Seat No.

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

Day and Date : Monday, 16-11-2015   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 three** question from Q. No. **3** to Q. No. **7**.
3) Figures to **right** indicated **full** marks.

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

   1) Magnetic tape is a _____ device.

      A) Input   B) Output

      C) Storage   D) None of these

   2) Which of the following is not operating system ?

      A) Dos   B) Windows

      C) Unix   D) Java

   3) _____ unit control the operation of CPU.

      A) ALU   B) BU

      C) CU   D) Memory

   4) Which is not a data transmission mode ?

      A) Simplex   B) Duplex-T

      C) Half duplex   D) Full duplex

   5) Which one is not a file operation ?

      A) Read   B) Copy

      C) Write   D) Mount

6) What is the function of Program Control (PC) ?

   A) Holds address of first memory location

   B) Holds address of last memory location

   C) Holds address of next memory location

   D) Holds 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 statements are not classified as computer language ?

   A) Machine languages   B) Assembly languages

   C) Speech languages   D) High-level languages

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

   1) Linux is multi user operating system.

   2) Binary number system is base 12.

   3) Internet is a network of computer.

   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 are output devices ? Explain.

   ii) What are the features of mainframe computer ?

3. Answer the following :

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

   B) Explain Data Transmission Modes. **7**

4. Answer the following :

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

   B) What is debugger ? Explain how does it help in programming. **7**

5. Answer the following :

   A) What is an OMR device ? Explain its technique for recognition. **7**

   B) What is structured programming ? What are its advantages. **7**

6. Answer the following :

   A) What is a browser ? How it facilitates navigation support ? **6**

   B) Describe the architecture of computer system with a diagram. **8**

7. Answer the following : **14**

   A) Describe the features of MS-Word.

   B) Explain the procedure of data sorting in Excel sheet with examples.

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SLR-G – 2

M.C.A. I (Sem. – I) Examination, 2015
(New CBCS)
COMPUTER SCIENCE
Programming Using C

Day and Date : Wednesday, 18-11-2015 　　　　　　　　　Max. Marks : 70

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

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

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

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

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

　　1) Predict the output for the following code
　　　　void main ( )
　　　　{
　　　　　　　int const p = 5;
　　　　　　　+ + p;
　　　　　　　printf ("%d", + + (p));
　　　　}
　　　　a) 6 　　　　　　　　　　　　b) 7
　　　　c) 8 　　　　　　　　　　　　d) None of these

　　2) Predict the output for the following code
　　　　void main ( )
　　　　{
　　　　　　　char s [ ] = "man";
　　　　　　　int i ;
　　　　　　　i = 0 ;
　　　　　　　printf ("\n%c%c%c" ,s[i],*(s+i),*(i+s)) ;
　　　　}
　　　　a) maa 　　　　　　　　　　b) man
　　　　c) mmm 　　　　　　　　　　d) aam

P.T.O.

3) Predict the output for the following code

```
void main ( )
{        float me = 1.1 ;
         double you = 1.1 ;
         if (me = = you)
                 printf ("I love U") ;
         else
                 printf ("I hate U") ;
}
```

a) I love U   b) I hate U

c) Compiler error   d) None of these

4) Predict the output for the following code

```
# define int char
void main ( )
{
  int i = 65 ;
  printf("sizeof (i) = %d", sizeof (i)) ;
}
```

a) Sizeof (i) = 1   b) Sizeof (i) = 2

c) Sizeof (i) = 4   d) None of these

5) Which of the following is not the relational operator ?

a) & &   b) <

c) ! =   d) >

6) Which of the following is the entry controlled loop statements ?

a) While loop   b) Do-while loop

c) For loop   d) Both a) and c)

7) Consider the following declarations–

```
struct policy
{
  int policy _ no ;
  char policy _ name [30] ;
  int policy _ term ;
  int policy _ amt ;
} ;
struct policy customer [10 ] ;
```

Here size of array 'customer' is

a) 10 bytes   b) 40 bytes

c) 360 bytes   d) 330 Bytes

8) What is the output of the following program ?

   # define clrscr ( ) 100

   void main ( )

   {

       clrscr ( ) ;

       printf ("% d", clrscr ( )) ;

   }

   a) Error   b) 1

   c) 100   d) 0

9) The entry point of the 'C' program is with

   a) # include   b) Void main (int argc, char * argv)

   c) # define   d) MAIN ( )

10) Which of the following statements is correct ?

   a) When a pointer is incremented by 1 the address contained in the pointer is incremented by 1

   b) When a pointer is incremented by 1 the address contained in the pointer is incremented by size of integer

   c) When a pointer is incremented by 1 the address contained in the pointer is incremented according to the type it is pointing to

   d) All are incorrect

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

   1) 'C' is a low level language.

   2) Fopen ( ) function requires maximum two arguments.

   3) The statement char ch = 'Z' ; would store in ch the ASCII value of 'Z'.

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

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

   i) Algorithm

   ii) Hierarchy of operators.

B) Answer the following.   **6**

   i) Write an algorithm to swap two integer values without using temporary variable.

   ii) Distinguish between structure and union.

3. Answer the following :

   a) Write the general syntax and working of Switch statement in C with an example. **6**

   b) Write a program to read a list of n random numbers and count the number of positive, zero, negative numbers in the list and also print the sum of all positive numbers. **8**

4. Answer the following :

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

   b) Explain the difference between call by reference and call by value. **6**

5. Answer the following :

   a) Explain in detail various functions for basic file manipulations. **8**

   b) Write a program to obtain transpose of a 4 × 4 matrix. The transpose of a matrix is obtained by exchanging the elements of each row with the elements of the corresponding column. **6**

6. Answer the following :

   a) Explain the various loop structures in detail. **7**

   b) What is preprocessor directives ? Describe any two preprocessor directives with example. **7**

7. Answer the following :

   a) Define a structure called student with name, register number and age as data members. Write a program to create an array of structures for 5 students. Read data into it and print. **8**

   b) Describe the following functions. **6**

      i) fopen ( )

      ii) fclose ( )

      iii) fseek ( ).

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Seat No.

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

Day and Date : Friday, 20-11-2015   Max. Marks : 70

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

Instructions : i) Q. 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, $a \wedge b = a$ if and only if
      a) $a \le b$ b) $a \ge b$ c) $a > b$ d) $a < b$

   ii) In propositional logic which of the following is equivalent to $(p \to q)$
      a) $\sim p \vee q$ b) $(\sim p \vee q)$ c) $(q \vee \sim p)$ d) $(p \wedge \sim q)$

  iii) In permutation $n_{n-1}p_{n-1} = ?$
      a) $^{n}P_{n}$ b) $^{n-1}P_{n-1}$ c) $^{n-1}P_{n}$ d) $^{n}P_{n-1}$

  iv) A graph in which each vertex is adjacent to every other vertex is called
      a) Planar graph   b) Regular graph
      c) Multigraph   d) Complete graph

   v) A graph in which multiple edges and loops exists is called
      a) Multigraph   b) Pseudograph
      c) Regular graph   d) Complete graph

  vi) In set theory $A \oplus B = ?$
      a) $(A - B) \cap (B - A)$ b) $(B - A) \cap (A - B)$
      c) $(A - B) \cup (B - A)$ d) $(A - B) \cup (A - B)$

  vii) If A, B, C are Boolean matrices of compatible, sizes, then $(A \vee B) \vee C = ?$
      a) $A \vee B \vee C$ b) $A \vee (B \vee C)$
      c) $(A \vee B) \vee C$ d) None of these

P.T.O.

viii) A relation R on a set A is called equivalence if
   a) Reflexive   b) Symmetric   c) Transitive   d) All of the above

ix) The proposition $(p \wedge q) \to p$ is a
   a) Contradiction   b) Tautology
   c) Logical equivalent of $p \vee q$ d) None of these

x) In a group G which of the law is called commutative
   a) $a * b = b * a$ b) $a * e = e * a = a$
   c) $a * a^{-1} = a^{-1} * a = e$ d) None of these

B) Fill in the blanks :   **4**
   i) In a set theory $A \cup \phi = $ _____
   ii) If $p = $ true, $q = $ false, then $p \to q = $ _____
   iii) $\sim (p \to q) = $ _____
   iv) Maximum degree of any node in a simple graph with n vertices is _____

2. A) Write short notes on :   **8**
   i) Matrix and determinant
   ii) Tautology.

   B) Answer the following :   **6**
   i) Explain the notations used in mathematical logic.
   ii) Explain the normal forms.

3. A) Show that $^{n+1}C_r = {}^nC_{r-1} + {}^nC_r$.   **7**
   B) If $p \to q$ is false, can you determine the truth value of $(\sim (p \wedge q) \to q$?
      Explain also.   **7**

4. A) Explain group codes with example.   **7**
   B) Explain Hamiltonian and Euclarian graphs.   **7**

5. A) Let $L = \{a_1, a_2,...,a_n\}$ be a finite lattice, then prove that L is bounded. **7**
   B) Explain Bipartite graph with an example.   **7**

6. A) Prove that the following equivalence :
      $(p \to q) \wedge (R \to q) \Leftrightarrow (p \vee R) \to q$. **7**
   B) Explain the applications of the Residue Arithmatic's to computers. **7**

7. A) State and prove Fleury's algorithm.   **7**
   B) Explain the algebraic structures and their applications to computer science. **7**

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Seat No.

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

Day and Date : Monday, 23-11-2015   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**

    i) OR is a
       a) Basic logic gate   b) Universal logic gate
       c) Multivibrator   d) None

    ii) indicates
       a) AND logic gate   b) OR logic gate
       c) NOT logic gate   d) None

    iii) NOR is a
       a) Basic logic gate   b) Universal logic gate
       c) Not a logic gate   d) None of the above

    iv)
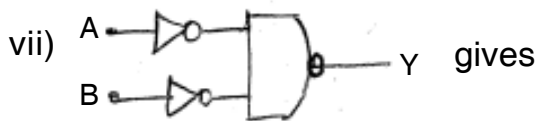   a) $Y = A + B$ b) $Y = A \cdot B$ c) $Y = (A)(B)$ d) None

    v)
       a) $Y = \overline{\overline{A}B}$ b) $Y = A\overline{B}$
       c) $Y = A + \overline{B}$ d) both (a) and (c)

P.T.O.

vi)

 Y gives

a) $y(\overline{A} + B) + \overline{B}$
b) $y = \overline{A} + 1$
c) $y = 1$
d) all the above

vii)

 Y gives

a) $y = \overline{\overline{AB}}$
b) $y = A + B$
c) both a) and b)
d) none

viii) Which of the following statements with respect to μ P 8085 is in correct ?
   a) The address bus is unidirectional
   b) The data bus is bi-directional
   c) The control lines provide a pulse to indicate an MPU operation
   d) None of these

ix) Indicate the wrong statement
   a) The 8085 has six general purpose registers
   b) Registers are programmable
   c) Accumulator is not part of ALU
   d) Flags help in knowing the data conditions

x) Which of the following describes a program counter ?
   a) It is a memory pointer
   b) It is a 16 bit register
   c) It is a 8 bit register
   d) It deals with sequencing the execution of instructions

B) State **true** or **false**. 4
   i) The 8086 has an accumulator to store 64 bit data
   ii) The 8085 has five flags to indicate five different types of data conditions
   iii) 8085 has a 8 – bit register to work as program counter
   iv) 8085 has a 16 – bit register to work as stack pointer

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

    i) Function of program counter (PC).

    ii) Instruction fetch operation.

   B) Answer the following. **6**

    i) Explain functions of EU in 8086.

    ii) Explain types of memory.

3. Answer the following.

   A) Explain working of a full adder circuit. **8**

   B) Compare half adder and full adder circuit. **6**

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

   B) Explain an 8 : 1 multiplier in detail. **8**

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

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

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

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

7. A) Write a note on memory segmentation in case of 8086. **6**

   B) i) Mention the flags used in 8086. **2**

    ii) Explain various addressing modes of 8086. **6**

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Seat No.

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

Day and Date : Thursday, 26-11-2015   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 Que. No. *3* to Que. No. *7*.
         3) Figures to the **right** indicate **full** marks.

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

    1) Goods returned to the supplier should be accompanied by _____
       a) Bill   b) Cash memo
       c) Debit note   d) Credit note

    2) Receipt is issued for _____
       a) Cash sale   b) Goods delivered
       c) Cash received   d) Cash paid

    3) Which document is prepared when the goods are sold on credit _____
       a) Invoice   b) Cash memo
       c) Cash voucher   d) Petty cash voucher

    4) In which type of the cheque the amount is credited directly to the payee's account in the Bank.
       a) Bearer   b) Order
       c) Crossed   d) Account payee

    5) In SWOT analysis 'S' stands for _____
       a) Security   b) Safety
       c) Strength   d) Surety

    6) Training to the staff improves _____
       a) Laziness   b) Working skill
       c) Working problems   d) Tension

P.T.O.

7) The cost unit for goods transport industry is _____
   a) Kilometres/passenger
   b) Tonnes/kilometre
   c) Weight/passenger
   d) None of the above

8) A quality circle is a volunteer group composed of _____ usually under the leadership of their supervisor.
   a) Workers
   b) Helpers
   c) Supervisors
   d) Managers

9) Key success variable for banking industry is _____
   a) Number of customers
   b) Name of cities
   c) Number of insurance policies
   d) None of the above

10) _____ discount will appear in the books of accounts.
   a) Bank
   b) Trade
   c) Cash
   d) Quantity

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

1) Book debts means amount payable.

2) Budget is done by lower management.

3) Goals are time less.

4) ABC or EOQ techniques are used for material management.

2. A) Write short notes on the following :   **8**
   i) Cost centre
   ii) Budget manual.

B) Answer the following :   **6**
   1) State purposes of selection.
   2) Explain benefits of training.

3. Answer the following :

Following information is available in respect of material M.

