habit of a person is
     a) an attribute   b) a discrete variable
     c) a continuous variable   d) a variable

   ii) Mean is a measure of
     a) Location (central value)   b) Dispersion
     c) Correlation   d) None of these

   iii) For a negatively skewed distribution
     a) median<mode<mean   b) mean>median>mode
     c) median<mean<mode   d) mean<median<mode

   iv) If A and B are two events which have no point in common, the events
     A and B are
     a) complementary to each other
     b) independent
     c) mutually exclusive
     d) dependent

   v) X is a binomial variate with parameters (n, p). If n = 1, the distribution of X
     reduces to
     a) Poisson distribution   b) Geometric distribution
     c) Bernoulli distribution   d) Discrete uniform distribution

   vi) If a discrete random variable X takes on four values 0, 1, 3, 4 with
     probabilities 0.1, 0.15, 0.2, k respectively then the value of k is
     a) 0.45   b) 1.45
     c) 1   d) 0.55

P.T.O.

vii) If the p.d.f. of a continuous random variable X is $f(x) = \dfrac{1}{2}; 0 < x < 2$ then E(X) is

    a) – 1   b) 0

    c) 0.5   d) 1

viii) Regression analysis is concerned with

    a) Establishing a mathematical relationship between two variables

    b) Measuring the extent of association between two variables

    c) Predicting the value of the dependent variable for a given value of the independent variable

    d) Both (a) and (c)

ix) If the correlation between the two variables X and Y is negative, the regression coefficient of Y on X is

    a) zero   b) positive

    c) negative   d) not certain

x) If the value of coefficient of Kurtosis β_2, is less than three, then the frequency distribution curve is said to be

    a) Leptokurtic   b) Platykurtic

    c) Mesokurtic   d) None of these

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

  i) For two discrete random variables X and Y if P(X = 3, Y = 5) = 0.15 and P(Y = 5) = 0.5 then P(X = 3/Y=5) is _____

  ii) If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be _____

  iii) If the mean and standard deviation of a distribution are 400 and 16 respectively, then the coefficient of variation of the distribution is _____

  iv) An unbiased coin is tossed three times. The probability of getting exactly two heads is _____

2. A) i) What do you mean by central tendency ? Explain the purpose of measures of central tendency.   **4**

    ii) For a group of 10 items if mean is 45.2, S.D. is 20 and mode = 43.7 then find the coefficient of skewness and interpret the result.   **4**

B) i) State multiplication theorem of probability.   **3**

ii) If the probability mass function of a r.v. X is

$$P(X = x) = \frac{x^2}{14}, X = 0, 1, 2, 3 \text{ then find } P(X^2 \geq 1.2).$$ **3**

3. A) The chance that doctor A will diagnose a disease X correctly is 60 per cent. The chance that a patient will die by his treatment after correct diagnosis is 40 per cent, and the chance of death by wrong diagnosis is 70 per cent. A patient of doctor A, who had disease X, died. What is the probability that his disease was diagnosed correctly ?   **7**

B) A machine produces 20 per cent defective items. Ten items are selected at random. Find the probability of not more than two items being defective.   **7**

4. A) The following data give the age distribution of life insurance policy holders, insured through an agent. Calculate coefficient of variation for the following data :

Age in years :	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50
No. of policy holders :	10	15	20	20	15	10

7

B) Give the procedure of generating random observations from uniform distribution over (a, b).   **7**

5. A) Define normal distribution and state its important properties.   **7**

B) If a r.v.X follows Poisson distribution with parameter $\lambda = 2$, find $P(X \geq 3)$.   **7**

6. A) Fit an exponential curve of the form $Y = a \cdot e^{bX}$ to the following data :

X :	1	2	3	4	5
Y :	0.74	5.46	40.34	298.1	2202.6

Estimate Y when X = 4.5.   **7**

B) Define exponential distribution. If life time of a certain kind of battery follows an exponential distribution with mean life time 1000 hours, find the probability that the life time of a battery is more than 1200 hours.   **7**

7. A) From a bivariate distribution a sample of 40 gives following values.

$\Sigma X = 628$ $\Sigma Y = 550$ $\Sigma X^2 = 40376$ $\Sigma Y^2 = 30812$ $\Sigma XY = 33969$
   i) Find regression coefficients
   ii) Correlation coefficient.   **7**

B) What is a Kurtosis ? Explain their types.   **7**

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Seat No.

M.C.A. – II (Semester – III) (Computer Science) (Old) (CGPA) Examination, 2016
COMPUTER COMMUNICATION NETWORK

Day and Date : Tuesday, 29-3-2016   Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

    1) Each IP packet must contains

        A) Only source addresses   B) Only destination address

        C) Source and destination address   D) Source or destination address

    2) What is a firewall in computer network ?

        A) The physical boundary of network

        B) An operating system of computer network

        C) A system designed to prevent the authorized access

        D) A web browsing software

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

        A) TCP   B) IP   C) UDP   D) All of the above

    4) DHCP is the abbreviation of

        A) Dynamic host control protocol

        B) Dynamic host configuration protocol

        C) Dynamic hyper control protocol

        D) Dynamic configuration protocol

P.T.O.

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

   A) Class-A   B) Class-B   C) Class-C   D) Class-D

6) DNS is the abbreviation of

   A) Dynamic Name System   B) Dynamic Network System

   C) Domain Name System   D) Domain Network System

7) The last address fo IP address represents

   A) Unicast address   B) Network address

   C) Broadcast addresses   D) None of the above

8) ADSL is the abbreviation of

   A) Asymmetric Dual SubscribeLine   B) Asymmetric Digital System Line

   C) Asymmetric Dual System Line   D) Asymmetric Digital Subscriber Line

9) How many layers in the TCP/IP model ?

   A) 4-layers   B) 5-layers   C) 6-layers   D) 7-layers

10) Router operates in which layers of OSI reference model.

   A) Layer-1 (presentation layer)   B) Layer-3 (Network layer)

   C) Layer-4 (Transport layer)   D) Layer-7 (Application layer)

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

   1) Network cable lies on _____ layer.

   2) Print server uses _____ which is a buffer that holds data before it is send to the printer.

   3) In a synchronous modem, the digital-to-analog converter transmits signal to the _____

   4) Standards that have not been approved by an organized body but have been adopted as standards through widespread are _____

2. A) Write short note on : **8**
   i) Real time transfer protocol.
   ii) Interior gateway routing protocol

   B) Differentiate between circuit switching and pocket switching with examples. **6**

3. A) What are the desirable properties of routing algorithm ? Discuss the conflict between fairness and optimality. **7**

   B) Briefly discuss the distance vector routing algorithm. Explain the count-to-infinity problem. **7**

4. A) Describe one-bit sliding window protocol. **7**

   B) Discuss classless inter domain routing. **7**

5. A) Explain the five major activities performed in Link State Routing and Build Link state packets for the subnet given below. **7**
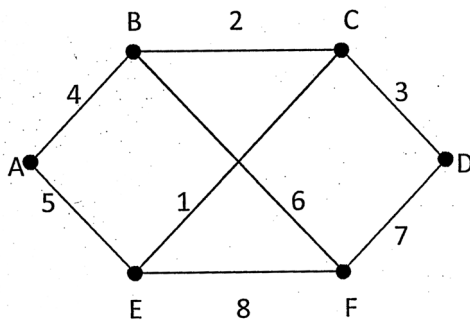
   B) Explain Hop by Hop choke packets and tunneling. **7**

6. A) What are the tools used in E-mail security ? Discuss any two of them briefly. **7**

   B) How to manage and monitor the easy flow of packets in reliable network security ? Explain briefly. **7**

7. A) Discuss the three way handshake method illustrate connection establishment and release with suitable diagrams. **7**

   B) Explain remote procedure calls. **7**

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Seat No.

M.C.A. – II (Semester – III) (Computer Science) (Old) (CGPA) Examination, 2016
JAVA PROGRAMMING

Day and Date : Thursday, 31-3-2016   Max. Marks : 70

Time : 2.30 p.m. to 5.00 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 them is a not command line tool ?
      a) java   b) javaw
      c) javapath   d) javadoc
   2) Which one of the following will declare an array and initialize it with five numbers ?

      a) Array a = new Array(5) ;

      b) int [ ] a = {23, 22, 21, 20, 19} ;

      c) int a [ ] = new int[5] ;

      d) int [5] array ;
   3) After the following code fragment, what is the value in a ?

      String s ;

      int a ;

      s = "Foolish boy." ;

      a = s.indexOf("fool");

      a) –1   b) 0
      c) 4   d) Random value

4) Given the following code fragment :

```
int A[] ;
int i = 0 ;
A = new int A[4] ;
while (i < 4)
{
    A [i] = 10 ;
    i = i + 1 ;
}
```

What is the value of A[3] ?

a) 0   b) 3   c) 10   d) 4

5) Given the following piece of code :

```
class Person{ public void talk() {} }
public class Test
{
    public static void main (String args [])
    {
        Person p = null ;
    try
    {
        p.talk();
    }
     catch (Null Pointer Exception e)
     {
        System.out.print ("There is a NullPointerException.");
     }
     catch(Exception e)
     {
        System.out.print ("There is an Exception.") ;
     }
     System.out.print ("Everything went fine.") ;
     }
}
```

What will be the result ?
a) If you run this program, the outcome is :
   There is a NullPointerException. Everything went fine.
b) If you run this program, the outcome is :
   There is a NullPointerException.
c) If you run this program, the outcome is :
   There is a NullPointerException. There is an Exception.
d) This code will not compile, because in Java there are no pointers.

