

Total number of printed pages—4

**3 (Sem-6) MAT M 3**

**2020**

**MATHEMATICS**

(Major)

Paper : 6-3

**(Computer Programming in C)**

Full Marks : 40

Time : Two hours

**The figures in the margin indicate  
full marks for the questions.**

1. Answer **any six** questions : 1×6=6

(a) What is a source program?

(b) What is an algorithm?

(c) What is meant by 'machine level language'?

*Contd.*

(d) State True **or** False :

“C is a case sensitive language.”

(e)  $i++ = 1$  can also be written as \_\_\_\_\_.  
(Fill in the blank)

(f) Which header file has to be included to use `getch()` ?

(g) The \_\_\_\_\_ statement is used to transfer the control to the beginning of the loop.  
(Fill in the blank)

(h) Give an example of a volatile memory.

2. Answer **any two** questions :  $2 \times 2 = 4$

(a) Write the following mathematical expression in C language :

$$e^{x+y} - \sin\left(\sqrt{|x+ny|}\right) + \log 2a$$

(b) What is an array variable ? How does it differ from an ordinary variable ?

(c) What are library functions ? Mention **any two** library functions of C available in `math.h`.

(d) Discuss the difference between assignment and equality with examples.

3. Answer **any two** of the following :

5×2=10

(a) What is a variable? How is it declared? What are the basic datatypes? How does the type float differ from double in C language.

(b) Write a C program to add  $3 \times 3$  matrices.

(c) Explain the utility of break and continue statement with the help of suitable examples.

4. Answer **any two** of the following :

5×2=10

(a) What is meant by a recursive function or recursion? Using a recursive function, write a C program for computing the value of  $x^n$  for given values of  $x$  and  $n$ .

(b) Discuss the following operators with examples :

(i) Relational operator

(ii) Logical operator

(iii) Ternary operator.

- (c) Give the general syntax of the if-else statement. Use it to write a C program to find the largest of three given numbers.
5. Answer **any two** questions :
- (a) Explain briefly what is meant by 'call by value' and 'call by reference' of a function. 5
- (b) Give the general form of 'for loop' in C. Explain how it works with the help of a suitable example. 5

**OR**

- Give the general form of a function declaration. How is a function called? What are actual and formal arguments?  $2+1+2=5$
- (c) Write a C program to sort a set of 10 given numbers in ascending order. 5

**OR**

Write a C program to find the roots of the quadratic equation  $ax^2 + bx + c = 0$  for given  $a, b, c$ .