2015 June 1   Purchased 100 units @ 10 each
         2   Purchased 200 units @ 12 each
         5   Issued 250 units
         7   Purchased 200 units @ 14 each
        10   Purchased 300 units @ 16 each

15	Issued 200 units	
20	Issued 200 units	
24	Purchased 100 units @ 18 each	
29	Issued 150 units	

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

B) Using the same information prepare stores ledger by using simple average method. **7**

4. Following information is available from the books of Mr. Kadam for the month of April 2015.

April 2015	1	Started business with cash Rs. 20,000 and machinery Rs. 40,000
	4	Cash purchases Rs. 6,000 @ 10% trade discount
	8	Cash sales Rs. 12,000
	10	Paid wages Rs. 1,400
	15	Purchased goods on credit from Shrikant traders Rs. 8,000
	20	Paid to Sanjay traders on account Rs. 6,400
	25	Withdraw cash for personal use Rs. 1,000.

A) Pass the journal entries in the books of Mr. Kadam. **7**

B) Prepare ledger accounts for the above information. **7**

5. A) Enter the following transactions in the appropriate subsidiary books of Mr. Ashok and Co. **7**

2015 Aug.	1	Purchased goods from Raj Traders Rs. 16,400 @ 10% trade discount.
	3	Priti enterprises invoiced goods to Ashok and Co. Rs. 17,250
	5	Sold goods to Vanita stores Rs. 19,000 @ 5% trade discount.
	8	Mahesh associates invoiced goods to Ashok and Co. Rs. 17,000 @ 3% trade discount.
	10	Returned goods to Raj Traders Rs. 1,650 (net)
	15	Vanita traders returned goods to Ashok and Co. as they were damaged in transit Rs. 4,000. (Gross).
	25	Deepika returned goods of Rs. 4,000 (Gross).

B) From the following figures of M/S Patel and Co. ascertain the amount of net profit. **7**

	Rs.
Dividend received	1,400
Gross profit	55,000
Postages	2,200
Commission received	1,000
Salaries	7,500
Insurance	1,200
Printing and stationary	3,600
Office rent	7,200
Depreciation	2,200

Prepare profit and loss A/c also.

6. Answer the following :

A) Explain the steps in Budgetary control. **7**

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

7. Answer the following :

A) Explain the steps for formal control process. **7**

B) Explain the different types of media available for advertisement. **7**

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Seat No.	

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

Day and Date : Monday, 16-11-2015   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) Which protocol provides e-mail facility among different hosts ?
      A) FTP   B) SMTP
      C) TELNET   D) SNMP

   2) Which one of the following is not an applications software package ?
      A) Redhat Linux   B) Adobe PageMaker
      C) Microsoft office   D) Open office

   3) Microsoft word is an example of
      A) Operating system   B) Processing device
      C) Application software   D) Input device

   4) Which of the following operating system is produced by IBM ?
      A) OS-2   B) Windows
      C) DOS   D) Unix

   5) Which was an early mainframe computer ?
      A) UNIC   B) FUNTRIA
      C) BRAINA   D) ENIAC

   6) A computer program that converts assembly language to machine language is
      A) Compiler   B) Interpreter
      C) Assembler   D) Comparator

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

     A) SRAM   B) ROM

     C) DRAM   D) All of these

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

     A) Analog to digital converter   B) CPU

     C) Memory   D) Input/output device

   9) Internet Explorer comes along with _____

     A) Linux   B) Windows

     C) MAC   D) Android

  10) Keyboard converts typed in character to _____ code.

     A) EBCIDIC   B) ASCII

     C) Decimal   D) Binary

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

   1) Operating system is system software.

   2) Unix is an multiuser and multitasking operating system.

   3) Intranet is a public network and an extranet is a private network.

   4) PARAM is a super computer made by India.

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

   i) CPU

   ii) Loader.

  B) Answer the following :   **6**

   i) What is Printer ? Explain different types of printers in short.

   ii) What is workstation ? Explain features of workstation.

3. Answer the following :

  A) Explain the features of Super computer as compare to mainframe computer.   **7**

  B) What is Operating System ? Explain Windows Operating System.   **7**

4. Answer the following :

   A) What is compiler ? Give the difference between compiler and Interpreter. **7**

   B) What is Number system ? Explain Binary and Decimal number system with example. **7**

5. Answer the following :

   A) Explain different types of programming languages. **7**

   B) What is the role of operating system ? Explain in detail. **7**

6. Answer the following :

   A) Explain following Unix commands with suitable examples. **8**
      i) date
      ii) Is
      iii) mkdir
      iv) cat.

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

7. Answer the following :

   A) Explain various formatting commands on Text in MS-Word. **7**

   B) What is spreadsheet ? Explain linking of workbooks. **7**

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Seat No.	

M.C.A. – I (Semester – I) (Computer Science) Examination, 2015
(Old CGPA)
PROGRAMMING USING C

Day and Date : Wednesday, 18-11-2015　　　　　　　　　　　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 the output of the program ?
　　　#include <stdio.h>
　　　void main ( )
　　　{
　　　　switch (5)
　　　　　　{
　　　　　　　　case 5 : printf ("5")
　　　　　　　　default : printf ("10");
　　　　　　　　case 6 : printf ("6")
　　　　　　}
　　　}
　　　a)　5　　　　　　　　　　　　　　b)　5　10
　　　c)　5　10　6　　　　　　　　　　d)　5　6
　　2) What will be the output of the following program ?
　　　void main ( ) {
　　　int x [ ] = {10, 20, 30, 40 , 50};
　　　printf ("\n %d %d %d %d", x[4], 3[x], x[2], 1[x], x[0]);}
　　　a)　compile time error　　　　　　b)　10　20　30　40　50
　　　c)　50　40　30　20　10　　　　　d)　none of these

P.T.O.

3) The operator + in a + = 4 means

a) a = 4 + 4   b) a + 4 = a

c) a = 4   d) a = a + 4

4) What is the output of the program ?

#include <stdio.h>

#define MAX 20

void main ( )

{

    printf("%d", + +MAX));

}

a) No error, output is 20

b) No error, output is 21

c) Error : Define directive needs an identifier

d) Error : Lvalue required

5) What will be the output ?

void main ( ) {

printf ("%d", 'B' <'A');}

a) Error   b) 1

c) 0   d) none of these

6) The operator & & is an example for _____ operator.

a) Assignment   b) Increment

c) Logical   d) Relational

7) Which of the following format specifier is used for hexadecimal ?

a) %d   b) %x

c) %o   d) %f

8) What is the output of this program ?

void main ( ) {

int a = b = c = 10;

a = b = c = 50;

prinf ("\n%d %d %d", a, b, c);}

a) 50 50 50   b) compile time error

c) 10 10 10   d) three garbage value

9) What will be the output ?

void main ( ){

printf("%d", 'A' < 'B');}

a) Error   b) 1

c) 0   d) None of these

10) A static variable by default gets initialized to

a) 0   b) blank space

c) 1   d) garbage value

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

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

2) Operators have hierarchy.

3) A 'continue' statement takes the execution control out of the loop.

4) 'do-while' loop is exit-controlled loop statement.

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

i) break statement.

ii) Increment and decrement operator.

B) Answer the following :   **6**

i) What is pseudo code ? What are the advantages of pseudo code ?

ii) Write a program to find the greatest among two numbers using ternary (? :) operator.

3. Answer the following :

a) Explain the following using general syntax and example

i) if

ii) if-else

iii) nested if-else.   **6**

b) Describe pointer with example.   **8**

4. Answer the following :

a) What are the various types of operators in C ?   **8**

b) Distance between two points (x_1, y_1) and (x_2, y_2) is governed by the formula $D^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$. Write a program to compute D.   **6**

5. Answer the following :

   a) Write a program to create file "eight" to store all integers between 1 and n which are divisible by 8. **6**

   b) Describe various functions supported by C for dynamic memory allocation. **8**

6. Answer the following :

   a) Write a program to enter n elements in array and find second largest number from array. **7**

   b) What is preprocessor ? Write purpose of any five preprocessors in C. **7**

7. Answer the following :

   a) Write a C language program to define structure for class containing class, name, no. of students and block no. Read 5 records and display it. **8**

   b) What is the difference between the array of pointer and pointer to the array ? Explain with example. **6**

_____

Seat No.	

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

Day and Date : Friday, 20-11-2015   Total Marks : 70

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

Instructions : i) *Question Nos.* **1** *and* **2** *are* **compulsory**.

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

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

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

   i) Every finite subset of a lattice has

      a) a LUB and a GLB   b) many LUBs and a GLB

      c) many LUBs and many GLBs   d) either some LUBs and som GLBs

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

      a) finite   b) infinite   c) cyclic   d) abelian

   iii) The number of vertices of odd degree in a graph is

      a) always zero   b) either even or odd

      c) always odd   d) always even

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

      a) multi graph   b) non regular graph

      c) regular graph   d) complete graph

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

      a) n^2 b) 2^n c) 2^{n^2} d) None of these

vi) The number of functions from an m element set to an n element set is

    a) $m + n$ b) n^m c) m^n d) all of these

vii) In propositional logic, which of the following is equivalent to $p \rightarrow q$

    a) $\sim p \vee q$ b) $\sim p \rightarrow q$ c) $\sim p \vee \sim q$ d) $p \rightarrow \sim q$

viii) If $A^T = A^{-1}$ where A is a real matrix, then A is

    a) Normal   b) Symmetric

    c) Hermitian   d) Orthogonal

ix) The proposition is $p \wedge (\sim p \vee q)$ is

    a) a tautology   b) a contradiction

    c) logically equivalent to $p \wedge q$ d) none of these

x) The number of words that can be formed out of the letters of the word 'COMMITTEE' is

    a) $\dfrac{9!}{(2!)^3}$ b) $\dfrac{9!}{(2!)^2}$ c) $\dfrac{9!}{2!}$ d) $9!$

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

    i) The number of circular permutations of n different things taken all at a time is _____

    ii) A square matrix in which $a_{ij} = a_{ji}$ for all i, j is called _____

    iii) _____ is a graph with a closed path that includes every vertex exactly once.

    iv) Only _____ mapping possess inverse mapping.

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

    i) Group codes.

    ii) Planar graphs.

B) Answer the following :   **6**

    i) Explain the equivalence relation.

    ii) Explain orthogonal matrix.

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

   $3x + 3y + 3z = 18$

   $6x - 3y + 3z = 9$

   $3x + 6y - 3z = 6.$

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

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

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

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

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

   B) Suppose a valid computer password consists of 4 characters, the first one chosen from the Set {A, B, C, D, E} and the remaining three from English alphabets or digits {0, 1, ... 9}. How many different passwords are there ?

   7

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

   All men are mortal. Socrates is a man. Therefore, Socrates is mortal.

   B) What is the theory of inference for predicate calculus ? Hence show that   **7**

   $(x) (P(x) \rightarrow Q(x)) \wedge (x)(Q(x) \rightarrow R(x)) \Rightarrow (x) (P(x) \rightarrow R(x)).$

6. A) Obtain the principle DNF (Disjunctive Normal Form) and principle CNF (Conjuctive Normal Form) of the following formula

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

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

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

   i) Regular and bipartite graphs.

   ii) Walks and paths.

   B) In a survey of 120 people it is found that 50 like to drink milk, 52 coffee and 52 tea. Also 18 like both milk and tea, 22 like milk and coffee, 16 like coffee and tea and 16 like none of the three. Using Venn diagram. **7**

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

   ii) Find the number of people who like exactly one of the three drinks.

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Seat No.	

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

Day and Date : Monday, 23-11-2015   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 from given answers :   **(1×10=10)**

   1) Digital circuits use diodes or transistors as

      a) switches   b) inputs   c) outputs   d) none

   2) Which logic gate assumes 1 as output, if one or more of the inputs assume
      1 state ?

      a) AND   b) OR   c) NOT   d) None

   3) Which one is known as universal logic gate ?

      a) NAND   b) AND   c) NOT   d) OR

   4) A counter is one of the most useful and versatile subsystems in a

      a) analog system   b) digital system

      c) control system   d) none

   5) A decade counter requires _____flip flops.

      a) two   b) three   c) four   d) five

   6) Group of flip flops used to store a binary number is called

      a) counter   b) logic gate   c) register   d) none

   7) A bidirectional shift register is one in which the data can be shifted

      a) left   b) right

      c) either left or right   d) none

   8) The physical components of the computer are called

      a) system   b) hardware   c) software   d) all

9) The instruction has

   a) op code   b) operand

   c) both a) and b)   d) none

10) The method of specifying an operand is

   a) addressing mode   b) loading

   c) extraction   d) none

B) Mention whether the following statement is **True** or **False** :   **(1×4=4)**

1) Solid state devices like PN-diode is used in digital circuits as switches.

2) AND logic gate is not referred as a universal gate.

3) A multiplexer gives only one output.

4) A microprocessor is basically a programmable logic chip.

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

   i) Universal logic gates

   ii) 2 to 4 line decoder.

B) Answer the following :   **6**

   i) With a neat diagram explain the working of a half adder circuit.

   ii) Name the flags available with 8086 microprocessor.

3. A) State and prove DeMorgan's theorems.   **(7+7=14)**

B) Explain the operation of edge triggered flipflops.

4. A) Draw a neat diagram of 4 to 1 multiplexer using AND and an OR gate. Give its truth table. Explain its working.   **(7+7=14)**

B) What are decoders ? Give a neat diagram of BCD to decimal decoder.

5. A) What are shift Registers ? Describe the types shift registers.   **(7+7=14)**

B) Explain Johnson counter using 7495.

6. A) Explain the internal structure of 8085 μ p.   **(7+7=14)**

B) Explain the various categories of instruction set used in 8085 μ p.

7. A) Explain the internal structure of 8086 μ p.   **(7+7=14)**

B) Explain various types of addressing modes used in 8086 μ p.

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Seat
No.