6) During the lifetime of applet, _____ method is invoked immediately after the execution of init() method.
a) paint()   b) start()
c) stop()   d) init()

7) After finishing a task assigned to a thread, it goes into a _____ state.
a) Blocked   b) Runnable
c) Dead   d) Waiting

8) In _____ two or more parts of the same program are executed concurrently.
a) Multithreading   b) Multitasking
c) Applet   d) None of these

9) _____ exception occurs if we attempt invalid conversion of a string to a numeric format.
a) NumberFormatException
b) ArithmeticException
c) ArrayIndexOutOfBoundsException
d) None of these

10) Consider the piece of code given below –
      String s = "Learn from the past experience" ;
      int n = s.indexOf('r') ;
After the execution _____ is assigned to variable n.
a) 2   b) 4
c) 3   d) 8

B) State whether **true** or **false** :   **4**
1) All constructors in a class must have different signatures.
2) When access specifier is private, that member can be accessed from anywhere within the class.
3) Keyword super is never used inside the constructor of subclass.
4) Redefining a member of superclass in the subclass is overloading.

2. A) Write short notes on the following : **8**
   i) Abstract class.
   ii) Scrollbar class.

  B) Answer the following : **6**
   i) Explain the need and importance of the 'super' keyword.
   ii) Explain the garbage collector.

3. Answer the following :
  A) Describe how combo-box is put on a frame. Explain how event generated by a combo-box is handled. **6**
  B) Describe various types of iterations statements in Java. **8**

4. Answer the following :
  A) Explain with example how event generated by a button is handled. **6**
  B) Write a program to create an applet to accept 'Total Number of Lectures' and 'Number of Lectures Attended' for a student in two different Textfields. When button with caption 'Percent Attendance' is clicked students percent attendance will get displayed in third Textfield. **8**

5. Answer the following :
  A) Describe how applet works. **8**
  B) Explain any two functions of Statement interface. **6**

6. Answer the following :
  A) Describe with suitable example, how the class FileWriter is used for writing into a file. **6**
  B) Write a program to display the following pattern. **8**
```
#
# #
# # #
# # # #
# # # # #
```

7. Answer the following :
  A) Explain the terms multitasking, multithreading, heavy-weight process and light-weight process. **7**
  B) What is an exception ? Explain with example implementation of user-defined exception. **7**

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Seat
No.

M.C.A. – II (Semester – III) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Software Engineering

Day and Date : Saturday, 2-4-2016 Max. Marks : 70
Time : 2.30 p.m. to 5.00 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) Statement and branch coverage metrics are part of _____
        a) Analysis model b) Testing
        c) Design model d) Source code

    2) What is a software ?
        a) Software is set of programs
        b) Software is documentation and configuration of data
        c) Both a) and b)
        d) None of the mentioned

    3) Which of these software engineering activities are not a part of software processes ?
        a) Software dependence b) Software development
        c) Software validation d) Software specification

    4) The fundamental notions of software engineering does not account for ?
        a) Software processes b) Software security
        c) Software reuse d) Software validation

    5) What is the major drawback of using RAD model ?
        a) Highly specialized and skilled developers/designers are required
        b) Increases re-usability of components
        c) Encourages customer/client feedback
        d) Both a) and c)

6) The incremental model is a result of combination of elements of which two models ?

   a) Build and FIX Model and Waterfal Model

   b) Linear Model and RAD Model

   c) Linear Model and Prototyping Model

   d) Waterfal Model and RAD Model (Ans-c)

7) Which model in system modelling depicts the dynamic behaviour of the system ?

   a) Context model

   b) Behavioural model

   c) Data model

   d) Object model

8) Defects Removal Efficiency (DRE) depends on

   a) E-errors found before software delivery

   b) D-defects found after delivery to user

   c) Both E and D

   d) Varies with project

9) A design description in OOD includes

   a) Protocol description

   b) Implementation description

   c) Type description

   d) Both a) and b)

10) Grady Booch, James Rumbaugh, and Ivar Jacobson combined the best features of their individual object-oriented analysis into a new method for object oriented design known as

   a) HTML

   b) XML

   c) UML

   d) SGML

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

   1) The results of structured analysis can be easily understood by ordinary customers.

   2) Structured analysis is based on the principle of Bottom-up approach.

   3) A DFD is always accompanied by a data dictionary.

   4) Throughout the OOD process, a software engineer should look for every opportunity for creating new design process.

2. A) Write a short note on the following : **8**
   1) Architectural design optimisation.
   2) Software quality assurance.

   B) Answer the following : **6**
   1) What is white box-testing ?
   2) What is unit-testing.

3. Answer the following : **14**

   A) Describe the decomposition techniques with LOC and CP estimation.

   B) Explain briefly the reusability of software.

4. Answer the following : **14**

   A) What are the characteristics of as SRS ?

   B) Discuss the control hierarchy of the design process.

5. Answer the following : **14**

   A) Explain software quality assurance in detail.

   B) Explain the basis path testing with example.

6. Answer the following : **14**

   A) What are different levels of testing and the goals of the different level ?

   B) Differentiate between the white-box testing and black box-testing.

7. Answer the following : **14**

   A) What is Object Oriented Analysis (OOA) ? Explain.

   B) Explain the functional modeling and behavioural modelling in detail.

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Seat No.	

M.C.A. – II (Semester – III) (Old) (CGPA) Examination, 2016
(COMPUTER SCIENCE)
DATABASE MANAGEMENT SYSTEM

Day and Date : Tuesday, 5-4-2016   Total Marks : 70

Time : 2.30 p.m. to 5.00 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 an Aggregate function ?

      a) Min   b) Max   c) Select   d) Avg

   2) A Database Management System (DBMS) is _____

      a) Collection of interrelated data

      b) Collection of programs to access data

      c) Collection of data describing one particular enterprise

      d) All of the above

   3) Which of the following represents a relationship among a set of values ?

      a) A Row   b) A Table   c) A Field   d) A Column

   4) Who proposed the relational model ?

      a) Bill Gates   b) E.F.Codd

      c) Herman Hollerith   d) Charles Babbage

   5) Which of the following option is use to retrieval of data ?

      a) Stack   b) Data Structure c) Linked list   d) Query

   6) The minimal set of super key is called _____

      a) Primary key   b) Secondary key c) Candidate key   d) Foreign key

7) Relational calculus is a _____

    a) Procedural language   b) Non-Procedural language

    c) Data definition language   d) High level language

8) The database schema is written in _____

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

9) A _____ consists of a sequence of query and/or update statements.

    a) Transaction   b) Commit   c) Rollback   d) Flashback

10) Which is a join condition that contains an equality operator ?

    a) Natural   b) Cartesian   c) Equijoins   d) Left

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

1) In SQL the LIKE predicate is essentially used to search for patterns in target string.

2) Composite key is a combination of two of more attributes used as a primary key.

3) Trigger is a special type of stored procedure that is automatically invoked whenever the data in the table is modified.

4) Denormalization is the process of minimizing redundancy and dependency by organizing fields and table of a database.

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

  i) Logical and physical database design.

  ii) Duties of Database Administrator.

B) Answer the following. **6**

   i) Define foreign key. How does it play a role in the join operation ?

   ii) How does a view differ from a table ?

3. Answer the following.

   a) Explain the integrity constraints : Not Null, Unique, Primary Key with an example each. Is the combination 'Not Null, Primary Key' a valid combination ? Justify. **6**

   b) Answer each of the following questions briefly. The questions are based on the following relational schema : **8**

   Emp (eid : integer, ename: string, age: integer, salary: real)

   Works (eid: integer, did: integer, pcttime: integer)

   Dept (did: integer, dname: string, budget: real, managerid: integer)

   i) Write an SQL statement to add John Doe as an employee with eid = 101, age = 32 and salary = 15,000.

   ii) Write an SQL statement to give every employee a 10 percent raise.

   iii) Write an SQL statement to delete the Toy department.

4. Answer the following.

   a) What should a DBMS guarantee with respect to concurrent execution of several transactions and database consistency ? **6**

   b) Given two relations R1 and R2, where R1 contains N1 tuples, R2 contains N2 tuples and N2 > N1 > 0, give the minimum and maximum possible sizes (in tuples) for the resulting relation produced by each of the following relational algebra expressions. In each case, state any assumptions about the schemas for R1 and R2 needed to make the expression meaningful : **8**

   i) $R1 \cup R2$ ii) $R1 \cap R2$ iii) $R1 - R2$ iv) $R1 \times R2$

5. Answer the following.

   a) Explain the following terms : % Type, % Rowtype and Cursor.　　**8**

   b) Consider a database with objects X and Y and assume that there are two transactions T1 and T2. Transaction T1 reads objects X and Y and then writes object X. Transaction T2 reads objects X and Y and then writes objects X and Y. Give an example schedule with actions of transactions T1 and T2 on objects X and Y that results in a write-read conflict.　　**6**

6. Answer the following.

   a) Define the term functional dependency. Give a set of FDs for the relation schema R (A, B, C, D) with primary key AB under which R is in 1NF but not in 2NF.　　**7**

   b) Describe BCNF.　　**7**

7. Answer the following.

   a) Describe steps in query processing.　　**7**

   b) Explain the concept of Varying Arrays.　　**7**

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Seat No.

M.C.A. – II (Semester – III) (Computer Science) (Old) (CGPA) Examination, 2016
COMPUTER ORIENTED STATISTICS

Day and Date : Thursday, 7-4-2016

Time : 2.30 p.m. to 5.00 p.m.   Max. Marks : 70

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

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

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

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

   1) The mean of ten numbers is 58. If one of the numbers is 40, what is the mean of the other nine ?

      a) 18   b) 60   c) 162   d) 540

   2) The mean and the standard deviation of the ages of a group of children are 7 and 1.31 respectively. If a child of age 7 joins the group of children, what are the effects on the mean and the standard deviation of the ages of the group of children ?

