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MMT-001

M.Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE) M.Sc. (MACS)

Term-End Examination

December, 2010

00919

MMT-001 : PROGRAMMING AND DATA STRUCTURES

Time : 1½ hours *Maximum Marks : 25*

Note : *Question No. 1 is **compulsory**. Answer **any three** questions from question no. 2 to 5. All programs should be written in 'C' **language**. Use of calculator is **not** allowed.*

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1. Which of the following statements are ***true*** and which are ***false***? Justify your answer with a short proof or a counter example. **2x5=10**

(a)
```
int a, b :
for  (a=122 ; a > 119 ; a - -) {
     for (b=a ; b > 119 ; b --)
      printf ("%c", b) ; printf ("\n") ; }
```

Output of the above logic is

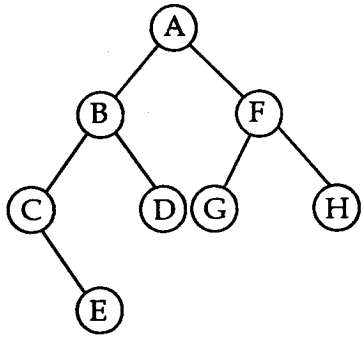
ABC

AB

A

(b) In both 'union' and 'structure', each member has its own storage location.

(c) The Inorder traversal of the below binary Tree is ECBDAGFH.



(d) In the following loop construct, "expr2" is executed only once always :

```
for (expr1 ; expr2 ; expr3)
{ . . . }
```

(e) In the following fragment of C code, the output will be 7.

```
int p [5] = {2, 3, 7, 9, 6} ;
printf ("%d", *(p+2)
```

2. (a) What is 'call by value' and 'Call by reference' ? Explain each with an example. 2

(b) Write a program for implementation of a 'LINEAR QUEUE'. Use a separate functions in the program for 'insertion'/ 'deletion' and 'display' operations of the queue. 3

3. (a) Write a program that finds the sum of the 1st 'n' terms of cos (x) series. 3

(b) Which of the following are valid identifiers ? Give reasons for your answer. 2

(i) 1 ABC (ii) ABC #

4. Write a menu driven program for implementation of a 'Doubly Linked List'. The implementation should include Creation, Insertion, Deletion and Display operations. 5

5. (a) Write a program that creates a file and store some text in the file. 2

(b) Draw the 'Binary Tree' by using the following Inorder and Post order traversals of a binary tree 3

Inorder : D J H B E A F I C G

Post order : J H D E B I F G C A