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

Day and Date : Thursday, 26-11-2015   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) Select the correct alternative :   **5**

   1) The outside liabilities of a business are Rs. 20,000. The proprietor's capital is Rs. 50,000. The total assets of the firm are
      a) Rs. 50,000   b) Rs. 30,000
      c) Rs. 70,000   d) Rs. 20,000

   2) The equality of debits and credits can be tested periodically by preparing a
      a) Trial Balance   b) T Account
      c) General Journal   d) Ledger

   3) Bank overdraft is a _____ liability.
      a) Current   b) Fixed
      c) Debit   d) Loss

   4) Net Working Capital =
      a) Current Asset plus Current Liabilities
      b) Liabilities minus Assets
      c) Current Assets minus Current Liabilities
      d) Fixed Assets minus Current Assets

   5) A company makes plastic windows and doors. Which one of the following is likely to be a fixed cost ?
      a) The cost of heating the factory
      b) The cost of plastic
      c) Sales commission
      d) None of these

P.T.O.

B) Match the pairs. **5**

A	B
a) Carriage inward	i) Fixed assets
b) Trading A/c	ii) Asset side
c) Repairs to machinery	iii) Profit and Loss A/c
d) Pre-paid expenses	iv) Machinery A/c
e) Furniture	v) Trading A/c
	vi) Gross Profit

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

1) P and L account is prepared on cash account basis.

2) Closing entries are needed to close nominal accounts.

3) Budget prepared at the single level of activity are referred to as fixed budget.

4) A Company's current ratio is 2.0. If it uses cash to pay creditors, this transactions would cause a decrease in current ratio.

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

a) Marketing Information System

b) Economic Order Quantity (EOQ).

B) Answer the following : **6**

a) What are the steps in Budgetary Control ?

b) What is SWOT analysis ?

3. Answer the following : **8**

a) Journalize the following transactions in the books of Vasudev.

 i) Vasudev sold goods to Krishna for Rs. 1,50,000 against a cheque

 ii) Received as commission Rs. 80,000

 iii) Cash deposited into Bank Rs. 10,00,000

 iv) Withdrawn cash from Bank for personal expenses Rs. 1,50,000

 v) Bank paid Rs. 60,000 directly for insurance premium of Vasudev.

b) State the advantages and importance of training. **6**

4. Solve the following :   **10**

a) From the following Trial Balance prepare Trading. Profit and Loss account for the year ended 31-12-2013 and Balance Sheet as on that date.

Particulars	Debit	Credit
Purchase	80,000	–
Sales	–	1,50,000
Wages	10,000	–
Printing and Stationery	1,000	–
Postage	1,000	–
Insurance	2,000	–
Capital	–	1,00,000
Sundry Creditors	–	44,000
Land and Building	40,000	–
Plant and Machinery	60,000	–
Cash	30,000	–
Bank	30,000	–
Sundry Debtors	40,000	–
	2,94,000	**2,94,000**

b) A manufacturing company has an expected usage of 50000 units of certain product during the next year. The cost of processing an order is Rs. 20 and the carrying cost per unit is Rs. 0.50 for one year. You are required to calculate the EOQ.   **4**

5. Answer the following :   **14**

a) Write advantage and disadvantages of Weighted average.

b) Write a note on strategic planning and task control.

6. Answer the following : **8**

   a) From the following particulars Store Ledger Account show how value of the issues would be recorded under the LIFO method.

Date	Particulars
Jan. 3	Opening stock 120 units at Rs. 10 each
Jan. 9	Purchased 800 units at Rs. 12 each
Jan. 10	Issued 200 units
Jan. 15	Issued 300 units
Jan. 22	Issued 310 units
Jan. 27	Purchased 300 units at Rs. 11 each
Jan. 29	Issued 350 units

   b) Write a note on Functions of Controller. **6**

7. Answer the following : **14**

   a) Write a note on Accounting Concepts.

   b) What are the informal and formal factors influencing control system ?

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SLR-G– 11

Seat
No.

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

Day and Date : Tuesday, 17-11-2015   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 function is used to set the width of variable ?
     a) width( )   b) weedth( )   c) setwidth( )   d) setweedth( )

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

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

   4) '<<' operator is called as
     a) Extractor operator   b) Insertion operator
     c) Relational operator   d) Arithmetic operator

   5) Which data type is used to represent character ?
     a) Double   b) Float   c) Character   d) Char

   6) Data hiding is also known as
     a) Data abstraction   b) Data encapsulation
     c) Meta data   d) Data mining

   7) In C++, function should
     a) Return a value   b) Not return a value
     c) Pass at least one argument   d) None of these

   8) How many types of inheritance is exist in C++ ?
     a) 5   b) 4   c) 3   d) 1

9) Which operator is not undergone overloading ?

   a) +   b) –   c) ::   d) <<

10) Pointer variables are used to store the

   a) Value   b) Address   c) Key   d) None of these

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

1) Arrays are itself called as pointers.
2) Float data type is used to store a real number.
3) Object of one class acquires the property of another class.
4) Ability to take more than one form is called as polymorphism.

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

  i) Ternary Operator

  ii) Data Abstraction.

B) Answer the following :   **6**

  i) How does manipulators works ?

  ii) Differentiate between public and private visibility modes.

3. Answer the following :   **14**

A) Write a program in C++ to demonstrate Friend function.

B) What is inheritance ? Discuss different types of inheritance.

4. Answer the following :   **14**

A) Define a class student with roll no, sname, sclass, scaste as data members and studinfo as member function. Write a code to accept student information and display that information.

B) How does the compile time polymorphism works ? Explain.

5. Answer the following :   **14**

A) Explain in detail the difference between structure and class.

B) Write a C++ Program to implement parameterized constructor.

6. Answer the following :   **14**

A) Describe the concept of object as function argument.

B) How dynamic initialization of object is achieved ? Discuss.

7. Answer the following :   **14**

A) Write a program in C++ to demonstrate unary operator.

B) Discuss the different types of data types used in C++.

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Seat No.

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

Day and Date : Thursday, 19-11-2015   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) A mathematical-model with a collection of operations defined on that model is called

   a) Data Structure   b) Abstract Data Type

   c) Primitive Data Type   d) Algorithm

   2) The OS of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called

   a) Concatenation   b) Garbage collection

   c) Collision   d) Dynamic Memory Allocation

   3) The memory address of the first element of an array is called

   a) floor address   b) foundation address

   c) first address   d) base address

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

   a) Arrays   b) Records   c) Pointers   d) None of these

   5) The term "push" and "pop" is related to the

   a) array   b) lists   c) stacks   d) all of above

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

   a) underflow   b) overflow   c) housefull   d) saturated

7) Which of the following statement is false ?

   a) arrays are dense lists and static data structure

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

   c) pointers store the next data element of a list

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

8) The number of interchanges required to sort 5, 1, 6, 2, 4 in ascending order using Bubble Sort is

   a) 6   b) 5   c) 7   d) 8

9) The smallest element of an array's index is called its

   a) lower bound   b) upper bound   c) range   d) extraction

10) The data structure required to evaluate a postfix expression is

   a) queue   b) stack   c) array   d) linked-list

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

   1) Finding the location of the element with a given value is _____

   2) The time factor when determining the efficiency of algorithm is measured by _____

   3) Null case does exist in complexity theory is true/false.

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

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

   i) Explain the classification of data structure.

   ii) What do you mean by algorithm ? Give example.

   B) Answer the following.   **6**

   i) What are the applications of an array ? Explain each with examples.

   ii) Write an algorithm to search element in array.

3. Answer the following.   **14**

   A) Explain application of Stack.

   B) What are the advantages of circular linked list over singly linked list ?

4. Answer the following. **14**

   A) What are the difference between linear search and binary search ?

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

5. Answer the following. **14**

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

   B) Write an algorithm to search element in array.

6. Answer the following. **14**

   A) Write pseudo-code for binary search using array and linked list.

   B) Write short note on Priority Queue.

7. Answer the following. **14**

   A) Write short note on bubble sort with algorithm.

   B) Explain application of binary tree.

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Seat
No.

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

Day and Date : Saturday, 21-11-2015   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** side indicate the **full** marks.

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

   i) Which of the following values of the number $\frac{1}{3}$ is the best approximation ?
      a) 0.30   b) 0.33   c) 0.34   d) 0.32

   ii) The root of the equation $e^{-x} = 10x$ lies between
      a) (–1, 2)   b) (–2, –1)   c) (0, 1)   d) (1, 2)

   iii) General formula given by $x_{n+1} = \dfrac{x_{n-1}f(x_n) - x_n f(x_{n-1})}{f(x_n) - f(x_{n-1})}$ is for

      a) Bolzano method   b) Regula-Falsi method
      c) Newtons Rapsons method   d) Secant method

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

   v) If n = 5, then the value of $\int_0^1 x^3 dx$ using Trapezoidal rule is
      a) 0.2   b) 0.26   c) 0.3   d) none

   vi) Which of the following method is direct method ?
      a) Gauss-elimination method   b) Triagilarisatio method
      c) Both a) and b)   d) None

   vii) The values of real symmetric matrix are
      a) all real
      b) all non-real complex
      c) some real and some non-real complex
      d) none

P.T.O.

viii) In Simpson's $\frac{3}{8}$th rule number of values must be

    a) 4 or 7 or 10 or 13   b) 3 or 6 or 9 or 12

    c) 5 or 10 or 15   d) none

ix) The largest Eigen value of the matrix $\begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ is _____

    a) 4   b) 2   c) 0   d) 1

x) $\Delta y_1, \Delta y_2, \Delta y_3, ..., \Delta y_{n-1}$ are all

    a) 1st order forward difference

    b) nth order difference

    c) nth degree difference

    d) none

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

  i) Newtons Rapsons method has order of convergence two.

  ii) Taylor's method is single step method to solve ordinary differential equation.

  iii) Euler method is not single step method.

  iv) If number of intervals are 6, then Simpson's $\frac{3}{8}$th rule is applicable.

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

  i) Langranges interpolation formula.

  ii) Divided difference.

B) Answer the following :   **6**

  i) Explain iteration method and its rate of convergence.

  ii) Explain the Eigen value of symmetric tridiagonal matrix.

3. Answer the following :   **14**

  A) Explain the error in a series approximation.

  B) Explain absolute, relative and percentage errors.

4. Answer the following : **14**

   A) Describe Newton's backward interpolation formula.

   B) Using Newton's forward interpolation formula evaluate f(15) for the following table :

x	10	20	30	40	50
y = f(x)	46	66	81	93	101

5. Answer the following : **14**

   A) Using Newton's general interpolation formula for the following table find f(x) as a polynomial in x :

x	– 1	0	3	6	7
f(x)	3	– 6	39	822	1611

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

6. Answer the following : **14**

   A) Describe the Gauss-elimination method for given matrix A.

   B) Solve the system of equations :
   $20x + y - 2z = 17$
   $3x + 20y - z = -18$
   $2x - 3y + 20z = 25$
   By using Gauss-Seidal iterative method perform the first three iterations.

7. Answer the following : **14**

   A) Evaluate the integral $\int_0^1 \frac{1}{1+x^2} dx$ using Simpson's $\frac{1}{3}$ rd rule.

   B) Given $\frac{dy}{dx} = \frac{y-t}{y+t}$ at t = 1.2 with initial conditions y = 1 at t = 0. Find y at t = 0.1 in five steps using Euler's method.

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Seat No.

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

Day and Date : Tuesday, 24-11-2015   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) _____ provides a convenient interface between computer user and hardware.
      a) Linked list   b) Operating system
      c) Microprocessor   d) Program Stack

   2) A _____ interface, in which commands and directives to control those commands are entered into files, those files are executed.
      a) Graphical user   b) Fundamental
      c) Directory   d) Batch

   3) The processes that are residing in main memory and waiting to execute are kept on a list called
      a) Running queue   b) System queue
      c) Ready queue   d) Waiting queue

   4) The _____ buffer has finite length 'n', thus; at most 'n' messages can reside in it.
      a) Bounded capacity   b) Zero capacity
      c) Single capacity   d) Unbounded capacity

   5) A _____ should be as fast as possible, since it is invoked during every process switch.
      a) I/O Event Wait   b) Dispatcher
      c) Memory Scheduler   d) Control system

P.T.O.

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

   a) Counting   b) Monitor

   c) Decimal   d) Binary

7) In Round Robin algorithm, a small unit of _____ is defined.

   a) Virtual memory   b) Time quantum

   c) Shortest job first   d) Wait time

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

   a) Absolute path   b) Directory path

   c) Relative path   d) File-directory path

9) The _____ behaves like writer lock; only one process at a time can acquire such lock.

   a) Hardware Lock   b) Exclusive Lock

   c) Shared Lock   d) System Lock

10) A major problem with _____ algorithms is indefinite blocking or starvation.

   a) Disk storage   b) Page replacement

   c) Priority   d) First Come First Serve

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

1) The ability to execute an operation on an object is an access right.

2) A network operating system is loosely coupled software on loosely coupled hardware system.

3) A threat is an attempt to break security and attack is potential for a security violation.

4) A physical memory divided into fixed sized blocks is called as page.

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

   i) Critical Section Problem.

   ii) Process State.

B) Answer the following :   **6**

   i) What do you mean by swapping ?

   ii) What do you mean by preemptive algorithm ?

3. Answer the following :

   A) What do you mean by Deadlock ? Discuss deadlock characterization in detail. **7**

   B) What do you mean by system call ? Discuss components of Computer System. **7**

4. Answer the following :

   A) Define the term Process Synchronization. Explain in detail Producer-Consumer problem. **7**

   B) Enlist various file operations. Discuss First Come First Serve Disk scheduling method with suitable example. **7**

5. Answer the following :

   A) Define the term Multi-Programmed System. Explain in detail various types of scheduler in detail. **7**

   B) What do you mean by Demand paging ? Explain in detail steps in involved in handling page fault. **7**

6. Answer the following :

   A) Define the term Cooperative Process. Explain in detail how inter-process communication will be carried. **7**

   B) Calculate the total number of page fault using Most Recently Used (MRU) page replacement on following reference string having maximum 03 frames. **7**

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

7. Answer the following :

   A) What do you mean by Operating System ? Discuss in detail vital role of Operating System as being resource allocator. **7**

   B) What are the various CPU Scheduling Criteria ? Discuss working of Shortest Job First algorithm using following data : **7**

P_NAME	P_Burst Time
ABC	19
XYZ	13
PQR	15
LMN	11
STU	18

   _____

Seat No.	

