MMT-001

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

Term-End Examination

December, 2020

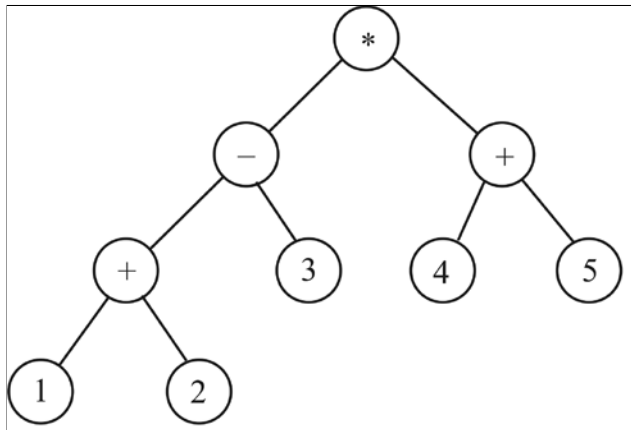**MMT-001 : PROGRAMMING AND DATA STRUCTURES**

Time : $1\frac{1}{2}$ Hours   *Maximum Marks : 25*

Weightage : 20%

Note : *Question No. **5** is compulsory. Answer any **three** questions from Q. No. 1 to 4. All programs should be written in 'C' language. Use of calculator is not permitted.*

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1. (a) Write the preorder and postorder traversals of the following binary tree : 2

(b) What is a Macro ? How is it different from function ? Discuss both with a suitable example for each.   3

2. (a) Expalin fprintf( ) and fscanf( ) functions, with an example.   2

(b) Write a program that determines whether a given year is a leap year or not.   3

3. (a) What is Priority Queue ? Give *one* advantage of it.   2

(b) Illustrate the malloc( ) and calloc( ) functions in 'C' language.   3

4. (a) Explain "call by value" and "call by reference" with the help of an example for each.   2

(b) Write a program for multiplication of two matrices and trace the program with sample input.   3

5. Find the output of the following. Justify your answer :   2 each

(a) ```
#include<stdio.h>
int main( )
{
   char i, j;
   for (i = 65, i < = 70; i++)
   { printf ("/n")
      for (j = 65; j < = 70; j++)
         { printf("%C", j);}
   }
   return 0;
}
```

(b) ```
main( )
{  increment( );
   increment( );
   increment( );
}
increment()
   {  static int i = 1;
      printf ("%d /n", i);
      i=i+1;
   }
```

(c) main( )

   { increment( );

   increment( );

   increment( );}

   increment( )

   { int i = 1; printf ("%d/n", i); i = i + 1;}

(d) main( )

   {if (printf("HELLO"))

     }

       }

   }

(e) main( )

   { int i;

   int marks[ ]={55, 65, 75, 56, 78, 78, 90};

   for (i = 0, i < 6; i++)

     disp(& marks [i]);

   }

    disp (int*n)

   {printf("%d/n", *n);}