Mean	**Standard deviation**
a) Unchanged	Increased
b) Unchanged	Decreased
c) Increased	Increased
d) Decreased	Decreased

   3) The range of the values a probability can assume is

      a) From 0 to 1   b) From – 1 to +1

      c) From 1 to 100   d) From 0 to 0.5

   4) A single card is drawn at random from a standard deck of cards, what is the probability that is a queen ?

      a) $\dfrac{1}{13}$ b) $\dfrac{1}{52}$ c) $\dfrac{4}{13}$ d) $\dfrac{1}{2}$

5) Which one of the following is not a condition of the binomial distribution ?
   a) Independent trials
   b) Only two outcomes
   c) Probability of success remains constant from trial to trial
   d) At least 10 observations

6) The number of traffic accidents in a small city has a rate (average) of 3 accidents per week. What is the probability of at least one accident in a week ?
   a) 0.0174   b) 0.9502   c) 0.9975   d) 0.1991

7) What is the area under the standard normal curve between z = 0.0 and z = 1.79 ?
   a) 0.4633   b) 0.0367   c) 0.9599   d) 0.0401

8) The following is not an advantage of simulation
   a) It allows for the study of *what-if* questions
   b) Each simulation model is unique
   c) It allows the study of interaction of components or variables to determine which are important
   d) It allows time compression

9) If two variables are totally independent, then the correlation between them is
   a) 0.100   b) – 1.00   c) 1.00   d) zero

10) The range of the correlation coefficient is.
    a) −1 to 0   b) 0 to 1
    c) −1 to 1   d) None of the above

B) Fill in the blanks :   **4**
   1) _____ measure of central location is found by arranging the data from smallest to largest and selecting the middle value.
   2) A particular result of an experiment is called _____ .
   3) Using Ogives _____ can be calculated graphically.
   4) If n = 900 and p = 1/3, then variance of binomial distribution is _____ .

2. A) Write short notes on the following :   **8**
   i) Explain the properties of the Poisson distribution.
   ii) Suppose coin is tossed 5 times, find the probability of getting at most 2 heads.

B) Answer the following : **6**

   i) State addition theorem of probability with usual notations.

   ii) Discuss the properties of regression coefficients.

3. Answer the following : **14**

   A) The frequency distribution of the lengths of 100 leaves from a certain species of plant is given below :

Length (mm)	20–24	25–29	30–34	35–39	40–44	45–49	50–54
Frequency	6	10	18	25	22	15	4

   Draw a histogram from the above data and determine the mode value from it.

   B) The following table shows the distribution of heights of 50 students :

Height (cm)	160 –164	165 – 169	170 –174	175 –179	180 – 184	185 –189
Frequency	8	12	14	7	6	3

   Find the range and standard deviation of heights.

4. Answer the following : **14**

   A) Distinguish between :

   i) Simple events and compound events.

   ii) Mutually exclusive and independent events.

   B) Out of 800 families with 4 children each, what percentage would be expected to have (a) 2 boys and 2 girls, (b) at least one boy, (c) at most two girls, (d) no girls.

   Assume equal probability for boys and girls.

5. Answer the following : **14**

   A) A discrete random variable X has the following distribution.

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

   Find the value of k and $P(|X| < 2)$.

   B) Define Poisson distribution with its mean and variance and state the condition under which this distribution is used.

6. Answer the following : **14**

   A) Write an algorithm to generate exponential random variable and hence generate 10 exponential random variables with parameter $\theta = 3$.

   B) If the height of 12000 college men closely follows a normal distribution with mean 69 inches and the standard deviation 205 inches, answer the following.

      i) How many of these men would you expect to be at least 6 feet in height ?

      ii) What range of height would you expect to include the middle 75% of the men in this group ?

7. Answer the following : **14**

   A) Define Karl Pearson's coefficient of correlation. Interpret r, when r = 1, –1 or 0.

   B) The age and blood pressure (B.P.) of 10 women are :

   Age : 56   42   36   47   49   42   60   72   63   55

   B.P. : 147   125   118   128   145   140   155   164   149   150

   Find the correlation coefficient between age and B.P.

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Seat No.

M.C.A. (Science) (Part – II) (Semester – IV) (New) (CGPA) Examination, 2016
COMPUTER SCIENCE
Distributed Operating System

Day and Date : Wednesday, 30-3-2016   Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

   1) If the file is _____ , then no updates are possible; but it simplifies file sharing and replication.

       a) User file   b) Variable file   c) Immutable file   d) Mutable file

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

       a) Shrinking and growing   b) Growing and shrinking

       c) Sink and rise   d) Rise and sink

   3) The difference in time values as _____ causes the programs that expect the time associated with a file or message to be correct and independent of machine on which it was generated can fail.

       a) Clock tick   b) Clock hour   c) Solar day   d) Clock skew

   4) _____ transparency refers to the fact that in a true distributed system, users cannot tell where hardware and software resources are to be found.

       a) Concurrency   b) Migration   c) Parallelism   d) Location

   5) The _____ does it work by putting a special bit pattern on the start and end of each frame, to mark them, as well as appends the checksum to the frame.

       a) Information layer   b) TCP/IP layer

       c) Data link layer   d) Network layer

6) A technique that is commonly used in _____ packages is the *mutex*, which is a kind of semaphore.

   a) Processor pool   b) Workstation model

   c) File extension   d) Threads

7) A _____ can have attributes, which are pieces of information about the _____ but which are not part of the _____ itself.

   a) Process   b) Thread   c) Processor   d) File

8) Using _____ , if a packet is damaged or lost, the client fails to receive an acknowledgment on time, so it retransmits the one bad packet.

   a) Blast protocol   b) Stop-and-wait protocol

   c) File Transfer Protocol   d) All or none protocol

9) The sending of a message from a single sender to a single receiver is sometimes called _____

   a) Unicasting   b) Broadcasting   c) Multicast   d) None of these

10) If the cache is large enough, the probability of success, called the _____ , will be high.

   a) Miss rate   b) Hit rate

   c) Data flow rate   d) Success rate

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

1) A binary name is a directory entry that maps onto a (Server, File name) string, which can be looked up on the server named to find the symbolic name.

2) Workstations can import or mount these file systems, augmenting their local file systems with those located on the servers.

3) Many deadlock algorithms in distributed systems produce true deadlocks like this due to incomplete or delayed information.

4) Atomicity ensures that each transaction either happens completely, or not at all.

2. A) Answer the following :   **6**

   i) Briefly explain meaning of Open Group.

   ii) What do you mean by Replication transparency ?

   B) Write a short note on the following :   **8**

   i) Buffered versus Un-buffered primitives (Client Server Model).

   ii) Switched multiprocessors.

3. Answer the following :

   A) What is meant by distributed OS ? Explain in detail various advantages and disadvantages of it over independent PC's and centralized systems. **7**

   B) What do you mean by mutual exclusion ? Discuss distributed algorithm to achieve mutual exclusion in distributed OS. **7**

4. Answer the following :

   A) What do you mean by Processor Pool Model ? Discuss in detail a basic queuing system to manage Processor Pool Model. **7**

   B) What is meant by Deadlock ? Explain in detail deadlock detection with suitable example. **7**

5. Answer the following :

   A) What do you mean by processor allocation ? Discuss scheduling in distributed system with suitable example. **7**

   B) Discuss in detail various comparison of Microsoft NT and Novell Netware. **7**

6. Answer the following :

   A) What is meant by Virtual memory ? Explain in detail the concept of demand paging with suitable example. **7**

   B) Define the term directory. Discuss file service interface by comparing upload/ download model and remote access model. **7**

7. Answer the following :

   A) Explain in detail how remote procedure call occurs in distributed OS with suitable example. **7**

   B) Explain in detail mechanism of different election algorithms with suitable example. **7**

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Seat No.

M.C.A. (Semester – IV) (New) (CGPA) Examination, 2016
COMPUTER SCIENCE
Data Mining and Warehouse

Day and Date : Friday, 1-4-2016   Max. Marks : 70
Time : 2.30 p.m. to 5.00 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 one manages both current and historic transactions ?
      a) OLTP   b) OLAP
      c) Spread Sheet   d) XML

   2) Which of the following is the collection of data objects that are similar to one another within the same group ?
      a) Partitioning   b) Grid   c) Cluster   d) Table

   3) Data mining application domains are
      a) Biomedical
      b) Financial data analysis
      c) Retail industry and telecommunication industry
      d) All the above

   4) K-nearest neighbor is one of the
      a) Learning technique   b) OLAP tool
      c) Purest search technique   d) Data warehousing tool

   5) The synonym for data mining is
      a) Data warehouse
      b) Knowledge discovery in database
      c) OLAP
      d) Business intelligence

6) Which of the following process includes data cleaning, data integration, data selection, data transformation, data mining, pattern evolution and knowledge presentation ?

   a) KDD process

   b) ETL process

   c) KTL process

   d) MDX process

7) An OLAP tool provides for

   a) Multidimensional analysis

   b) Roll-up and drill-down

   c) Slicing and dicing

   d) Rotation

8) Data mining is used to aid in

   a) Operational management

   b) Analyzing past decision made by managers

   c) Detecting patterns in operational data

   d) Retrieving archival data

9) Data mining requires

   a) A large quantities of operational data stored over a period of time

   b) Lots of tactical data

   c) Several tape drives to store archival data

   d) Large mainframe computers

10) OLTP stands for

   a) Online Transfer Protocol

   b) Online Transaction Protocol

   c) Online Transaction Processing

   d) Online Transfer Processing

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

1) The fact table of a data warehouse is the main store of all of the recorded transactions over time.