M.C.A. (Semester – II) Examination, 2015
COMPUTER SCIENCE (CGPA)
Software Engineering (New)

Day and Date : Friday, 27-11-2015　　　　　　　　　　　　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 worst type of coupling is

      A) Data coupling 　　　　　　　B) Control coupling

      C) Stamp coupling 　　　　　　D) Content coupling

   2) System analysis and design phase of Software Development Life Cycle (SDLC) includes which of the following ?

      A) Parallel run 　　　　　　　B) Sizing

      C) Specification Freeze 　　　D) All of above

   3) Which of the following is not an attribute of software engineering ?

      A) Efficiency 　　　　　　　　B) Scalability

      C) Dependability 　　　　　　D) Usability

   4) Prototyping aims at

      A) End user understanding and approval

      B) Program logic

      C) Planning of dataflow organisation

      D) None of these

   5) What is Cyclomatic complexity ?

      A) Black box testing 　　　　B) White box testing

      C) Yellow box testing 　　　　D) Green box testing

6) How many feasibility studies is conducted in Requirement Analysis ?

   A) Two   B) Three

   C) Four   D) Five

7) As the reliability increases, failure intensity

   A) Decreases   B) Increases

   C) No effect   D) None of the above

8) Which of the items listed below is not one of the software engineering layers ?

   A) Process   B) Manufacturing

   C) Methods   D) Tools

9) Which tool is use for structured designing ?

   A) Program flow chart   B) Structure chart

   C) Data-flow diagram   D) Module

10) A step by step instruction used to solve a problem is known as

   A) Sequential structure   B) A list

   C) A plan   D) An algorithm

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

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

2) _____ software development model is most suited to a system where all the requirements are known at the start of a project and remain stable through out the project.

3) In the Analysis phase, the development of the _____ occurs, which is a clear statement of the goals and objectives of the project.

4) In an _____ Model the first increment is often core product.

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

   i) Software process

   ii) Software Myths.

B) Answer the following :   **6**

   i) Explain software characteristics.

   ii) Explain some of the limitations of testing.

3. Answer the following : **14**

   A) Why is SRS also known as the black box specification of system ? Explain.

   B) Differentiate between object oriented and function oriented design.

4. Answer the following : **14**

   A) Design a GUI form for providing student feedback for teaching faculty and infrastructure facilities of the institute.

   B) Discuss the importance of Object Oriented analysis, design and testing.

5. Answer the following : **14**

   A) What is documentation ? Explain the types of documentation.

   B) What are the objectives of software design ? How do we transform an informal design to a detailed design ?

6. Answer the following : **14**

   A) Describe the determinants for software quality and organizational effectiveness.

   B) Explain the steps to create the behavioural Model.

7. Answer the following : **14**

   A) Describe the dimensions of the design model with neat diagram.

   B) Explain various software Testing Strategies.

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Seat No.

M.C.A. I (Semester – II) (Computer Science) Examination, 2015
(Old-CGPA)
NUMERICAL TECHNIQUES

Day and Date : Saturday, 21-11-2015   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) Newton-Raphson iteration formula for finding $\sqrt[3]{c}$, where c > 0 is

     a) $x_{n+1} = \dfrac{2x_n^3 + 3\sqrt{c}}{3x_n^2}$ b) $x_{n+1} = \dfrac{2x_n^3 - 3\sqrt{c}}{3x_n^2}$

     c) $x_{n+1} = \dfrac{2x_n^3 + c}{3x_n^2}$ d) $x_{n+1} = \dfrac{2x_n^3 - c}{3x_n}$

   ii) For a two equation system

     $a_{11}x_1 + a_{12}x_2 = b_1$

     $a_{21}x_1 + a_{22}x_2 = b_2$

     a sufficient condition for convergence of the Gauss-Seidel iteration process is

     a) $|a_{12}a_{21}| = |a_{11}a_{22}|$ b) $|a_{12}a_{21}| > |a_{11}a_{22}|$

     c) $|a_{12}a_{21}| < |a_{11}a_{22}|$ d) $|a_{11}| + |a_{22}| < |a_{12}| + |a_{22}|$

iii) The smallest degree of the polynomial that interpolates the data

x	:	−2	−1	0	1	2	3
f(x)	:	−58	−21	−12	−13	−6	27

    a) 3   b) 4   c) 5   d) 6

iv) The trapezoidal, Simpson's 1/3rd and Simpson's 3/8th rules are exact for polynomials of order
    a) 1, 2, 3 respectively   b) 1, 3, 3 respectively
    c) 1, 3, 4 respectively   d) 1, 3, 5 respectively

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

    a) $\nabla^n f(x) = \sum\limits_{r=0}^{n} {}^n C_r\, f(x - rh)$ b) $\nabla^n f(x) = \sum\limits_{r=0}^{n} (-1)^{n-r}\, f(x - rh)$

    c) $\nabla^n f(x) = \sum\limits_{r=0}^{n} (-1)^{n-r}\, {}^n C_r\, f(x - rh)$ d) None of these

vi) If f(x, y) and $\dfrac{\partial f}{\partial y}$ are continuous for all (x, y) in the rectangle R and

    bounded, $|f| \le k \left| \dfrac{\partial f}{\partial y} \right| \le M$ for all $(x, y) \in R$ then the initial value problem

    has at least one solution y (x), this is
    a) Uniqueness theorem for initial value problem
    b) Existence theorem for initial value problem
    c) Greens theorem
    d) None of these

vii) Given initial problem $y' = \dfrac{dy}{dx} = f(x, y)$, where $y(x_0) = y_0$. In Runge-Kutta method

    a) $k_3 = hf(x_n + h, y_n + k_2)$ b) $k_3 = hf(x_n, y_n)$

    c) $k_3 = hf\left(x_n + \dfrac{h}{2}, y_n + \dfrac{k_2}{2} \right)$ d) None of these

viii) If in a simplex table the relative cost $Z_j - C_j$ is zero for a non-basic variable, then there exists an alternate optimal solution, provided
   a) It is starting simplex table
   b) It can be any simplex table
   c) It is optimal simplex table
   d) None of these

ix) The first approximation of a root of $x^3 + 3x - 1 = 0$ by Newton-Raphson method taking $x_0 = 0$ is
   a) 0.3
   b) 0.32
   c) 0.33
   d) 0.66

x) Which of the following states "If f(x) is three times differentiable and f', f'' are not zero at a solution s of f(x) = 0, then x_0 sufficiently close to s" ?
   a) Newton's method is of first order
   b) Newton's method is of second order
   c) Newton's method is of third order
   d) None of these

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

   i) As soon as a new value of a variable is found by iteration, it is used immediately in the following equations, this method is called _____

   ii) If f(x) is a polynomial of degree n in x then n^{th} difference of this polynomial is _____

   iii) Degrees of precision of Simpson's one third rule for numerical integration is _____

   iv) Dual simplex method is applicable if _____

2. A) Write short notes on the following. **8**
   i) Gauss elimination method
   ii) Dual simplex method

   B) i) If 2/3 is approximated to 0.667 find the absolute, relative and percentage errors. **3**

   ii) Find a real root of the equation cosx–1.3x = 0 correct to five decimal places using bisection method in five stages. **3**

3. A) Use Newton Raphson method to derive, an iterative formulae for finding the Kth root of a positive number and hence find fourth root of 22. **7**

   B) Solve the following system of equations by gauss seidel method to obtain the final solution correct to three places of decimals.

   $x_1 + x_2 + 54x_3 = 110,$

   $27x_1 + 6x_2 - x_3 = 85,$

   $6x_1 + 15x_2 + 2x_3 = 72$ **7**

4. A) State and prove Lagrange's Interpolation formula for unequal intervals. **7**

   B) Find the interpolating polynomial f(x) satisfying f (0) = 0, f (2) = 4, f (4) = 56, f (6) = 204, f (8) = 496, f(10) = 980 and hence find f (3), f (5) and f(7). **7**

5. A) Use Simpson's 1/3rd rule with seven equidistant ordinates to evaluate $\int_{2}^{8} \dfrac{dx}{\log_{10} x}$. **7**

   B) Find f′ (3), f″ (7) and f‴ (12) form the following data. **7**

x	2	4	5	6	8	10
y	10	96	196	350	868	1746

6. A) Use Fourth order Runge-Kutta method to solve $\dfrac{dy}{dx} = 3x + \dfrac{y}{2}, y(0) = 1$ at x = 0.2 by taking h = 0.2. **7**

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

x	0	0.2	0.4	0.6
y	0	0.02	0.0795	0.1762

   Compute y at x = 0.8 by applying Milne's method. **7**

7. A) Use the Simplex method to Maximize Z = 2x + 4y

   subject to the constraints,
   $$3x + y \le 22,$$
   $$2x + 3y \le 24,$$
   $$x \ge 0, y \ge 0.$$
   7

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

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

   Subject to $x_1 + 4x_2 + 2x_3 \ge 5$ **7**
   $$3x_1 + x_2 + 2x_3 \ge 4$$
   $$x_1, x_2, x_3 \ge 0.$$

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Seat
No.

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

Day and Date : Monday, 16-11-2015   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) _____ is a main problem of audio and video on demand.
       a) Jitter   b) Random early detection
       c) Buffering   d) Overprovisioning
    2) In _____ sequence of redundant bits are added at the end of data
       unit for detecting the errors.
       a) Parity check   b) CRC   c) Hamming code   d) Checksum
    3) _____ are fixed-content documents that are created and stored in a
       server.
       a) Web documents   b) Dynamic documents
       c) Static documents   d) None of the mentioned
    4) The _____ domain is used to map an address to a name.
       a) Inverse   b) Country
       c) Generic   d) None of the mentioned
    5) Sink tree will generate in _____ routing algorithm.
       a) Flooding   b) Distance vector
       c) Shortest path   d) Optimality principle
    6) Based on the interprocessor distance which of the following is in smaller
       to larger distance ?
       a) PAN, LAN,MAN,WAN   b) LAN, PAN,MAN,WAN
       c) LAN, PAN,WAN, MAN   d) PAN, LAN,WAN, MAN
    7) _____ is a reliable connection oriented protocol.
       a) TCP   b) IP
       c) UDP   d) None of the mentioned

P.T.O.

8) In cyclic redundancy checking, what is the CRC ?

    a) The quotient   b) The dividend

    c) The divisor   d) None of the mentioned

9) The network layer in the Internet is designed as a _____ network.

    a) Datagram   b) Virtual circuit

    c) Circuit switched   d) None of the mentioned

10) _____ farming method is not suitable for Unicode characters.

    a) Character count   b) Bit stuffing

    c) Byte stuffing   d) Physical layer code violation

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

1) Dotted decimal notation of 1000001 10000011 00011011 11111111 is _____

2) Sink tree is generated in _____ routing algorithm.

3) _____ is a connectionless, unreliable transport protocol.

4) Class _____ addresses were designed for multicasting.

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

1) Piggy backing and its usefulness.

2) Connection Oriented services.

B) Find the first address, last address, and number of addresses from the following address block.   **6**

1) 205.16.37.39/28

2) 17.12.40.0/26

3. A) What is E-mail ? Which are the various types user agents ? Which are the various services of user agents ?   **8**

B) Give the dataword 1010011110 and the divisor 10111,

1) Show the generation of the code word at the sender site (using binary division).

2) Show the checking of the codeword at the receiver site (assume no error).   **6**

4. A) Consider the following network with the indicated link cost. Use Dijkstra's shortest-path algorithm to compute the shortest paths from A to H and J. **8**
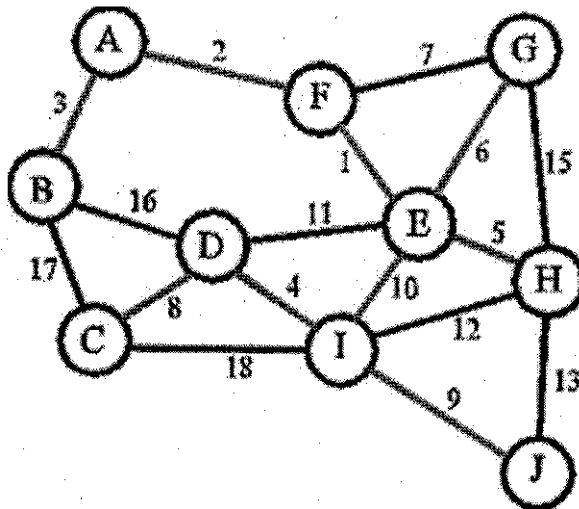
   B) Explain the architecture of WWW. **6**

5. A) The following is a dump of a TCP header in hexadecimal format.
   05320017 00000001 00000000 5OO207FF 00000000
   a) What is the source port number ?
   b) What is the destination port number ?
   c) What is the sequence number ?
   d) What is the acknowledgment number ?
   e) What is the length of the header ?
   f) What is the type of the segment ?
   g) What is the window size ? **8**
   B) Explain Selective Repeat-ARQ protocol **6**

6. A) Discuss IPV6 architecture and issues. **8**
   B) Explain Internet Architecture in detail. **6**

7. A) Explain UDP format in detail. Also explain uses of UDP. **8**
   B) The following character encoding is used in a data link protocol :
   A : 01000111; B : 11100011; FLAG : 01111110; ESC : 11100000
   Show the bit sequence transmitted (in binary) for the four-character frame :
   AB ESC FLAG

   When each of the following framing methods are used :
   a) Character count.
   b) Flag bytes with byte stuffing.
   c) Starting and ending flag bytes, with bit stuffing. **6**

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Seat
No.

M.C.A. – II (Semester – III) (CGPA) Examination, 2015
COMPUTER SCIENCE (New)
Java Programming

Day and Date : Wednesday, 18-11-2015   Total Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

   1) Which of the following is the method of object class ?
      a) toString()   b) notify()   c) equals()   d) All of these

   2) Which of the following is not predefined exception ?
      a) ArithmeticException   b) PointerNullException
      c) IndexOutOfBoundsException   d) SecurityException

   3) The execution of thread begins from _____ method.
      a) start()   b) stop()   c) init()   d) paint()

   4) _____ layout manager arranges the component in rows and
      columns.
      a) FlowLayout   b) GridLayout   c) CardLayout   d) None

   5) Which of the following method is not defined by the Applet class ?
      a) init()   b) start()   c) update()   d) None of these

   6) A new thread can be created by extending the _____ class.
      a) Runnable   b) Thread
      c) Both a) and b)   d) None of these

   7) By default _____ package is imported in your program.
      a) java.io   b) java.default   c) java.lang   d) java.util.

