

No. of Printed Pages : 4

MMT-001

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

Term-End Examination

June, 2020

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

Time : $1\frac{1}{2}$ Hours

Maximum Marks : 25

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

P. T. O.

1. Write the output of the following pieces of code in "C". Justify your answer with short explanations. 10

(a) `main()`

```
{ float a = 5, b = 2;
```

```
int c;
```

```
c = a% b;
```

```
printf ("%d", c);}
```

(b) `main()`

```
{ int x = 10, y = 5, p, q ;
```

```
p = x > q; q = x > 3 && y != 3;
```

```
printf ("p = % d q = %d", p, q);}
```

(c) `main()`

```
{ int X = 3;
```

```
X * = X + 4;
```

```
printf ("X = %d", X);}
```

(d) `main ()`

```
{ int a = 10, b = 20;
```

```
  abc (&a, &b); printf ("%d %d", a, b);
```

```
  abc (int * x int * y){
```

```
    * x + = 10; * y + = 10;
```

```
  printf ("%d % d", *x, *y);}
```

(e) `int a [5] = {2, 3};`

```
  printf ("\n%d, %d, %d", a [2], a [3], a[4]);
```

2. (a) Draw the binary tree corresponding to the following inorder and postorder traversals of the binary tree : 3

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

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

- (b) Explain "break" and "continue" statement in "C", with an example of each. 2

3. (a) Write a program that creates a file and stores some text in the file. 3

- (b) Explain the usage of the ternary if ()-then-else operator through an example. 2
4. (a) Write a programme to add two $n \times n$ matrices. 2
- (b) Write a programme for implementation of a linear queue. Use separate functions in the programme for 'insertion'/'deletion' and 'display' operations of the queue. 3
5. (a) Explain malloc() and calloc() functions with *one* example each. 3
- (b) Convert the expression $6 + 5 - 6/3 + 4 * 9$ to RPN. 2