2) Weka is the data mining tool.

3) A star schema has One to One type of relationship between a dimension and fact table.

4) A Data warehouse is organized around important subject areas.

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

   i) Data Mining.

   ii) Outliers.

   B) i) Write a note on data integration. **3**

   ii) What is classification ? **3**

3. Answer the following :

   A) Explain Multi-dimensional data model. **6**

   B) Discuss different OLAP Operations. **8**

4. Answer the following :

   A) Explain the basic concepts of mining associations. **6**

   B) Explain the different kinds of association rules. **8**

5. Answer the following :

   A) Explain decision tree induction. **6**

   B) Explain K – Medoids method. **8**

6. Answer the following : **14**

   A) Explain about Data Transformation process of data preprocessing technique with an example.

   B) Differentiate between OLTP and OLAP.

7. Answer the following :

   A) Explain data mining primitives. **6**

   B) Explain architecture of data warehouse. **8**

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Seat
No.

M.C.A. – II (Semester – IV) (Computer Science) (New) (CGPA) Examination, 2016
UML

Day and Date : Monday, 4-4-2016 Total Marks : 70
Time : 2.30 p.m. to 5.00 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) What is true about UML stereotypes ?
      a) A stereotype is used for extending the UML language
      b) A stereotyped class must be abstract
      c) The stereotype {frozen} indicates that the UML element cannot be changed
      d) UML Profiles can be stereotyped for backward compatibility

   2) If you need to show the physical relationship between software components and the hardware in the delivered system, which diagram can you use ?
      a) Component diagram b) Deployment diagram
      c) Class diagram d) Network diagram

   3) Which three processes are best suited for UML ?
      i) use-case driven
      ii) waterfall development-based
      iii) iterative and incremental
      iv) architecture-centric
      v) requirements-centric

      a) i, ii and iii b) i, iii and iv

      c) ii, iii and iv d) iii, iv and v

   4) An interface is
      a) A set of objects used to provide a specific behavior
      b) A set of classes used on a collaboration
      c) A set of attributes used on an operation
      d) A set of operations used to specify a service of a class or component

P.T.O.

5) An attribute is a data item held by which of the following ?
   a) Class
   b) Object
   c) Class or object
   d) None of these

6) What are the notations for the Use case Diagrams ?

   a) Use case   b) Actor   c) Prototype   d) a) and b)

7) Given the following diagram, which method(s) should be implemented for the Account class ?
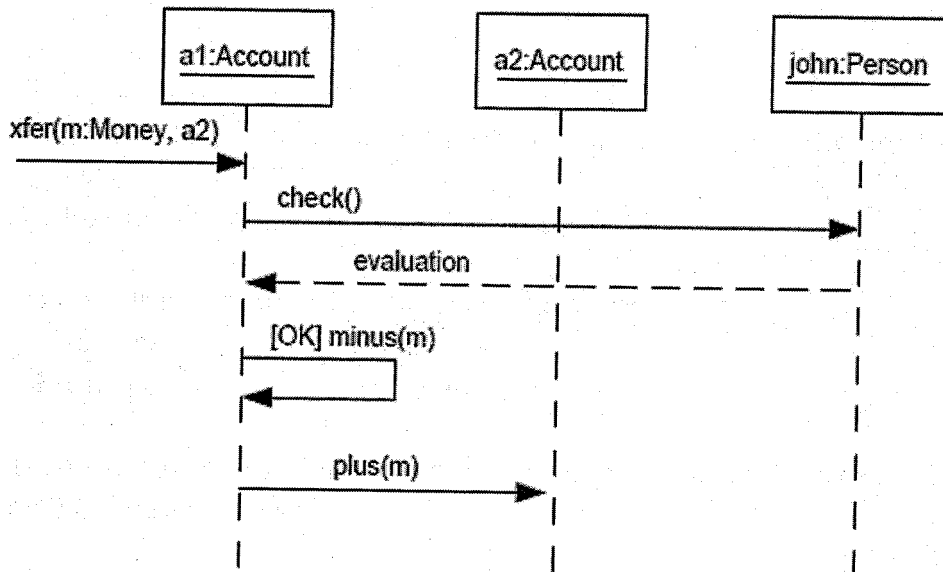
   a) xfer()
   b) xfer(),plus(),minus()
   c) check(),plus(),minus()
   d) xfer(),evaluation(),plus(),minus()

8) The following diagram indicates :
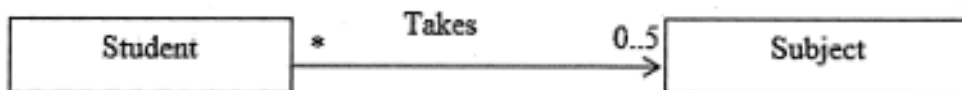
   a) A student can take exactly 5 subjects
   b) A student can take zero or up to 5 subjects
   c) A subject can be taken by 0 or more students
   d) Both b) and c)

9) _____ is graphically rendered as a rectangle with thick lines.
   a) Active class
   b) Class
   c) Package
   d) Use case

10) A package is graphically rendered as a
   a) rectangle
   b) tabbed folder
   c) circle
   d) dashed arrow

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

1) Activity diagrams can be used to depict work flow for a particular business activity.

2) All operations defined in a sub-class are inherited by the super-class.

3) An attribute can also be a instance variable, which means that there is only one value stored for the attribute that is shared by all class instances.

4) The aggregation association represents the part-whole relation between the instances of the associated classes.

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

i) Importance of modeling.

ii) Visibility of attribute and operations.

B) Answer the following : **6**

i) Describe grouping things.

ii) What are the various components of sequence diagram ?

3. Answer the following : **(6+8)**

a) What are the different properties that can be used in association ?

b) What is a package ? Describe generalization among packages.

4. Answer the following : **(6+8)**

a) What is object diagram ? What are the contents of object diagram ?

b) Describe sequence diagram with example.

5. Answer the following : **(8+6)**

a) What are the elements of use case diagram ? Draw the use case diagram to model the behavior of a cellular phone.

b) Describe fork and join with example.

6. Answer the following : **(6+8)**

a) Explain swimlanes and object flows in activity diagrams.

b) What is a component ? How it is graphically represented in the UML ? What are the different kinds of components ? What is the difference between node and component ?

7. Answer the following : **(7+7)**

a) Explain different structural things.

b) What is a diagram ? What are different types of diagram in the UML ?

Seat
No.

M.C.A. – II (Semester – IV) (Computer Science) (New) (CGPA) Examination, 2016
.NET

Day and Date : Wednesday, 6-4-2016   Max. Marks : 70

Time : 2.30 p.m. to 5.00 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 alternative :   **10**

1) _____ is the correct way of implementing an interface Create by class Command.

   a) class Command : Create {}

   b) class Command imports Create {}

   c) class Command implements Create {}

   d) class Command extends Create {}

2) By default value of PageSize property of DataGridView is _____

   a) – 1   b) 1   c) 5   d) 10

3) _____ is default access specifies for class.

   a) Internal   b) Public   c) Private   d) Protected

4) _____ of the following is value type.

   a) Array   b) Enum   c) Class   d) Delegate

5) When Session will be started in an ASP.Net application ?

a) Before Application Started

b) After Application Started

c) When the Client first sends a request to browser

d) While closing the application

6) In C# _____ class cannot be inherited.

a) Sealed   b) Finally   c) Static   d) Abstract

7) _____ property of compare validation control is need to set for comparison with value.

a) ControlToCompare   b) Value

c) ValueToCompare   d) CompareValue

8) _____ number of HotSpots are available in ImageMap control.

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

9) In ASP.Net, _____ property of TextBox control is for password text.

a) Password   b) TextMode

c) PasswordMode   d) PasswordText

10) _____ state management technique is used to maintain data across Website level.

a) Session   b) Application

c) View   d) QueryString

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

i) In C# Thread.Sleep(x) measures time (x) in _____

ii) _____ event of calender control visits each and every data in calendar.

iii) Dataset class is available in _____ namespace.

iv) A package of one or more components together is known as _____

2. A) 1) Explain use of base and this keyword. Give example of base and this keyword.   **8**

2) Explain difference between Abstract class and Interface.

B) Explain website and web page life cycle.   **6**

3. Answer the following : **14**

   1) What is garbage collector ? How garbage collector concept is achieved in C# ? Explain with example.

   2) What are different page structures used in ASP.Net ? Explain each in detail.

4. Answer the following : **14**

   1) Explain DriveInfo, DirectoryInfo and FileInfo class.

   2) What is Event ? Explain with example.

5. Answer the following : **14**

   1) What is difference between thread and process ? Write a program for thread synchronization.

   2) What is use of Adrotator control ? Explain with example.

6. Answer the following : **14**

   1) What are advantages and disadvantages of client side and server side state management ? Explain view state and Hidden field state management with example.

   2) What is difference between DataAdapter and DataReader ? Write a program to retrieve records using DataAdapter and DataReader.

7. Answer the following : **14**

   1) What are the uses of Validation controls ? Explain different validation controls used in ASP.Net.

   2) Write a program to overload = = (is equal to) and <= (Less than and equal to) operators.

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Seat No.