   8) Wrapper classes are used for _____
      a) Converting one data type to another
      b) Converting one class to another
      c) Converting primitive values to objects
      d) None of these

9) Entering text in the text field throws _____ event.

   a) ActionEvent   b) KeyEvent   c) KeyTyped   d) All of these

10) The _____ method of the ActionEvent class is used to get the object which caused the event.

   a) getActionCommand()   b) getObject()

   c) getSource()   d) None of these

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

   1) An interface can extend another interface.
   2) One try block can have multiple catch statement.
   3) Applet can call init method multiple times during its life cycle.
   4) MySQL connector is a type-II driver.

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

   i) StringTokenizer
   ii) Resultset interface.

B) Attempt the following :   **6**

   i) What is abstract class ? State its properties.
   ii) Explain the inner classes in Java.

3. A) Explain steps in creation and implementation of package with example.   **7**

B) What is synchronization ? Explain with example.   **7**

4. A) Explain parameter passing in applet with example.   **7**

B) Explain inter-thread communication with example.   **7**

5. A) Explain different types of drivers in jdbc.   **7**

B) Write a program to copy contents of one text file to another text file using command line arguments.   **7**

6. A) What is difference between statement and PreparedStatement interface ? Explain with example.   **7**

B) What is persistence ? Explain with example.   **7**

7. A) What is event delegation model ? Explain sources and listeners.   **7**

B) Create a windows application to insert and display student information.   **7**

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Seat
No.

M.C.A. – II (Semester – III) Examination, 2015
COMPUTER SCIENCE (New) (CGPA)
System Software

Day and Date : Friday, 20-11-2015   Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions : 1) *Question Number **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 alternative :   **10**

    1) What are the activities of pass-I of multi-pass assembler ?

       a) Assign addresses to all the statements

       b) Saves addresses assigned to be used in Pass-2

       c) Defines the symbols in the symbol table

       d) All of these

    2) Which of the following statement is not used in an assembly program ?

       a) Interactive   b) Imperative

       c) Directive   d) Declarative

    3) Code generation is performed in which part of compilation process.

       a) Analysis phase   b) Synthesis phase

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

    4) Translator used in low level programming language is known as

       a) Compiler   b) Interpreter

       c) Assembler   d) Linker

    5) The expansion of nested macro calls follows

       a) FIFO rule   b) FCFS rule

       c) LIFO rule   d) All of these

6) In a two-pass assembler, the task of the Pass II is to

    a) Separates the symbols, mnemonics, operands

    b) Build the symbol table

    c) Construct intermediate code

    d) Synthesize the target program

7) Relocatable programs

    a) Cannot be used with fixed partitions

    b) Can be loaded almost anywhere in memory

    c) Do not need a linker

    d) Can be loaded only at one specific location

8) Which of the following are language processors ?

    a) Compiler   b) Assembler

    c) Interpreter   d) All of these

9) Java compiler follows which of the following compiler design option.

    a) Interpreter   b) Compiler-compiler

    c) P-code   d) All of these

10) Macro assembler can perform

    a) Translation   b) Macro-expansion

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

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

    1) Updating the location counter is performed in second pass.

    2) When storage space has to be minimized an interpreter is preferred over a compiler ?

    3) The output of the lexical analyzer is string of characters.

    4) Synthesis phase of the compiler does syntax analysis.

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

    a) YACC

    b) Absolute loader

    c) Pentium Pro architecture.

B) Differentiate CISC and RISC computers.   **6**

3. Answer the following : **14**

   A) Define and explain data structure used in Assembler.

   B) Explain different types Assembler in detail.

4. Answer the following : **14**

   A) What is loader and linker ? Explain various loader design options.

   B) What is lexical analysis ? Explain various tasks performed by scanner.

5. Answer the following : **14**

   A) What is macro preprocessing ? Design algorithm for one pass macro preprocessor.

   B) Explain the following :
      I) Macro assembler
      II) Nested macros.

6. Answer the following : **14**

   A) Explain various phases of compilation process.

   B) Explain p-code compilers. Find out its advantages and disadvantages.

7. Answer the following : **14**

   A) What is system software ? Differentiate system software with application software.

   B) Explain different statements types of assembly language.

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SLR-G – 24

M.C.A. – II (Semester – III) Examination, 2015
COMPUTER SCIENCE
DBMS (New CGPA)

Day and Date : Monday, 23-11-2015   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**

    i) The process of minimizing the differences between entities by identifying their common characteristics known as _____
       a) Specialization   b) Generalization
       c) Aggregation   d) None of these

    ii) A NULL means _____
       a) Unknown   b) Known
       c) Known partially   d) None of these

    iii) The logical tables of data extracted from existing tables known as _____
       a) Records   b) Views
       c) Virtual Tables   d) Relation

    iv) The process of Normalization is _____
       a) Reversible   b) Irreversible
       c) Iterative   d) Recursive

    v) Tables 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

P.T.O.

vii) Shadow paging is used for _____

    a) Writing same item at same location

    b) Writing same item at different locations

    c) Creating shadows

    d) Writing different items at different locations

viii) BLOB stands for _____

    a) Binary Large Object Base   b) Binary List Object

    c) Binary List Object Base   d) Binary Large Object

ix) A phase during which all locks are released is _____

    a) Growing Phase   b) Shrinking Phase

    c) Aborted Phase   d) Committed Phase

x) What is the cardinality of table with 50 rows and 5 columns ?

    a) 50   b) 5   c) 250   d) None of these

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

   i) CREATE and DROP are DDL commands.

   ii) Every view serializable schedule is conflict serializable too.

   iii) Every table must have at least one primary key or foreign key.

   iv) 4th Normal form removes multi-valued dependency.

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

   i) Limitations of file processing system.

   ii) Types of distributed databases.

B) Answer the following.   **6**

   i) What are the advantages of optimization in query processing ?

   ii) Describe the checkpoint technique for recovery.

3. Answer the following.

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

   B) An insurance agent sells insurance policies to clients. Policies can be of different types such as vehicle insurance, life insurance, Accident insurance etc. The agent collects monthly premiums on the policies in the form of cheques of local banks. Draw an ER diagram for above system with extended ER notations if necessary. **7**

4. Answer the following.

   A) What is functional dependency ? Explain its types in detail with example. **7**

   B) What is relational calculus ? Explain its types with example of each. **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) Explain conflict serializability and view serializability with example. **7**

   B) Discuss about differed database updates and immediate database updates with example of each. **7**

7. Answer the following.

   A) What is relational algebra ? Explain following operations of relational Algebra with example : select, project, cross product, union and division. **7**

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

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Seat No.

M.C.A. – II (Semester – III) (CGPA) (New) Examination, 2015
COMPUTER SCIENCE
Computer Oriented Statistics

Day and Date : Thursday, 26-11-2015   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) The number of observations belonging to a class is called
      a) class-frequency   b) cumulative-frequency
      c) class width   d) none of these

   ii) _____ is a measure of central tendency.
      a) Standard deviation   b) Arithmetic mean
      c) Coefficient of variation   d) None of these

   iii) For a symmetric distribution
      a) mean<median<mode   b) mean>median>mode
      c) median<mean<mode   d) none of these

   iv) If A and B are mutually exclusive events then $P(A \cap B) =$
      a) 1   b) 0.5   c) 0   d) none of these

   v) For a binomial distribution
      a) Mean < Variance   b) Mean > Variance
      c) Mean = Variance   d) Both a) and c)

   vi) If a discrete random variable X takes on three values 0, 1, 3 with
       probabilities 0. 1, 0.5 and 0.4 respectively then the mean of X is
      a) 1   b) 1.5   c) 1.7   d) 1.33

   vii) Mean of the exponential distribution with parameter 100 is
      a) 100   b) 10   c) 1   d) 0.01

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 positive, 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 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) If $P(B) = 0.4$ and $P(A \cap B) = 0.2$ then $P(A/B)$ 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 100 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 three heads is _____.

2. A) i) What do you mean by dispersion ? State the types of measures of dispersion.   **4**

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

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

    ii) If the probability mass function of a r.v.X is :   **3**

$$P(X = x) = \frac{x^2}{14}, X = 0, 1, 2, 3 \text{ then find P } (X + 0.4 > 1.4)$$

3. A) A bag contains 4 red and 8 green balls. Two balls are drawn one by one without replacement from the bag.

   Find the probability of drawing
   i) both green balls
   ii) second red ball. **7**

   B) The probability that a student is accepted to a prestigious college is 0.3. If 5 students from the same school apply, what is the probability that at most 2 are accepted ? **7**

4. A) Calculate coefficient of variation for the following data. **7**

Classes	:	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
Frequencies	:	10	15	20	30	20	15

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

5. A) Give the procedure of generating random observations from uniform distribution over (10, 100). **7**

   B) If a r.v.X follows Poisson distribution with mean 2, find $P(X \le 3)$. **7**

6. A) Fit an exponential curve of the form $Y = aX^b$ to the following data : **7**

X	:	1	2	3	4	5	6
Y	:	10	12.31	13.9	15.16	16.21	17.11

   Estimate Y when X = 3.5.

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

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

   $\sum X = 628 \ \sum Y = 550 \ \sum X^2 = 40376 \ \sum Y^2 = 30812 \ \sum XY = 33969$

   Find a line of regression of Y on X. **7**

   B) Define exponential distribution. If life time of a certain kind of electric unit follows an exponential distribution with mean life time 500 hours, find the probability that the life time of the electric unit is at least 400 hours. **7**

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Seat No.

M.C.A. – II (Semester – III) Examination, 2015
COMPUTER SCIENCE (Old – CGPA)
Computer Communication Network

Day and Date : Monday, 16-11-2015   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) Computer Network is

       A) Collection of Hardware component and computers

       B) Interconnected by communication class

       C) Sharing resource and information

       D) All of the above

    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) How many layers does OSI reference model have ?

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

    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

5) IPV4 address is

   A) 8 bits   B) 16 bits   C) 32 bits   D) 64 bits

6) DNS is the abbreviation of

   A) Dynamic Name System   B) Dynamic Network System

   C) Domain Name System   D) Domain Network System

7) What is meaning of bandwidth in network ?

   A) Transmission capacity of communication channels

   B) Connected component in the network

   C) Class of IP used in network

   D) None of the above

8) ADSL is the abbreviation of

   A) Asymmetric Dual Subscribe Line

   B) Asymmetric Digital System Line

   C) Asymmetric Dual System Line

   D) Asymmetric Digital Subscriber Line

9) What is the bridge in network ?

   A) To connect LAN's   B) To separate LAN's

   C) To control network speed   D) All of the above

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) If a computer on the network shares resources for others to use, it is called _____

   2) SMTP is a protocol used in _____

   3) Terminators are used in _____ topology.

   4) In _____ topology, if a computer's network cable is broken, whole network goes down.

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

   i) Distance vector routing algorithm.

   ii) Remote procedure call.

   B) For the network structure given using Dijkstra's algorithm find the shortest path from node A to node D show all steps **6**
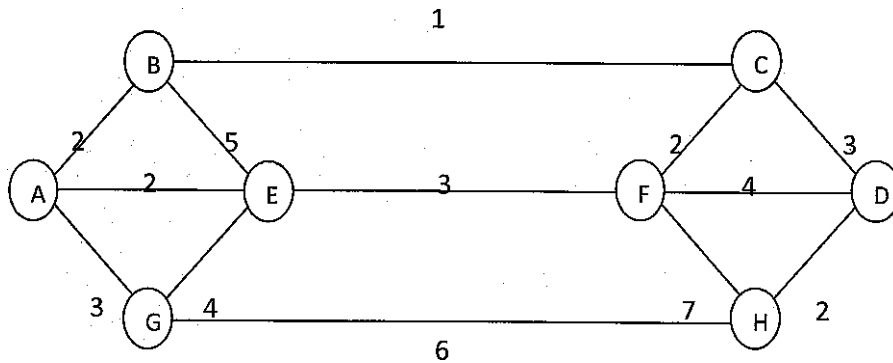
3. A) What are the different congestion prevention policies ? Explain them. **7**

   B) List the IEEE standards for LANs and their brief specifications. **7**

4. A) Discuss resource reservation protocol. **7**

   B) What is the FDDI ? Explain token ring protocols. **7**

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

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

6. A) Explain RSA public key cryptosystem with an example. **7**

   B) Discuss Simple Mail Transfer Protocol. **7**

7. A) How do HTTP server and CGI script communicates ? **7**

   B) Explain terms RPC, fundamental cryptographic principles. **7**

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Seat
No.

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

Day and Date : Wednesday, 18-11-2015   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 is a not characteristic of Java programming language ?

        a) Robust   b) Procedural

        c) Distributed   d) Multithreaded

    2) Which will legally declare, construct and initialize an array ?

        a) int [] myList = {"1", "2", "3"};   b) int [] myList = (5, 8, 2) ;

        c) int myList [] [] = {4, 9, 7, 0};   d) int myList [] = {4, 3, 7};

    3) What is the numerical range of char ?

        a) −128 to 127   b) −(215) to (215) − 1

        c) 0 to 32767   d) 0 to 65535

    4) What does the following line of code mean ?

            double table [ ];

        a) table is a variable to refers to a real number

        b) table is a variable that refers to two numbers

        c) it is not legal Java code

        d) table is a variable that refers to an array

5) Given the following piece of code :

```
class MyThread extends Thread {
        public String text;
        public void run ( )  {
                System.out.print(text) ;
        }
    }
    public class Test {
        public static void main (String args []) {
                MyThread t1 = new MyThread (); t1.text = "one";
                MyThread t2 = new MyThread (); t2.text = "two";
                t1.start();
                t2.start();
                System.out.print("three");
        }
    }
```

Which of the following statements is true ?

a) If you execute this program, the result is always one two three.

b) If you execute this program, the result is always three one two.

c) The result of this program is undetermined.

d) Compilation will fail.

