No. of Printed Pages : 4

MMT-001

00222

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

Term-End Examination

June, 2013

MMT-001 : PROGRAMMING AND DATA STRUCTURES

Time : 1½ hours | *Maximum Marks : 25*

Weightage : 20%

Note : *Question* **1** *is* ***compulsory****. Answer* ***any three*** *questions from questions* **2** *to* **5.** *All programs should be written in* ***'C' language.*** *Use of calculator is* ***not*** *allowed.*

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1. Write the output of the following code in 'C' language. Justify your answer with brief explanation. **10**

(a)

```
#define PRINT(int) printf("%d", int)
main ( )
{
        int x, z ;
        x=03 ; z=01 ;
        PRINT (x^x) ;
        z<<=3 ; PRINT (z) ;
}
```

(b)
```
#include<stdio.h>
int main ( )
{
    int x=7, y=11, z=12, w ;
    w=x+ + - + +y ;
    z=x+y ;
    printf ("x=%d, y=%d, z=%d,
    w=%d", x, y, z, w) ;
    return 0 ;
}
```

(c)
```
#include<stdio.h>
int main ( )
{
    int a, b ;
    for (a=50 ; a>25 ; a- -=5)
    {
        for (b=a ; b>25 ; b- -=5)
            printf ("%d",b) ;
        printf ("\n") ;
    }
    return 0 ;
}
```

(d)
```
#include<stdio.h>
main ( ) {
    int TS=5000, X ;
    X=( (TS>10000) ?TS*0.2 : ( (TS>5000) ?TS*0.1 : TS*0.05) ) ;
    printf ("%d", X) ;
    return 0 ;
}
```

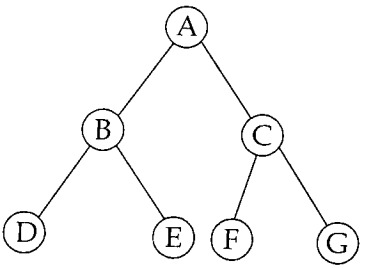
(e)
```
#include<stdio.h>
int main ( ) {
    int X [ 5 ]={4, 7, 9, 3, 5} ;
    printf ("%d", * (X+3) ) ;
    return 0 ;
}
```

2. Define a mode for stack implementation using pointers. Write PUSH and POP function for your implementation. 5

3. Write a function which takes three integers as input and returns the smallest of them. The function uses if-else statements only. 5

4. (a) Write a recursive function which takes a nonnegative integer n as a parameter and returns n ! 2

(b) Write post order and pre-order traversal of the below binary tree. 3



5. Explain in brief the following : 5

(a) Global and local variable

(b) Escape sequences

(c) Auto and Static variables

(d) Maltoc( ) and calloc( ) function

(e) Macros in 'c'