M.C.A. – II (Semester – IV) (New) (CGPA) Examination, 2016
COMPUTER SCIENCE
Finite Automata

Day and Date : Saturday, 9-4-2016   Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

    1) The ordered pair of elements is known as
      a) set   b) alphabet   c) relation   d) string

    2) Proper prefix of the string abc are
      a) $\{\varepsilon, c, bc, abc\}$ b) $\{\varepsilon, c, bc\}$
      c) $\{\varepsilon, a, ab, abc\}$ d) $\{\varepsilon, a, ab\}$

    3) The regular expression for Arden's algorithm is
      a) $R_{ij}^{(K)}$ b) $R = R + QP$
      c) $R = Q + RP$ d) None of these

    4) Function which mapping one to one from input to state such function is known as _____ function.
      a) machine   b) state
      c) both a and b   d) none of these

    5) The (a/b) is rule used for conversion of RE to NFA with $\in$-moves is used for
      a) alternative   b) closure
      c) positive closure   d) series

    6) Regular expression are
      a) Type 0 language   b) Type 1 language
      c) Type 2 language   d) Type 3 language

7) If rightmost and leftmost production is single non-terminal then it is known as _____ production.

   a) unit   b) self   c) cross   d) none of these

8) In CNF grammar is required in the form of

   a) $A -> BC|a$ b) $A -> a\alpha$

   c) Both a and b   d) None of these

9) The _____ is accepted unrestricted grammar.

   a) TM   b) PDA   c) DFA   d) None of these

10) In PDA one situation has more than one transition then it is known as

   a) PDA   b) DPDA   c) NPDA   d) Stack

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

   1) The transition function $\delta : Q \times (\Sigma \cup \{\varepsilon\}) \times \Gamma \rightarrow Q \times \Gamma^*$ is of _____

   2) The language accepted by PDA is known as _____

   3) If L (r) = {a, aa, aaa, aaaa, aaaaa, ------} then r = _____

   4) PDA has _____ tuples.

2. A) Write a short note on :
   1) Notations used for CFG.   **4**
   2) Chomsky hierarchy.   **4**

   B) Answer the following :   **6**
   1) Convert the following NFA to its equivalent DFA.

	0	1
p	{p, q}	{p}
q	{r}	{r}
r	{s}	ϕ
*s	{s}	{s}

   2) Give the applications of PDA.

3. Answer the following :

   A) Construct RE for following DFA by Arden's theorem. **7**
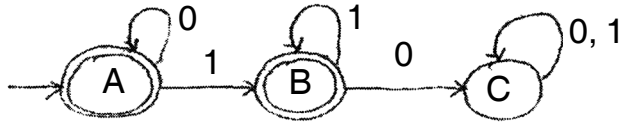
   B) Construct FA for following RE **7**
   $(0 + 1)^* (0.1)^* (0 + 1)^*$

4. Answer the following :

   A) What is pumping lemma ? Using pumping lemma check $\{a^p | p \text{ is prime}\}$ is regular or not. **7**

   B) Find CNF for the following grammar : **7**
   $A -> A + A \,|\, A * A \,|\, (A) \,|\, a$

5. Answer the following :

   A) Design a PDA to check whether a given string over {a, b} ends in abb. **7**

   B) Check whether the following grammar is ambiguous or not; if ambiguity found remove the ambiguity and rewrite an equivalent grammar. **7**
   $S -> iCtS \,|\, iCtSeS \,|\, a, C -> b$

6. Answer the following :

   A) Construct PDA that accepts the language generated by CFG. **7**
   $S -> S + S \,|\, S * S \,|\, 4$
   Give the acceptance of string "2 + 2 * 4" by PDA.

   B) Explain closure properties of CFL with example. **7**

7. Answer the following :

   A) Construct Turing machine for string palindrome over $\Sigma = \{a, b\}$. **7**

   B) Explain DFA minimization with example. **7**

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SLR-J – 36

M.C.A. (Part – II) (Semester – IV) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Distributed Operating System

Day and Date : Wednesday, 30-3-2016   Total Marks : 70
Time : 2.30 p.m. to 5.00 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 _____ condition must hold for non-sharable resources. For example, a printer cannot be simultaneously shared by several processes.

      a) Hold and wait   b) Circular wait

      c) Mutual exclusion   d) Resource sharing

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

      a) True distributed systems   b) Multiprocessor time sharing systems

      c) Middleware systems   d) Network operating systems

   3) If the system is _____, the users will not notice the existence of the users.

      a) Election algorithm   b) Concurrency transparent

      c) Parallelism transparent   d) None of these

   4) _____ are the standards rules that govern the format, contents and meaning of the messages sent and received.

      a) Threads   b) Clock synchronization

      c) Inter-process communication   d) Protocols

P.T.O.

5) Every time a client runs, on the first attempt to use a server, the client sends a query message to a special mapping server, often called a _____

   a) Client server   b) File server

   c) Name server   d) Processor pool

6) When a packet is sent to one of special network addresses, it is automatically delivered to all machines listening to the address. This technique is called _____

   a) Multicasting   b) Broadcasting

   c) Un-buffered primitive   d) Reliable primitive

7) When any process notices that the coordinator is not functioning, it sends _____ message containing its own process number and sends the message to its successor.

   a) Recovery   b) Update   c) Group   d) Election

8) In _____, the process first acquires all the locks it needs during the growing phase, and then releases them during the shrinking phase.

   a) Writeahed log   b) Two-phase locking

   c) Two phase commit protocol   d) Optimistic concurrency control

9) The coordinator incorretly concludes that a deadlock exists and kills some process. Such a situation is called a _____

   a) True distributed system deadlock

   b) Processor deadlock

   c) False deadlock

   d) Centralized deadlock detection

10) Once a file has been created, it cannot be changed. Such a file is said to be _____

   a) Capability file   b) Immutable file

   c) Programmable file   d) Data and code file

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

1) Whenever a cache sees a write occurring to a memory address present in its cache, it either removes that entry from its cache or updates the cache entry with new value. Such a cache is called write through cache.

2) Some systems support open group groups, in which only the members of the group can send messages to the group. Outsiders cannot send messages to the group as whole.

3) In team model, the first thread generates some data and passes them on to the next thread for processing.

4) Using replication policy, multiple copies of selected files are maintained, with each copy on a separate file server.

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

1) Stable storages.

2) RPC semantics in the presence of failures.

B) Answer the following. **6**

 i) Explain in brief the taxonomy of parallel and distributed computer systems.

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

3. Answer the following.

A) Define distributed operating systems. State and explain in detail advantages of it over centralized systems. **7**

B) What do you mean by distributed file system ? Discuss in detail the semantics of file sharing ? **7**

4. Answer the following.

A) State and explain the client server model. Discuss client server addressing in detail. **7**

B) Define deadlock. Explain in detail centralized and distributed deadlock detection ? **7**

5. Answer the following.

   A) Discuss in detail registry based algorithm for finding and using idle workstations. **7**

   B) Define remote procedure call. State and explain in detail steps involved to place calls and messages in it. **7**

6. Answer the following.

   A) Define clock synchronization. Discuss how to correct clocks using lamport's happens before relation algorithm. **7**

   B) Enlist and discuss the various design issue for distributed operating systems. **7**

7. Answer the following.

   A) State and explain in detail the bully algorithm as the election algorithm. **7**

   B) State the comparison in between MS-Windows NT and Novell Netware. **7**

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Seat
No.

M.C.A. – II (Semester – IV) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Data Mining and Warehouse

Day and Date : Friday, 1-4-2016   Max. Marks : 70

Time : 2.30 p.m. to 5.00 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) Data warehouse is only used for

        a) Operating the data

        b) Managing the data

        c) Decision making

        d) Queries

     2) Smaller local data warehouse is called as

        a) data mart   b) database

        c) data model   d) meta data

     3) Which of the following is true ?

        a) The data warehouse consists of data marts and operational data

        b) The data warehouse consists of data marts and application data

        c) The data warehouse is used as a source for the operational data

        d) The operational data are used as a source for the data warehouse

     4) Data mining requires

        a) a large quantities of operational data stored over a period of time

        b) lots of tactical data

        c) several tape drives to store archival data

        d) large mainframe computers

P.T.O.

5) Data mining is used to refer _____ stage in knowledge discovery in database.

   a) Selection   b) Retrieving c) Discovery   d) Coding

6) Knowledge discovery in database refers to

   a) whole process of extraction of knowledge from data

   b) selection of data

   c) coding

   d) cleaning the data

7) Data mining algorithms require

   a) efficient sampling method

   b) storage of intermediate results

   c) capacity to handle large amounts of data

   d) all of the above

8) In KDD and data mining, noise is referred to as

   a) repeated data   b) complex data

   c) meta data   d) random errors in database

9) In K-nearest neighbor algorithm K stands for

   a) number of neighbors that are investigated

   b) number of iterations

   c) number of total records

   d) random number

10) The next stage to data selection in KDD process

   a) Enrichment   b) Coding

   c) Cleaning   d) Reporting

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

1) The data mining refers to extracting knowledge from larger amount of data.

2) OLAP stands for Online Linear Analytical Processing.

3) The partition of overall data warehouse is data mart.

4) Classification rules are extracted from decision tree.

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

   i) Prediction.

   ii) Data Mining Query Language (DMQL).

   B) i) Write a note on OLTP. **3**

   ii) What is data warehousing ? **3**

3. Answer the following : **14**

   A) Explain Multi-dimensional data model.

   B) Explain data mining functionalities.

4. Answer the following : **14**

   A) Explain the K-means method.

   B) Explain star schema and snowflake schema model with example.

5. Answer the following : **14**

   A) Explain agglomerative and divisive hierarchical method of clustering.

   B) Describe the different OLAP Operations.

6. Answer the following : **14**

   A) Explain decision tree induction.

   B) Write a note on data warehousing back end tools.

7. Answer the following :

   A) Explain the basic concepts of mining associations. **6**

   B) Data mining as a step in the process of KDD. Explain. **8**

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Seat
No.