6) _____ method of Applet is called whenever execution of applet needs to be suspended.

a) paint( )   b) start( )   c) stop( )   d) init( )

7) _____ class is used to encapsulate a primitive type value in an object.

a) Wrapper   b) int   c) char   d) None of these

8) A new thread can be created by implementing interface _____

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

9) _____ exception occurs if we attempt to access an element in the array whose index is out of bounds.

a) NumberFormatException

b) ArithmeticException

c) ArrayIndexOutOfBoundsException

d) None of these

10) _____ is a container that stores related classes and interfaces.

a) Panel   b) Applet   c) Frame   d) Package

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

1) In Java, garbage collection is performed automatically.

2) A static method cannot refer to keywords this or super.

3) A final method can be overridden.

4) Abstract class cannot be inherited by another class.

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

i) Overloading methods

ii) 'Super' keyword.

B) Answer the following :   **6**

i) Describe between suspend( ) and sleep( ) method with respect to thread.

ii) State various features of Java.

3. Answer the following :

A) With suitable example explain how to create a menu and how to handle the events generated by menu and menuitems.   **8**

B) Describe various types of selection statements in Java.   **6**

4. Answer the following :

A) Describe how combo-box is put on a frame. Explain how event generated by a checkbox is handled.   **6**

B) State the purpose of the following JDBC classes and interface :   **8**

i) Driver Manager   ii) Connection

iii) Statement   iv) Result set.

5. Answer the following :

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

   B) Write a program to define a class Test containing data members sub1, sub 2. Write a method to add marks of sub1 and sub 2 and display it. **8**

6. Answer the following :

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

   B) Write a program using 'while' statement to compute the sum of the first N terms in the following series. **8**

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

7. Answer the following :

   A) Explain with suitable example how to create a new thread using the class Thread. **6**

   B) With suitable example explain how to use a try-catch- finally framework to avoid the crashing of a program. **8**

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**Seat
No.**

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

Day and Date : Friday, 20-11-2015   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) The reason for software bugs and failures is due to
        A) Software Companies   B) Software Developers
        C) Both a and b   D) Non Software Developers

    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

P.T.O.

6) The Incremental Model is a result of combination of elements of which two models ?
   A) Build and FIX Model and Waterfall Model
   B) Linear Model and RAD Model
   C) Linear Model and Prototyping Model
   D) Waterfall Model and RAD Model

7) Which model in system modelling depicts the dynamic behaviour of the system ?
   A) Context Model
   B) Behavioral Model
   C) Data Model
   D) Object Model

8) Which perspective in system modelling shows the system or data architecture ?
   A) Structural perspective
   B) Behavioral perspective
   C) External perspective
   D) None

9) Which of the following diagram is not supported by UML considering Data-driven modeling ?
   A) Activity
   B) Data Flow Diagram (DFD)
   C) State Chart
   D) Component

10) Which of the following is not a direct measure of SE process ?
   A) Efficiency
   B) Cost
   C) Effort Applied
   D) All of the mentioned

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

1) Company has latest computers and state-of-the-art software tools, so we shouldn't worry about the quality of the product.

2) Spiral Model has user involvement in all its phases.

3) Tests are automated in Extreme Programming.

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) Project Team Skills and Roles.

2) Categories of Analysts.

B) Answer the following. **6**

   1) Explain the Two Planning Steps of planning phase.

   2) Explain the Three Analysis Steps of Analysis phase.

3. Answer the following. **14**

   A) Explain the evolution of software.

   B) What are the causes for software crises ? Explain.

4. Answer the following. **14**

   A) Discuss the different types of the requirements that are needed during the system design.

   B) Define DFD. Draw the DFD for a Banking system.

5. Answer the following. **14**

   A) Identifying the factors that affect the quality and classify them in categories of "Responsibility".

   B) What is object oriented systems development methodology ? Compare and contrast with structured design and object oriented design.

6. Answer the following. **14**

   A) What is software testing ? Explain its objectives.

   B) Describe the white-box testing method and explain how it differs from black-box testing method.

7. Answer the following. **14**

   A) What is object oriented analysis (OOA) ? Explain.

   B) Discuss the Bouch's OOA with a suitable example.

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Seat
No.

M.C.A. – II (Semester – III) (Computer Science) Examination, 2015
(Old – CGPA)
DBMS

Day and Date : Monday, 23-11-2015 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) In an Entity Relationship Diagram "Ellipses" represents _____

      a) Attributes b) Weak entity set

      c) Relationship sets d) Multivalued attributes

   2) Disadvantages of File systems to store data is _____

      a) Data redundancy and inconsistency

      b) Difficulty in accessing data

      c) Data isolation

      d) All of the above

   3) A Relation is a _____

      a) Subset of a Cartesian product of a list of attributes

      b) Subset of a Cartesian product of a list of domains

      c) Subset of a Cartesian product of a list of tuple

      d) Subset of a Cartesian product of a list of relations

   4) Which of the following terms does refer to the correctness and completeness of the data in a database ?

      a) Data security b) Data constraint

      c) Data independence d) Data integrity

5) Which SQL Query is use to remove a table and all its data from the database ?

    a) Create Table   b) Alter Table

    c) Drop Table   d) None of these

6) A functional dependency between two or more nonkey attributes is called
   _____

    a) Transitive dependency

    b) Partial transitive dependency

    c) Functional dependency

    d) Partial functional dependency

7) Cartesian product in relational algebra is _____

    a) A Unary operator

    b) A Binary operator

    c) A Ternary operator

    d) Not defined

8) An entity set that does not have sufficient attributes to form a primary
   key is a _____

    a) Strong entity set   b) Weak entity set

    c) Simple entity set   d) Primary entity set

9) In order to undo the work of transaction after last commit which one should
   be used ?

    a) View   b) Commit

    c) Rollback   d) Flashback

10) Which of the following is the process of selecting the data storage and data
    access characteristics of the database ?

    a) Logical database design

    b) Physical database design

    c) Testing and performance tuning

    d) Evaluation and selecting

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

1) A database trigger is a code or programs that automatically execute with response to some event on a table or view in a database.

2) Data Integrity defines the accuracy and consistency of data stored in a database.

3) MINUS operator is used to combine the results of two tables, and it eliminates duplicate rows from the tables.

4) Key to represent relationship between tables is called primary key.

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

   i) View

   ii) Equi join.

   B) Answer the following : **6**

   i) What are the responsibilities of a DBA ?

   ii) Explain the terms briefly : attribute, domain, entity.

3. Answer the following :

   a) Draw and explain the three level architecture of the database system : **7**

   b) A company database needs to store information about employees (identified by ssn, with salary and phone as attributes), departments (identified by dno, with dname and budget as attributes), and children of employees (with name and age as attributes). Employees work in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company. Draw an ER diagram that captures this information. **7**

4. Answer the following :

   a) Consider the following relations :

   Student(snum: integer, sname: string, major: string, level: string, age: integer)

   Class(name: string, meets at: string, room: string, fid: integer)

   Enrolled(snum: integer, cname: string)

   Faculty(fid: integer, fname: string, deptid: integer)

   The meaning of these relations is straight forward; for example,
   Enrolled has one record per student-class pair such that the student is enrolled
   in the class. Write the following queries in SQL. No duplicates should be printed
   in any of the answers. **6**

      i) Find the names of all Juniors(level = JR) who are enrolled in a class
        taught by 'John' Teacher.

     ii) Find the names of all classes that meet in room R128.

   b) Define the terms : **8**

   atomicity, consistency, isolation, durability.

5. Answer the following :

   a) 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**

   b) Describe 2NF with suitable example. **8**

6. Answer the following :

   a) Discuss the concurrency control mechanism in detail using suitable example. **7**

   b) Explain the architecture of Client-Server databases in detail. **7**

7. Answer the following :

   a) Discuss the concept of Query Processing. What is a parser ? Why it is used ? **7**

   b) Explain Abstract Data Types and nested tables. **7**

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Seat No.

**M.C.A. – II (Semester – III) (Computer Science) Examination, 2015
(Old CGPA)
COMPUTER ORIENTED STATISTICS**

Day and Date : Thursday, 26-11-2015   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) The observation which occurs most frequently in a sample is the
        a) Median   b) Mean deviation
        c) Standard deviation   d) Mode

    2) Find the range of the group of numbers –10, –8, 1, 11, 19.
        a) 1   b) 2.6
        c) 24   d) 29

    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) When a die is rolled, the probability of getting a number greater than 4 is
        a) $\dfrac{1}{6}$ b) $\dfrac{1}{3}$ c) $\dfrac{1}{2}$ d) 1

    5) Suppose 60% of a large group of animals is infected with a particular disease. Let Y = the number of non-infected animals in a sample of size 5. The distribution of Y is
        a) binomial with n = 5 and p = 0.6
        b) binomial with n = 5 and p = 0.4
        c) binomial with n = 5 and p = 0.5
        d) Poisson with $\lambda = 0.6$

P.T.O.

6) Which shape describes a Poisson distribution ?

   a) Positively skewed   b) Negatively skewed

   c) Symmetrical   d) All of the above

7) Which of the following is NOT true regarding the normal distribution ?

   a) Mean, median and mode are all equal

   b) It has a single peak

   c) It is symmetrical

   d) The points of the curve meet the X-axis at $z = -3$ and $z = 3$

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) A student produces a correlation of +1.3. This is

   a) A high positive correlation   b) A significant correlation

   c) An impossible correlation   d) Only possible if N is large

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 used to determine an average annual percent increase.

2) Probability of impossible event is _____

3) Using Ogives _____ can be calculated graphically.

4) In a binomial experiment, the probability of a _____ remains constant.

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

   i) Explain the concept of geometric distribution with its applications.

   ii) Suppose coin is tossed 5 times, find the probability of getting at least 4 heads.

B) Answer the following :   **6**

   i) State Bayes theorem with usual notations.

   ii) Discuss the properties of correlation coefficient.

3. Answer the following : **14**

   A) Test scores for a class of 20 students are as follows :

      93, 84, 97, 98, 100, 78, 86, 100, 85, 92, 72, 55, 91, 90, 75, 94, 83, 60, 81, 95.

Test Scores	Frequency
91 – 100	
81 – 90	
71 – 80	
61 – 70	
51 – 60	

   a) Copy and complete the table shown at the left.

   b) Find the modal interval.

   c) Find the interval that contains the median.

   B) The provisional figures on the population by age group in Hong Kong as at 9/2001 are tabulated below. Draw a cumulative frequency polygon and determine the median age for the population.

Length (mm)	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44	45 – 49	50 – 54
Frequency	6	10	18	25	22	15	4

4. Answer the following : **14**

   A) State and prove the multiplicative theorem of probability. How is the result modified when the events are independent ?

   B) Calculate $P(B|A)$ if $P(A) = 0.75$, $P(B) = 0.60$ and $P(A|B) = 0.90$.

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	0.2	0.2	0.2	k

   Find the value of k and $P(|X| < 2)$.

B) A typist in a company commits the following number of mistakes per page in typing 432 pages :

Mistakes per page :	0	1	2	3	4
No. of pages :	223	142	48	15	4

Fit a Poisson distribution and test the goodness of fit.

6. Answer the following : **14**

A) Write an algorithm to generate exponential random variable and hence generate 10 exponential random variables with parameters $\theta = 3$.

B) If the height of 300 students is normally distributed with mean 68 inches and standard deviation 2 inches, how many students have height ?
   i) Greater than 72 inches,
   ii) Less than or equal to 60 inches and
   iii) Between 65 and 71 inches inclusive,
   Assume the measurements to be recorded to the nearest inch.

7. Answer the following : **14**

A) Define rank correlation coefficient. When is it preferred instead of Karl Pearson's coefficient of correlation ?

B) Ten students obtained the following marks in Statistics (X) and Computer Science (Y) :

Student :	A	B	C	D	E	F	G	H	I	J
X :	92	89	86	87	83	71	77	63	53	50
Y :	86	83	77	91	68	52	85	82	57	57

Calculate the coefficient of correlation between the two series.

_____

M.C.A. (Part – II) (Semester – IV) (CGPA) Examination, 2015
COMPUTER SCIENCE
Finite Automata

Day and Date : Tuesday, 17-11-2015   Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions : i) *Question no.***1** *and Q.No.* **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) A language L is accepted by a finite automata if and only if it is
      a) context free   b) context sensitive
      c) recursive   d) right linear

   2) Regular expression a/b denotes the set
      a) {a}   b) {ε, a, b}   c) {a, b}   d) {ab, a}

   3) Context free grammer can be recognized by
      a) finite state automata   b) posts correspondence problem
      c) turing machine   d) push down automata

   4) A PDM behaves like a TM when the number of auxiliary memory it has
      a) 0   b) 1 or more   c) 2 or more   d) all of these

   5) Choose the correct statement
      a) All regular grammars are CFG
      b) All CSG are CFG
      c) CSG are most restricted grammar
      d) CSG and Unrestricted has equal powers

   6) Turing machine is more powerful than finite state machine because
      a) tape movement confined to one direction
      b) it has no finite state
      c) it has capability to remember arbitrarily long sequences of input symbol
      d) all of the above

P.T.O.

7) Which of the following problem is solvable ?

   a) Writing a universal turing machine

   b) Determining of an arbitrary turing machine is an universal turing machine

   c) Determining of a universal turing machine and some input will halt

   d) None of these

8) The logic of Pumping lemma is good example of

   a) the pigeon-hole principle

   b) devide and conquer method

   c) iteration

   d) recursion

9) Finite state machine can recognize

   a) any grammar

   b) any unambiguous grammar

   c) only CFG

   d) only regular grammar

10) Any string of treminals that can be generated by the following context free grammar

$s \rightarrow XY$

$X \rightarrow aX|bX|a$

$Y \rightarrow Ya|Yb|a$

   a) has atleast one 'b'

   b) should end with 'b'

   c) has no consecutives a's or b's

   d) has atleast two a's

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

   i) Finite state machine can recognize palindromes.

   ii) Power of DFSM and NDFSM are same.

   iii) Post's correspondence problem is solvable.

   iv) CFG grammar can be recognized by push-down automata.

2. A) Write short notes on the following. **8**
   i) Regular expression
   ii) Universal turing machine.

   B) Answer the following. **6**
   i) State and explain limitations of finite automata
   ii) Distinguish between DPDA and NPDA.

3. Answer the following.

   A) Define PDA. Design PDA that accepts the language generated by the CFG **7**

   $$S \rightarrow S + S \mid S * S \mid 8$$

   B) Explain the closure properties of context free languages with the help of suitable example. **7**

4. Answer the following.

   A) Consider the following ε-NFA **7**

States \ Σ	E	A	b	c
$\rightarrow$ p	ϕ	{p}	{q}	{r}
q	{p}	{q}	{r}	ϕ
* r	{q}	{r}	ϕ	{p}

   i) Compute the ε-closure of each state.
   ii) Give the string of length three or less accepted by automata.
   iii) Convert the automata to DFA.

   B) Prove that if L is a CFL and R is a regular language, then $L \cap R$ is a CFL. **7**

5. Answer the following.

   A) Using the following grammar

   $$s \rightarrow AS \mid SB \mid 0 \mid 1$$

   $$A \rightarrow AA \mid 0$$

   $$B \rightarrow BB \mid 1$$ **7**

   Use the CYK algorithum to determine whether the following string is in L(G)
   000000

   B) Design a turing machine which computes 2's comlement of a given binary number. **7**

6. Answer the following.

    A) Explain the recursive and recursively enumerable languages with the help of suitable example. **7**

    B) Prove that, the following language is non-regular using Pumping Lemma. **7**

    $L = \{0^{i^2} \mid i \text{ is an int eger}, i \geq 1\}$

7. Answer the following.

    A) Construct DFA accepting language represented by (0+1)*.00.(0+1)* **7**

    B) Define grammar. Construct CFG for the following language

    (with $n \geq 0, m \geq o, k \geq 0$) $L = \{a^n b^m c^k \mid n = m \text{ or } m \leq k\}$ **7**

    _____

M.C.A. – II (Semester – IV) Examination, 2015
COMPUTER SCIENCE (CGPA)
.NET

Day and Date : Thursday, 19-11-2015　　　　　　　　　　Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

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

　　i) The object that contains all the properties and methods for every ASP.NET page, that is built is

　　　　a) Page Object　　　　　　　　b) HTTPPage Object

　　　　c) WebPage Object　　　　　　d) System.Web.UI.Page

　　ii) You need to generate a public/private key pair for using in creating a shared assembly. Given the above scenario, which .NET SDK utility should be used ?

　　　　a) certmgr.exe　　b) gacutil.exe　　c) sn.exe　　　d) resgen.exe

　　iii) Which of the following languages is not included in the default ? .NET framework installation

　　　　a) C#　　　　　　　　　　　　b) VB.NET

　　　　c) JScript.NET　　　　　　　　d) VBScript.NET

　　iv) The unique ID that gets generated at the start of the Session is stored in

　　　　a) Client computer as a cookie

　　　　b) Server machine

　　　　c) Passed to and fro on each and every request and response

　　　　d) Both a and b are correct

　　v) The keyword 'int' maps to one of the following .NET types

　　　　a) System .Int 16　　　　　　　b) System .Int 32

　　　　c) System .Int 64　　　　　　　d) System .Int 128

   vi) A new server-side control can be created by implementing the class

      a) System.Web.WebControl

      b) System.Web.UI.WebControl

      c) System.Web.UI.WebControls.WebControl

      d) Any one of the above

   vii) A set of tables are maintained in a Dataset as

      a) TablesCollection object

      b) DataTableCollection object

      c) DataRowsCollection object

      d) TableRowCollection object

   viii) The method that need to be invoked on the DataAdapter control to load the generated dataset with data is

      a) Bind ()   b) Fill ()   c) FillData ( )   d) SetData ()

   ix) What method(s) must be used with the application object to ensure that only one process accesses a variable at a time ?

      a) Synchronize ()   b) Lock () and UnLock()

      c) Lock ()   d) Asynchronize ()

   x) The event handlers that can be included in the Global.asax file are

      a) Application Start and Session Start event handlers only

      b) Application End and Session End event handlers only

      c) Per-request and Non-deterministic event handlers only

      d) Application Start and End.

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

   i) C# supports multiple-inheritance.

   ii) Static method cannot be overridden.

   iii) Any ODBC-compliant database can be accessed through ASP.NET.

   iv) The following is a valid statement in ASP.NET <%@ Page Language = "C"%>.

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

   i) What is command line argument explain.

   ii) Define Boxing and Unboxing.

  B) Write steps create a winform application.   **6**

3. Answer the following : **14**

   A) Explain structure of .net framework.

   B) Describe web architecture model with a neat diagram.

4. Answer the following : **14**

   A) Explain the components of c#.

   B) Explain ASP.NET page life cycle.

5. Answer the following : **14**

   A) Define namespaces. Explain any two namespaces.

   B) Explain the use of COM⁺.

6. Answer the following : **14**

   A) Differentiate between client side and server side validation.

   B) Explain Navigation controls.

7. Answer the following : **14**

   A) Write steps to compile and execute a c# program with example.

   B) Explain structure and functions of .NET runtime.

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SLR-G – 33

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

Day and Date : Saturday, 21-11-2015   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) In UML diagram of a class

      a) State of object cannot be represented

      b) State is irrelevant

      c) State is represented as an attribute

      d) State is represented as a result of an operation

    2) An object is selected for modeling a system provided

      a) Its attributes are invariant during operation of the system

      b) Its attributes change during operation of the system

      c) It has numerous attributes

      d) It has no attributes relevant to the system

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

      a) Dependency   b) Assertion

      c) Association   d) Realization

    4) Objects may be viewed as

      a) Clients in a system

      b) Servers in a system

      c) As both clients and servers in a system

      d) Neither as clients nor as servers in a system

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) In object-oriented design

    a) Operations and methods are identical

    b) Methods specify algorithms whereas operations only state what is to be done

    c) Methods do not change values of attributes

    d) Methods and constructor are same

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) An activity is ongoing _____ execution within a state machine.

2) A component is a _____ and _____ parts of a system that performs to and provides the realization of a set of interfaces.

3) Activity diagram commonly contain activity states and action states is true/ false

4) An active object is an object that owns a _____ and initiate control activity.

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

   i) Behavioural diagrams in UML

   ii) Logical database schema modeling.

   B) Answer the following : **6**

   i) Portrays the different types of relationships with an example.

   ii) Explain the role of realization with an example.

3. Answer the following : **14**

   A) Explain modeling static and dynamic types.

   B) Explain forward and reverse engineering process.

4. Answer the following : **14**

   A) Portray the need of modeling the seams in a system.

   B) Explain the state chart diagram.

5. Answer the following : **14**

   A) Explain the modeling the lifetime of an object.

   B) Explain names, attributes, operations and responsibilities.

6. Answer the following : **14**

   A) Explain the need of notes in structural modeling.

   B) Explain the modeling inter-process communications.

7. Answer the following : **14**

   A) Explain the modeling timing constraints.

   B) Explain the basic four adornments that apply to association.

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Seat
No.

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

Day and Date: Tuesday, 24-11-2015   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) The process of grouping a set of physical or abstract objects into classes
      of similar objects is called
      A) Classification   B) Prediction
      C) Clustering   D) Combination

   2) A _____ Schema allows dimension tables to be shared between fact
      tables.
      A) Fact constellation   B) Star
      C) Snowflake   D) All of the above

   3) The 0-D cuboid, which holds the highest level of summarization is called
      A) Linear Cuboid   B) Base Cuboid
      C) Latex Cuboid   D) Apex Cuboid

   4) _____ contains querying, basic statistical analysis and reporting using
      tables, charts or graphs.
      A) Analytical processing   B) Information processing
      C) Data mining   D) Data binding

   5) _____ is the process of finding a model that describes and distinguishes
      data classes or concepts.
      A) Data characterization   B) Data classification
      C) Data discrimination   D) Data selection

6) _____ means that a DM system will use some facilities of a DB or DW system, fetching data from a data repository managed by this system.

    A) Loose coupling   B) Semi-tight coupling

    C) Tight coupling   D) No-coupling

7) _____ specifies the portions of the database or the set of data in which the user is interested.

    A) Interestingness measures   B) Kind of knowledge to be mined

    C) Task relevant data   D) Visualization

8) Data transformation includes which of the following ?

    A) A process to change data from a detailed level to a summary level

    B) A process to change data from a summary level to a detailed level

    C) Joining data from one source into various sources of data

    D) Separating data from one source into various sources of data

9) Learning is

    A) The process of finding the right formal representation of a certain body of knowledge in order to represent it in a knowledge based system

    B) It automatically maps an external signal space into a system's internal representational space

    C) A process where an individual learns how to carry out a certain task when making a transition from a situation in which the same task under the same circumstances can be carried out

    D) None of these

10) Which is the technique used for classification in data mining ?

    A) Descriptive pattern   B) Associations

    C) Regression   D) Decision tree

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

1) Roll up operation performs aggregation on a data cube, either by climbing up a concept hierarch for a dimension or by dimension reduction.

2) Enterprise warehouse contains a subset of corporate-wide data that is of value to a specific group of users.

3) Pivot is a visualization operation that rotates the data axes in view in order to provide an alternative presentation of the data.

4) An OLTP is market-oriented and is used for data analysis by knowledge workers including managers, executives and analysts.

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

    i) Metadata repository

    ii) Data reduction.

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

    i) Explain in short data mining query language.

    ii) What is data cleaning ? Explain some strategies to fill the missing values.

3. Answer the following : **14**

   A) Explain different types of schemas for multidimensional databases.

   B) Explain data mining primitives in detail.

4. Answer the following : **14**

   A) What is Association Rule ? Explain single dimension Boolean association rule

   B) Explain with example classification by Decision Tree Induction Method.

5. Answer the following : **14**

   A) Explain IF-THEN rules for classification method with example.

   B) What is cluster analysis ? Explain types of data in cluster analysis.

6. Answer the following : **14**

   A) Explain K-medoids Algorithm in detail.

   B) Explain three tier data warehouse architecture with well labeled diagram.

7. Attempt the following : **14**

   A) What is data warehouse ? Explain various OLAP operations.

   B) Explain various trends in data mining.

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Seat No.

M.C.A. (Part – II) (Semester – IV) (CGPA) Examination, 2015
COMPUTER SCIENCE
Distributed Operating System

Day and Date : Friday, 27-11-2015   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 alternatives :   **10**

   1) The benefit of _____ programming, the threads share memory and the resources of the process to which they belong.
      a) Audio-Visual   b) Dynamic   c) Multithreading d) None of these

   2) A _____ is loosely-coupled software on tightly-coupled hardware.
      a) True Distributed systems   b) Multiprocessor time sharing systems
      c) Middleware systems   d) Network Operating systems

   3) _____ means that resources must be free to move from one location to another without having changing their names change.
      a) Migration transparency   b) Remote procedure calls
      c) Location transparency   d) Election transparency

   4) The sender just transmits the first message when it is ready, dropping a letter in a mailbox is an example of _____ communication.
      a) Berkeley   b) Processor allocation
      c) Connectionless   d) Connection-oriented

   5) _____ scheme states that when a process calls send it specifies a destination and a buffer to send to that destination, while message is being sent, the sending process is suspended.
      a) Buffered messaging   b) Blocking primitives
      c) Extermination   d) Non-blocking primitive

6) The sending of message from a single sender to a single receiver is sometimes called
   a) Broadcasting   b) Unbuffered primitive
   c) Unicasting   d) Multicasting

7) Happens before is a _____, so if 'A $\rightarrow$ B' ('A' happens before 'B') and 'B $\rightarrow$ C' ('B' happens before 'C'), then 'A $\rightarrow$ C' ('A' happens before 'C').
   a) Associative Relation   b) Transitive Relation
   c) Paired Relation   d) Best fir relation

8) In two phase locking, the process first acquires all the locks it needs during the _____ phase and then releases them during shrinking phase.
   a) Acquisition   b) Read and Writing
   c) Optimistic concurrency control   d) Growing

9) In distributed deadlock detection, generates a special probe message consists of three numbers: the process that ____(i)_____, the process sending message and the process to whom it is being _____ (ii) _____.
   a) (i) Just released and (ii) blocked
   b) (i) Just unblocked and (ii) received
   c) (i) Just blocked and (ii) sent
   d) (i) Sent and (ii) just blocked

10) In _____, the file service provides a large number of operations for opening and closing files, reading and writing parts of files, moving around within files (LSEEK), examining and changing file attributes and so on.
   a) Workstation model   b) Remote access model
   c) Minicomputer model   d) Upload/Download model

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

1) A bus based multicomputer consist of some number of CPUs all connected to a common bus, along with a shared memory.

2) Open groups are typically used for parallel processing. That is a collection of processes working together to play a game of chess might form an open group.

3) In Dispatcher/Worker model, data continues from thread to thread; by the time first thread generates some data and passes them on to the next thread for processing.

4) The location transparency means that the path name gives no hint as to where the file is located.

2. A) Write a short note on following :   **8**
   1) The Berkeley algorithm for clock synchronization.
   2) Layered protocols.

   B) Answer the following :   **6**
   i) What do you mean by bus-based multiprocessor ?
   ii) Enlist the design issue in distributed systems.

3. Answer the following :
   A) Define distributed operating systems. State and explain in detail the advantages
   and disadvantages of it.   **7**
   B) What do you mean by distributed file systems ? Discuss in detail cache
   consistency algorithms for managing a client file cache ?   **7**

4. Answer the following :
   A) Discuss in detail client server model with reliable versus unreliable primitives.   **7**
   B) Define mutual exclusion. State and compare centralized and token ring algorithm
   to achieve mutual exclusion.   **7**

5. Answer the following :
   A) Enlist the various system models. Discuss in detail processor pool model.   **7**
   B) Discuss in detail the concept of remote procedure call.   **7**

6. Answer the following :
   A) What do you mean by threads ? State and explain the hierarchical processor
   allocation algorithms ?   **7**
   B) Discuss in detail usefulness of atomic transaction in distributed systems.   **7**

7. Answer the following :
   A) Discuss in detail the bully and ring algorithm as the election algorithms.   **7**
   B) What are the windows programming concepts ? State the difference between
   MS-Windows NT and Novell Netware ?   **7**

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Seat No.