M.C.A. (Semester – IV) Examination, 2016
Computer Science (Old) (CGPA)
UML

Day and Date : Monday, 4-4-2016   Total Marks : 70
Time : 2.30 p.m. to 5.00 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) Objects are (i) tangible entities (ii) intangible entities (iii) transient entities
        (iv) uniquely identifiable

        a) i, ii   b) i, ii, iii   c) i, ii, iii, iv   d) i, ii, iv

    2) An instance of an object is created by a

        a) query operation   b) update operation

        c) constructor operation   d) open operation

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

        a) Dependency   b) Assertion   c) Association   d) Realization

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

        a) Objects   b) Classes   c) Links   d) Messages

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

        a) Data Objects   b) Named Objects

        c) Class Objects   d) None of the above

    6) Which one is not belong to structural diagrams ?

        a) Class diagram   b) Data diagram

        c) Object diagram   d) Component diagram

    7) Identify which is not a stereotype when modeling interactions among objects ?

        a) Become   b) Call   c) Copy   d) Delete

                                                                                  P.T.O.

8) All objects have (i) attributes (ii) states (iii) a set of operations (iv) a unique identity

   a) i, ii, iii   b) ii, iii, iv   c) i, iii, iv   d) i, ii, iii, iv

9) Attributes are assigned value

   a) when operations are performed on an object

   b) when instances of objects are defined

   c) when methods are invoked

   d) when classes are identified

10) The UML defines a standard constraint that applies to objects

   a) Transient   b) Volatile

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

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

1) A thread is a _____ flow that can execute concurrently with other threads within the same process.

2) A component is a _____ and _____ parts of a system that performs to and provides the realization of a set of interfaces.

3) An association is rendered as a _____ the same or different classes.

4) A responsibility is a _____ of a class.

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

   i) Portray the modeling systems architecture.

   ii) Explain the class diagram contents.

B) Answer the following. **6**

   i) Justify the need of a modeling architectural view with neat diagram.

   ii) Explain modeling concrete instances.

3. Answer the following. **14**

   A) Define object diagrams, common properties of contents.

   B) Explain modeling families of signals.

4. Answer the following. **14**

   A) Explain transition parts of a state machine.

   B) Explain sequential sub states.

5. Answer the following. **14**

   A) Describe the modeling the distribution of components.

   B) Explain different standard stereotypes that apply to packages.

6. Answer the following. **14**

   A) Explain the modeling flow of control.

   B) Explain the need of concurrent sub states.

7. Answer the following. **14**

   A) Explain the modeling exceptions.

   B) Explain the need of Forking and Joining.

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Seat No.

M.C.A. – II (Sem. – IV) Computer Science (Old) (CGPA) Examination, 2016
.NET

Day and Date : Wednesday, 6-4-2016   Max. Marks : 70
Time : 2.30 p.m. to 5.00 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 alternative :   **10**

   1) _____ is valid signatures for the Main function.

      a) public static void Main ( )

      b) public static int Main ( )

      c) public static void Main (string [ ] args)

      d) all of these

   2) _____ of the following is reference type.

      a) int   b) class   c) enum   d) ushort

   3) _____ optional parameter in advertisement file of adrotator control specifies categories.

      a) Category   b) Keyword   c) Impression   d) AlternateText

   4) _____ value of command type property in command object is need to set for SQL Query.

      a) Query   b) SQL   c) Text   d) SQLQuery

   5) Choose correct statement about destructor in C#.

      a) Destructor is only one

      b) Destructor cannot Overload

      c) Destructor cannot inherited

      d) All of these

6) _____ of the following is not correct way to overload public int add ( ) { } method.

   a) public float add ( ) { }

   b) public int add ( ) {int}

   c) public int add ( ) {string}

   d) public int add () {char}

7) _____ of the following is server side state management technique.

   a) Session   b) QueryString

   c) ServerState   d) Cookies

8) _____ property of button control is need to set for execution of client side script.

   a) OnClientClick   b) OnClientScript

   c) OnClick   d) OnClient

9) _____ tag must be available in master.

   a) <asp:Content>   b) <asp:ContentPlaceHolder>

   c) <asp:Table>   d) <asp:Master>

10) _____ property of Regular Expression Validation control specify pattern to validate input data.

   a) RegularExpression   b) ValidationExpression

   c) Pattern   d) ValidatePattern

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

   i) _____ keyword prevent a class from being inherited.

   ii) DataTable is collection of _____.

   iii) Exception is nothing but _____ error.

   iv) All ASP.Net controls are inherited from _____ class.

2. A) 1) Explain different parameter passing technique used in C#.   **8**

      2) Explain C# Pre-processors Directives in detail.

   B) Explain Multiview, View and Wizard controls with example.   **6**

3. Answer the following :   **14**

   1) Explain ADO.Net class in detail.

   2) What is inheritance ? Explain different types of inheritance with example.

4. Answer the following : **14**

   1) Explain StreamReader and StreamWriter class with example.

   2) Explain button class with example.

5. Answer the following : **14**

   1) What is Delegate ? Explain multicast delegates with example.

   2) Design web page which display examination schedule in calendar control.

6. Answer the following : **14**

   1) What is dynamic compilation of ASP.Net ? Explain with diagram.

   2) What is jagged array ? Explain array class with example.

7. Answer the following : **14**

   1) Write a program to overload any two binary and any two unary operators.

   2) What is use of Application state ? Explain application state management technique in detail.

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Seat
No.

M.C.A. (Part – II) (Semester – IV) (Old) (CGPA) Examination, 2016
COMPUTER SCIENCE
Finite Automata

Day and Date : Saturday, 9-4-2016   Total Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

   1) Finite state machine can recognize

      a) any grammar   b) any unambiguous grammar

      c) only CFG   d) only regular grammar

   2) Regular expression (a/b).(a/b) denotes the set

      a) {a, b, ab, aa}   b) {ε, a, b}

      c) {a, b, ba, bb}   d) {aa, ab, ba, bb}

   3) Can DFA simulate NFA ?

      a) No   b) Yes

      c) Sometimes   d) Depends on NFA

   4) If L and $\overline{L}$ are recursively enumerable, then L is

      a) regular   b) context free

      c) context sensitive   d) recursive

   5) Choose the correct statement

      a) All CFG are regular grammars

      b) All CFG are CSG

      c) CSG are most restricted grammar

      d) CSG and unrestricted has equal powers

6) A grammar is called ambiguous if

a) two or more productions have the same non-terminal on the left hand side

b) a derivation tree has more than one associated sentence

c) there is a sentence which more than one derivation tree corresponding to it

d) all of the above

7) Consider a grammar with following productions

S → aab | bac | aB |

S → ∝ S|b|

S → ∝ bb | ab

S ∝ → bdb | b

The above grammar is

a) CFG   b) CSG   c) regular   d) LR(k)

8) A PDM behaves like an FSM when the number of auxiliary memory it has, is

a) zero   b) one   c) two   d) all of these

9) Universal Turing Machine influenced the concept of

a) stored program computers

b) interpretative implementation of programming language

c) computability

d) all of these

10) S → aSa | bSb | a | b

The language generated by the above grammar over the alphabet {a, b} is the set of

a) all palindromes

b) all odd length palindromes

c) string that begin and with same symbol

d) all even length palindromes

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

   i) Ambiguity problems for CFG's is undecidable.

   ii) There is a unique minimal DFA for every regular language.

   iii) Every subset of recursively enumerable set is recursive.

   iv) Universal Turing machine influenced the concept of stored program computers.

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

   i) Application of CFG

   ii) Derivation Tree.

B) Answer the following : **6**

   i) State and explain limitations of DPDA.

   ii) State the difference between DFA and NFA.

3. Answer the following :

A) Construct DFA equivalent to NFA. **7**

$(\{p, q, r, s\}, \{0, 1\}, \delta, p, \{q, s\})$

Where δ is

Q/Σ	0	1
P	q, r	Q
Q	r	q, r
R	s	P
S	–	P

B) Design a Turing machine to find GCD of two given numbers. **7**

4. Answer the following :

A) Define Turing machine, explain its working and give the application of the same. **7**

B) Using the following grammar : **7**

   S → AS | SB | 0 | 1

   A → AA | 0

   B → BB | 1

   Use the CYK algorithm to determine whether the following string is in L(G)
   100100

5. Answer the following :

   A) Define Greibach normal form. Convert the following grammar to Greibach normal form. **7**

      S → ABA | AB | BA | AA | A | B

      A → aA | a

      B → bB | b

   B) Define CFG grammar. Explain ambiguous grammar with suitable example. **7**

6. Answer the following :

   A) Construct DFA accepting the language represented by **7**

      (ab/ba) * aa (ab/ba)*

   B) Define PDA. Construct a PDA accepting the following language **7**

      $L = (a^n b^n \mid n \geq 0)$

7. Answer the following :

   A) Define regular expression. Show that $(a^* b^*)^* = (a + b)^*$. **7**

   B) Define undecidable problem. Explain Post's correspondence problem with suitable example. **7**

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Seat No.	

M.C.A. (Semester – V) (CGPA) Examination, 2016
COMPUTER SCIENCE
Artificial Intelligence

Day and Date : Tuesday, 29-3-2016   Marks : 70
Time : 10.30 a.m. to 1.00 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) AND-OR graph is also called as

     a) List   b) Tree

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

   2) Which one is not a mundane task ?

     a) Engineering   b) Perception

     c) Natural language   d) Robot control

   3) The most recently created state from which alternative moves are available will be revisited and a new state will be created, this is called as

     a) front backtracking   b) chronological backtracking

     c) both (a) and (b)   d) none of the above

   4) Slot and filer structure is also called as

     a) frames   b) semantic network

     c) both (a) and (b)   d) none of the above

   5) 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

6) If the new facts are consistent with all the other facts that have already been asserted, then nothing will ever be retracted from the set of facts that are known to be true, this property is called

   a) Monotonicity   b) Bitonocity

   c) Singlecity   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) EMYCIN is a

   a) script   b) semantic net

   c) shell   d) all of the above

9) 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

10) A minimax search procedure is

   a) depth-first   b) depth-limited

   c) both (a) and (b)   d) none of the above

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

1) A _____ is a path through the graph in which a given node appears more than once.

2) The first AI programs to exploit means-ends analysis was _____.

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

4) _____ was the first program to support explanation and knowledge acquisition.

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

   i) Means-Ends analysis

   ii) Expert system shell.

B) Answer the following.   **6**

   i) Explain the simulated annealing

   ii) Explain the predicate logic resolution algorithm.

3. Answer the following. **14**

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

   B) Explain sentence Level Processing.

4. Answer the following. **14**

   A) Explain the Bayes theorem.

   B) Explain partitioned semantic nets with descriptions.

5. Answer the following. **14**

   A) Explain the steps in natural language processing.

   B) Explain Dempster-Shafer theory.

6. Answer the following. **14**

   A) What is conceptual dependency and list its categories ?

   B) Explain acquisition process in expert system.

7. Answer the following. **14**

   A) Explain constraint satisfaction algorithm.

   B) Write algorithm to convert to clause form.

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Seat No.

M.C.A. – III (Semester – V) (Computer Science) (CGPA) Examination, 2016
WEB TECHNOLOGY

Day and Date : Thursday, 31-3-2016

Time : 10.30 a.m. to 1.00 p.m.   Max. Marks : 70

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

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

   1) The execution of a servlet is managed by
      a) Servlet engines
      b) Java class
      c) Web server
      d) None of these

   2) CONTENT_TYPE designates the _____ type of attached data, if specified.
      a) MIME   b) Integer
      c) String   d) None

   3) The cookie header becomes
      a) HTTP_COOKIE
      b) request.getheader
      c) HTTP_REFERER
      d) None

   4) XML authors can use the following alternative syntax for JSP expressions :
      a) <jsp : expression> Java Expression < jsp : expression>
      b) <Java Expression> jsp : expression < jsp : expression>
      c) <jsp : expression % OR % Java Code %>
      d) </jsp : expression> jsp : expression <Java Expression>

5) <% string querydata = request.getquerystring();

   Out.println ("Attached Get data :"+querydata);%>

   a) Explicitly sends the output to the resultant page

   b) Explicitly receives the data through querydata

   c) Explicitly sends the input to the monitor

   d) Not known

6) <% = Java Expression %> ; the jsp expression is

   a) Used to insert directly into the output

   b) Evaluated, converted to a string

   c) Both (a) and (b)

   d) None of the above

7) Deactivating the _____ language in multiple jsp pages can be done using jsp-property group webxml.

   a) Expression   b) Regular

   c) English   d) All of the above

8) Var my_list = new Array (1, 2, "one", "two"); In this declaration an Array object of

   a) Length four is created and initialized

   b) Length two is created and initialized

   c) Length four is created

   d) Length two is created

9) HTTP stands for

   a) Hypertext Transfer Protocol

   b) Hyper Text Technology Protocol

   c) Both (a) and (b)

   d) None of the above

10) Server-side JavaScript is a collection of objects that make the language useful on

   a) Web server   b) Client program

   c) Mouse click   d) None

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

1) XML elements, unlike HTML ones, are case insensitive

   a) False   b) True

2) The code I and II are equivalent

   I) <jsp : plugin type = "applet"

     code = "myapplet.class"

     width = "475" height = "350">

     </jsp : plugin>

   II) <applet code = "myapplet.class"

     width = 475 height = 350>

     <\applet>

     a) True   b) False

3) The jsp : Plugin element add additional java capabilities to the browser

   a) False   b) True

4) XML is used for Parsing

   a) True   b) False

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

   i) Servlet and JSP Filters

   ii) Life-cycle of Servlet methods.

B) Explain the following tags **6**

   a) Select

   b) Frame

   c) Text area

3. A) Explain the HTTP 1.1 request headers "Accept" and "Connection".

B) What is a Servlet container ? **14**

4. A) Explain the steps involved in sending and receiving cookies to the client.

B) Explain the use of jsp : plugin element and the four attributes which they supply. **14**

5. A) What is the advantage of using expression Language Operators ? Explain the commonly used arithmetic and relational operators in EL.

   B) With suitable example discuss the two ways of setting bean properties. **14**

6. A) Create XHTML document that contains student information viz name, roll number, marks in subject1, subject2 and subject3. Insert the values for each student in different rows. Assume that there are ten students whose information is to be entered.

   B) What parameter-passing method does JavaScript use ? How can a function access actual parameter values for those actual parameters that do not correspond to any formal parameters ? **14**

7. Answer the following :

   A) What is the need of session tracking API ? Explain any three methods available in the HTTP session class.

   B) Mention the two characteristics of arrays in JavaScript and describe the two ways that an Array object can be created. **14**

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Seat No.

M.C.A. – III (Semester – V) (CGPA) Examination, 2016
COMPUTER SCIENCE
Network Security

Day and Date : Tuesday, 5-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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) A _____ forms a barrier through which the traffic going in each direction must pass.
      A) LAN   B) MAN
      C) Firewall   D) None of these

   2) _____ attacks are very difficult to detect because they do not involve any alteration of data.
      A) Active attack   B) Passive attack
      C) Null attack   D) None of these

   3) _____ is concerned with assuring that a communication is authentic.
      A) Confidentiality   B) Authentication
      C) Access control   D) Data Integrity

   4) TLS stands for_____
      A) Transport Layer Protocol   B) Transport Lower Protocol
      C) Transaction Layer Protocol   D) Telecommunication Layer Port

P.T.O.

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

   A) Encryption algorithm   B) Secret key

   C) Cipher text   D) Decryption algorithm

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

   A) Stream cipher   B) Block cipher

   C) Triple cipher   D) None of these

7) Passive entity or resource in a computer system.

   A) Object   B) Subject

   C) Response   D) Denial of service

8) _____ prevents either sender or receiver from denying a transmission message.

   A) Data integration   B) Access control

   C) Data confidentiality   D) Nonrepudiation

9) A _____ is the scramble message produced as output.

   A) Passive attack   B) Encryption algorithm

   C) Plain text   D) Cipher text

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

   A) IESG   B) IETF

   C) IAB   D) None of these

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

1) A block cipher processes the input elements continuously, producing output one elements at a time, as it goes along.

2) Larger key size means greater security.

3) Malicious software is a software that is intentionally included or inserted in a system for a security purpose.

4) Passive attack affects the system resources.

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

    1) Non-Repudiation

    2) Cryptanalysis

  B) Answer the following : **6**

    1) Define the term plain text, secret key and cipher text with example.

    2) What is data confidentiality ? Explain with example.

3. Answer the following :

  A) Explain model for network security with well labeled diagram. **7**

  B) Explain access control models in detail. **7**

4. Answer the following :

  A) Define the term cipher. Explain stream cipher with example. **7**

  B) What are the different objectives of network security. **7**

5. Answer the following :

  A) What do you mean by web security ? Explain SSL in detail. **7**

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

6. Answer the following :

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

  B) Explain Access Control List (ACL) and capabilities. **7**

7. Answer the following :

  A) Describe the features of Kerberos service. **7**

  B) Explain the characteristics of firewalls. **7**

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SLR-J – 44

M.C.A. (Part – III) (Semester – V) (CGPA) Examination, 2016
COMPUTER SCIENCE
Digital Image Processing

Day and Date : Thursday, 7-4-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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 an application of Gamma ray imaging ?
      A) Lithography   B) Nuclear medicine
      C) Breast cancer   D) Microscopy

    2) In the following image Q is in _____

       0   1 1^Q
       0   1^P 0
       0   0   1
      A) 8-adjacent with P
      B) d-adjacent with P
      C) m- adjacent with P
      D) 8 and m- adjacent with P

    3) In case of contrast stretching the locations of points (r_1, s_1) and (r_2, s_2) control the shape of the transformation function. If $r_1 = s_1$ and $r_2 = s_2$ then this function acts as _____
      A) Thresholding function
      B) Identity transformation
      C) Linear transform
      D) Linear transformation with Thresholding function

4) Which of the following statements is false for first and second-order derivatives ?

   A) First-order derivatives generally produce thicker edges in an image

   B) Second-order derivatives have a stronger response to fine detail, such as thin lines and isolated points

   C) First-order derivatives generally have a stronger response to a gray-level step

   D) Second-order derivatives produce no response at step changes in gray level

5) In a Fourier transformed image the slowest varying frequency component ($u = v = 0$) corresponds to the _____ gray level of input image.

   A) Lowest   B) Highest

   C) Average   D) Zero

6) Notch filters are _____

   A) Always symmetric about origin

   B) Always band pass filters

   C) Always band reject filters

   D) Always located away from origin

7) The morphological operations used for extraction of outer boundary of an object are _____

   A) Dilation and addition   B) Dilation and subtraction

   C) Erosion and addition   D) Erosion and subtraction

8) Thresholding is used for _____

   A) Image enhancement   B) Image smoothing

   C) Edge detection   D) Image segmentation

9) The chain code of the following shape is
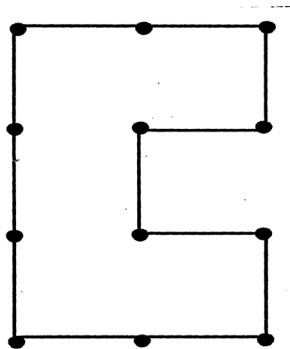
A) 003113303003
B) 003230322111
C) 003130311222
D) 001210122333

10) Which of the following statements is false regarding American Banker's Association E-13B font character set ?