M.C.A. (V Semester) (CGPA) (Computer Science) Examination, 2015
ARTIFICIAL INTELLIGENCE

Day and Date : Monday, 16-11-2015   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 one is not an expert task ?
      a) Engineering   b) Scientific analysis
      c) Games   d) Financial Analysis

   2) Production system consists of
      a) A set of Rules   b) One or more knowledge/databases
      c) A rule applier   d) All the above

   3) What is the term used for describing the judgemental or commonsense part of problem solving ?
      a) Heuristic   b) Critical
      c) Value based   d) Analytical

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

   5) Which of the following is a TT-Contradiction ?
      a) Cube(a) $\wedge \neg$Cube(a)
      b) (Tet(a) $\wedge$ a=b) $\wedge$ Dodec (b)
      c) Tet(a) $\wedge$ Tet(b) $\wedge \neg$(Tet(a) $\vee$ Tet(b))
      d) $\exists$x$\neg$Cube(x) $\wedge \neg \forall$x Cube(x)

   6) Different ways of handling sentences such as
      a) All paths   b) Best path with backtracking
      c) Best path with patchup   d) All of the above

P.T.O.

7) A frame is a collection of

   a) Slots and associated values

   b) Attributes and associated values

   c) Both a) and b)

   d) None of the above

8) Horn Clause is a clause that as

   a) At most one positive literal

   b) At most one negative literal

   c) Both a) and b)

   d) None of the above

9) A minimax search procedure is

   a) depth-first   b) depth-limited

   c) both a) and b)   d) none of the above

10) Script is a structure that describes

   a) stereotyped sequence   b) monotype sequence

   c) both a) and b)   d) none of the above

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

1) A _____ function is a function that maps from problem state descriptions to measure desirability, represented as numbers.

2) _____ algorithm is used to find a minimal-cost overall path.

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) Production system.

   ii) Explain Semantic Nets.

B) Answer the following :   **6**

   i) Explain acquisition process in expert system.

   ii) Explain the need of waiting for Quiescence.

3. Answer the following : **14**

   A) Explain the problem characteristics.

   B) Write Algorithm to convert to clause form.

4. Answer the following : **14**

   A) Explain the Bayes Theorem.

   B) Explain partitioned semantic Nets with descriptions.

5. Answer the following : **14**

   A) What is conceptual dependency and list its categories.

   B) Explain the Minimax search procedure.

6. Answer the following : **14**

   A) Explain the steps in natural language processing.

   B) Explain Dempster-shafer theory.

7. Answer the following : **14**

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

   B) Explain Expert System Shells.

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Seat
No.

M.C.A. (Semester – V) (CGPA) (Computer Science) Examination, 2015
WEB TECHNOLOGY

Day and Date : Wednesday, 18-11-2015   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) 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) Asynchronous Request Processing.

   ii) Accessing the standard CGI Variables.

B) Explain the following tags :   **6**

   a) Canvas

   b) Fonts

   c) Text area.

3. A) What exactly does a Constructor do in JavaScript ?

  B) Explain the scope and objective of sharing beans.   **14**

4. A) List and explain five primitive data types in JavaScript.

  B) Explain the use of jsp:plugin element and the four attributes which they supply.   **14**

5. A) Write a code using jsp expression to output a bulleted list of five random integer numbers from 1 and 10, use a separate helper class for the random Int method.

   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 subject 1, subject 2 and subject 3. 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 : **14**

   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.

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Seat No.	

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

Day and Date : Monday, 23-11-2015   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 the correct alternatives :   **10**

    1) _____ is a collection of protocols designed by the IETF to provide security for a packet at the network level.

      A) IPSec   B) SSL   C) Threat   D) None of these

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

      A) Misfeasor   B) Masquerader

      C) Clandestine user   D) None of these

    3) _____ provides authentication at the IP level.

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

    4) TLS stands for

      A) Telecommunication Layer Standard

      B) Transaction Layer Serial

      C) Transport Lower Standard

      D) Transport Layer Security

    5) IPSec defines two protocols : _____ and _____

      A) AH;SSL   B) PGP; SSL

      C) AHP;ESP   D) None of these

6) A _____ is defined as the set of hardware, software, people, policies and procedures needed to create, manage, store, distribute and revoke digital certificates based on asymmetric cryptography.

   A) PKI   B) PGP   C) TLS   D) None of these

7) A _____ processes the input one block of elements at a time, producing an output block for each block.

   A) Block Cipher   B) Stream Cipher

   C) Table Cipher   D) None of these

8) _____ is the original message or data that is fed into the algorithm as input.

   A) plain-text   B) secret-text   C) cipher text   D) none of these

9) The _____ prevents or inhibits the normal use or management of communications facilities.

   A) Masquerade   B) Replay

   C) Modification of message   D) Denial of service

10) _____ responsible for defining the overall architecture of the internet, providing guidance and broad direction to the IETF.

   A) IAB   B) IETF   C) IESG   D) None of these

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

   1) PGP is open-source freely available software package for e-mail security.

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

   3) Passive attack affects the system resources.

   4) Kerberos is an authentication service designed for use in a distributed environment.

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

   i) E-mail security

   ii) Cryptanalysis.

B) Answer the following :   **6**

   i) Define the term security attack, security mechanism and security service.

   ii) What is Attack ? Explain in short types of active attacks.

3. Answer the following :

   A) What do you mean by Cipher ? Explain difference between block and stream cipher with example. **7**

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

4. Answer the following :

   A) Draw and explain a model for network security. **7**

   B) Explain Bell-LaPadula Model in detail. **7**

5. Answer the following :

   A) Explain authentication procedure in terms of one-way, two-way and three way authentication. **7**

   B) Explain HRU Model in detail. **7**

6. Answer the following :

   A) What is Biometric ? Explain components of Biometric. **7**

   B) Define Cryptography. Discuss IDEA in detail. **7**

7. Answer the following :

   A) What is Intruder ? Explain different types of Intruders. **7**

   B) Explain various firewall applications. **7**

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Seat No.

M.C.A. – III (Semester – V) (CGPA) Examination, 2015
COMPUTER SCIENCE
Digital Image Processing

Day and Date : Thursday, 26-11-2015   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) Nuclear medicine is one of the applications based on _____
      a) Gamma rays   b) X-rays
      c) Ultraviolet rays   d) Infra red rays

   2) An image of size 10×50 pixels formed with 256 gray levels need _____ bits of storage space.
      a) 4000   b) 500   c) 128000   d) 5000

   3) D_4 distance is always _____ Euclidean distance.
      a) Less than   b) Less than or equal to
      c) Greater than   d) Greater than or equal to

   4) For the histogram equalization
      a) With increase in input intensity, output intensity may increase or decrease
      b) With increase in input intensity, output intensity will always increase
      c) Input and output intensities are not in the same range of intensities
      d) Input and output image histograms are equal

   5) The importance of homomorphic filtering is _____
      a) Filtering on reflection component only
      b) Suppression of illumination component
      c) Separation of illumination and reflectance component
      d) Combined filtering of illumination and reflectance component

6) Better filters to reduce periodic noise are _____ filters.

   a) Mean
   b) Median
   c) Special domain
   d) Frequency domain

7) The erosion of a square with perimeter of 4 cm using a square of width and height 1 cm will result in a _____

   a) Square of 2 cm width and height
   b) Square of 1 cm width and height
   c) One pixel at center of object
   d) Nothing remains

8) In an image whose gray level profile is ramp or slope, its second order derivative is _____

   a) Zero
   b) Constant
   c) Monotonically increasing
   d) Transition between positive and negative

9) The four directional chain code of an object is 030033212211. Its shape number is _____

   a) 0330310330331
   b) 0330330133033
   c) 0303310330331
   d) 0330301330331

10) Chain code is invariant to _____

   a) Rotation
   b) Translation
   c) Translation and rotation
   d) Translation, rotation and scaling

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

   1) Let H be an operator whose input and output are images. H is said to be a linear operator if, for any two images f and g and any two scalars a and b, _____

   2) The two dimensional Fourier transform in continuous domain is given by _____

   3) Ratio of major axis and minor axis of any object is called as _____

   4) A region contains 10 connected components, 7 vertices, 5 faces and 4 holes. The numbers of edges are _____

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

   i) Simple image formation model.
   ii) Combining spatial enhance methods.

B) Answer the following :   **6**

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

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

    ii) Use the specific primitives a, b, c and d given as ↘ , ↗ , → and ↓ respectively and build the following structure :
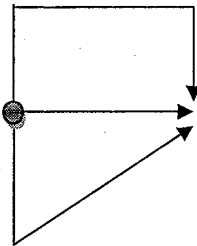
3. Answer the following :   **14**

    A) What are the different piecewise linear transformation functions ? Explain them briefly.
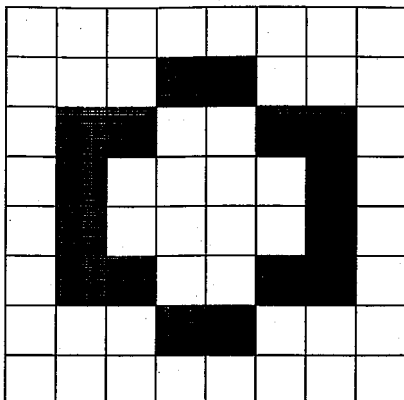
    B) Dilate a rectangle of width 8 cm and height 6 cm using a circle of 2 cm radius and a triangle with base and height 2 cm.

4. Answer the following :   **14**

    A) Discuss smoothing frequency domain filters.

    B) Fill the following region using morphological region filling algorithms :

5. Answer the following : **14**

   A) What are the different noise reduction probability density functions ? Explain any three of them.

   B) Compute the covariance matrix for the following vectors :

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

6. Answer the following : **14**

   A) How to extract inner and outer boundary of an object using morphological image processing techniques ? Explain with example.

   B) The three classes of objects denoted by ω_1 and ω_2 have sample mean vectors $m_1 = (5, 4, 7)$ and $m_2 = (9, 3, 2)$ respectively. Compute decision boundary between these two objects.

7. Answer the following : **14**

   A) Discuss dam construction technique in watershed segmentation.

   B) Compute the distances between following objects and find out which of them are nearest.

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

_____
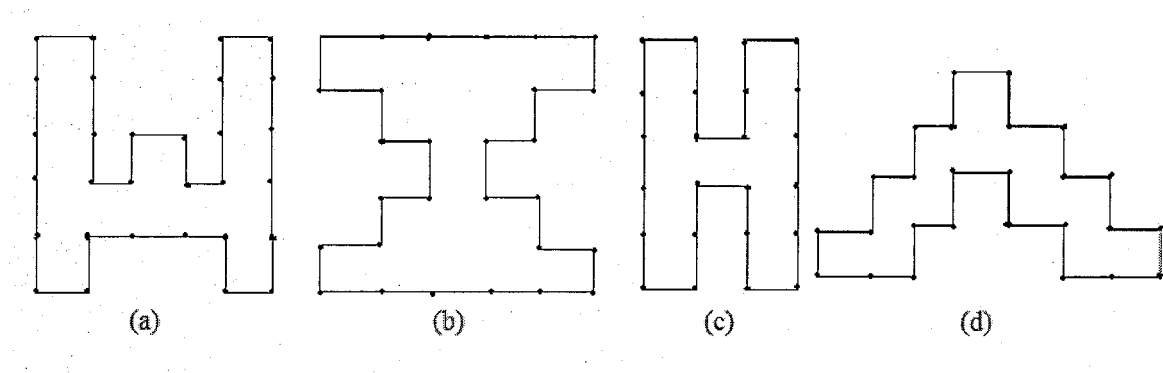
Seat No.

M.C.A. III (Semester – V) (CGPA) Examination, 2015
COMPUTER SCIENCE
Mobile Computing

Day and Date : Saturday, 28-11-2015   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) The core concept used in Cellular technology is
        a) TDM   b) Frequency Reuse
        c) Code reuse   d) None of the above

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

    iii) 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

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

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

vi) The type of access used in GSM technology is
   a) FDMA/TDMA
   b) CDMA
   c) OFDMA
   d) None of the above

vii) The process of channel coding, encryption, multiplexing and modulation for Trans direction and reverse for reception are to be carried out by
   a) BTS
   b) BSC
   c) MSC
   d) MS

viii) He cell having the same number in the adjacent cluster using the same set of RF channels are termed as
   a) Adjacent cell
   b) Co channel cell
   c) Macro cell
   d) Selective cell

ix) The technique adopted to increase the system capacity and reduce co-chl interference is
   a) High power BTS
   b) By installing the Omnidirectional antenna
   c) Sectorisation
   d) None of the above

x) The uplink frequency of P-GSM system is
   a) 1850-1910 Mhz
   b) 1710-1785 Mhz
   c) 890-915 Mhz
   d) None of the above

B) State **true/false**. **4**
   i) Flexibility and Planning are advantages of wireless LAN.
   ii) SNIFF state is one of the three Low Power States provided by Bluetooth.
   iii) Inter BSC Intra MSC handover is not one of the four types of handover available in GSM.
   iv) Network and Switching subsystem (NSS) is not a subsystem in GSM system.

2. A) Write short notes on the following. **8**
   i) Multipath propagation
   ii) IP packet delivery.

B) Answer the following : **6**
   i) What are the types of spread spectrum and differentiate them ?
   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 architecture of Mobile IP.

4. Answer the following : **14**

   A) What is multiplexing ? Explain different multiplexing techniques.

   B) Explain in brief the components of Cellular System.

5. Answer the following. **14**

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

   B) What is Handovering ? 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) What is the motivation behind to have specialized MAC techniques for Wireless networks ? Explain.

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