A) Magnetized ink is used for providing clean waveforms for character reader

B) Every character is divided into a grid of 9×7 to facilitate their reading

C) Font contains 14 character

D) Optical character recognition is used to recognize the cheque numbers

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

1) The visible spectrum is good for measuring plant vigor is _____.

2) The expression for Butterworth highpass filter is _____

3) Hough transform is used for _____.

4) The expression $y = A (x – m_x)$ is called as _____

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

i) Bilinear v/s nearest neighbor interpolation techniques.

ii) Rayleigh noise.

B) Answer the following : **6**

i) Why Fourier transform is called "Mathematical Prism" ?

ii) Find m-path between P and Q.

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

3. Answer the following :

A) Discuss smoothing filters in frequency domain. **7**

B) What are the results of applying 3 × 3 mean and median filters on following image ? Perform zero padding for boundary conditions. **7**

10	12	16	7
14	25	4	20
1	11	0	15
6	9	22	5

4. Answer the following :

A) Discuss histogram processing techniques. Give comparison between them. **7**

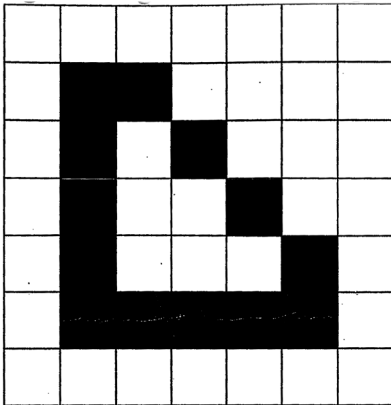B) Perform dilation on a triangle of each sided 6 cm using a square of 2 cm each and circle with 2 cm diameter. **7**

5. Answer the following :

A) Describe adaptive local noise reduction filtering technique. **7**

B) Fill the following region using cross structuring element. **7**


6. Answer the following :

A) Describe the local processing algorithm for edge linking and boundary detection. **7**

B) Two class of leaves ω_1 and ω_2 have sampled mean length, width and intensity (12, 5, 10) and (10, 2, 6) respectively. Compute the boundary bisecting these two classes. Also find the class of object with feature vector (12, 3, 7). **7**

7. Answer the following :

A) What is a region ? What are its basic formulations ? Explain region splitting and merging. **7**

B) Which among the following objects have highest similarity R ? **7**

_____
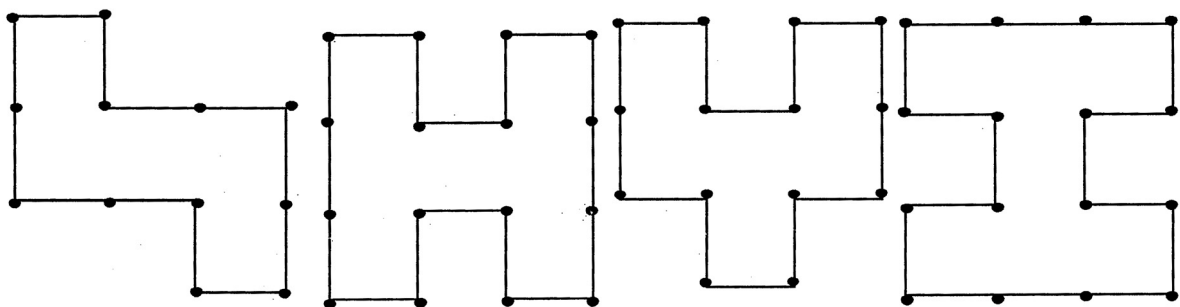
Seat No.

M.C.A. (Part – III) (Semester – V) (CGPA) Examination, 2016
COMPUTER SCIENCE
Mobile Computing

Day and Date : Saturday, 9-04-2016   Max. Marks : 70
Time : 10.30 a.m. to 1.00 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) _____ is centralized scheme with one master and several slaves.

   a) Polling   b) Aloha   c) SDMA   d) None of these

   ii) The process of channel coding, encryption, multiplexing and modulation for Trans direction and reverse for reception are to be carried out by

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

   iii) The cell having the same number in the adjacent cluster using the same set of RF channels are termed as

   a) Adjacent cell   b) Co-channel cell

   c) Macro cell   d) Selective cell

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

   a) High power BTS

   b) By installing the omnidirectional antenna

   c) Sectorisation

   d) None of the above

   v) The uplink frequency of P-GSM system is

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

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

vi) The core concept used in Cellular technology is

a) TDM   b) Frequency reuse

c) Code reuse   d) None of the above

vii) The coverage and capacity of CDMA system is more than that of GSM system.

a) True   b) False

c) Equal   d) None of the above

viii) The connectivity from exchange to customer premises is termed as

a) Data network   b) Access Network or Local Loop

c) Bridge network   d) None of the above

ix) Which of these is not true for TDD ?

a) TDD uses different time slots for transmission and reception paths

b) Single radio frequency can be used

c) Duplexer is required

d) It increases the battery life of mobile phones

x) Mobile phone in roaming is registered in

a) Visitors Location Registry of another MSC

b) Visitors Location Registry of same MSC

c) Home Location Registry of another MSC

d) Home Location Registry of same MSC

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

i) Inter BSC Intra MSC handover is one of the four types of handover available in GSM.

ii) Network and Switching Subsystem (NSS) are subsystems in GSM system.

iii) Flexibility and Planning are not advantages of wireless LAN.

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

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

i) FSK

ii) Radio Interface

B) Answer the following : **6**

i) Explain the concept of roaming.

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

3. Answer the following : **14**

A) Explain the architecture of 802.11 WLAN.

B) Explain in brief the Snooping TCP.

4. Answer the following : **14**

A) Explain the architecture of Mobile IP.

B) What are the problem of hidden and exposed terminals ? How to solve it using MACA ?

5. Answer the following : **14**

A) Describe with diagram MOC and MTC in GSM system.

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

6. Answer the following : **14**

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

B) Explain in brief the DHCP.

7. Answer the following : **14**

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

B) Explain TDMA with Fixed TDM, Classical Aloha, Slotted Aloha, CSMA and polling.

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Seat No.

M.C.A. (Semester – II) (Old) Examination, 2016
COMPUTER SCIENCE
Management – II

Day and Date : Saturday, 9-4-2016
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

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

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

   1) ABC analysis is used in _____
      a) HRD control
      b) Inventory control
      c) Sales control
      d) None of the above

   2) Networking capital means _____
      a) Total assets minus total liabilities
      b) Total assets minus capital
      c) Current assets minus current liabilities
      d) None of the above

   3) Strategy helps the organisation to achieve its _____
      a) plans
      b) goals
      c) target
      d) none of the above

   4) Key success variable for sugar industry is
      a) molasses rate
      b) wastage rate
      c) recovery rate
      d) none of the above

   5) Budgetary control is exercised by _____
      a) the lower management
      b) the middle management
      c) the top management
      d) none of the above

   6) The functions of Banking and custody is pertains to _____
      a) treasurer
      b) controller
      c) secretary
      d) chairman

P.T.O.

7) Task is _____
   a) strategy
   b) transaction oriented
   c) action
   d) goals

8) In funds flow statement, sale of fixed assets means _____
   a) Application of funds
   b) Sources of funds
   c) Forecasting of funds
   d) None of the above

9) Normal or standard for current ratio is _____
   a) 2 : 2
   b) 1 : 2
   c) 2 : 1
   d) 3 : 2

10) Stores ledger account is prepared and maintained in _____
    a) Purchase department
    b) Engineering department
    c) Costing department
    d) Sales department

B) State the following statements are **true** or **false** :   **4**
   1) Sundry creditors means amount receivable.
   2) Bad debts means amount recovered in advance.
   3) Outstanding salary is a Personal A/c.
   4) Bin-card is maintained by storekeeper.

2. A) Write short notes on the following :   **8**
      i) Responsibility centre.
      ii) Inventory control.

   B) Answer the following :   **6**
      i) How the flexible budget is prepared ?
      ii) What is the importance of variance analysis ?

3. Answer the following :   **8**

   A) Following Balance Sheet is submitted by M/s. Anand and Co.

   Balance Sheet as on 31-3-2014

Liabilities		Assets	
Capital	35,000	Fixed Assets	45,000
Reserves and Surplus	40,000	Current Assets	55,000
Secured loans (long term)	11,000	(long term) Investment	26,000
Current liabilities	13,000		
Provisions	27,000		
	1,26,000		**1,26,000**

Calculate :

i) Current ratio

ii) Proprietary ratio.

B) Define Ratio. Explain the objectives of Ratio analysis. **6**

4. Answer the following : **14**

A) Distinguish between management control and task control.

B) Explain requisites of a good management reporting system.

5. Answer the following :

A) From the following transactions, prepare stores Ledger Account by using FIFO method. **8**

Date	Particulars	Quantity (units)	Rate per unit
2014 Jan.			Rs.
1	Received	2000	10
6	Received	300	12
9	Issued	1200	–
10	Received	200	14
11	Issued	1000	–
22	Received	300	15
30	Issued	200	–

B) Explain the 'sources' in funds flow statement. **6**

6. Answer the following :

A) Define the factors affecting the working capital. **8**

B) Calculate Economic ordering quantity from the following particulars : **6**

X Ltd., purchases 800 units of a certain component at the rate of Rs. 50 per unit from outside supplier.

The annual usage is 800 units, order placing and receiving cost is Rs. 100/- per order and cost of holding one unit of the component for one year is Rs. 4.

7. Answer the following : **14**

A) Define Budget and Budgetary control. Explain the steps in preparation of budget.

B) What is variance analysis ? Explain the objectives of variance analysis.

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