2022

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 as directed : *(any six)*   1×6=6

    (a) ROM is a temporary storage medium.
    (Write True or False)

    (b) High-level languages are otherwise termed as _____ generation languages.   *(Fill in the blank)*

    (c) What is a flowchart ?

    (d) An identifier/a variable can begin with__ (underscore).
    (Write True or False)

(e) What is a string constant ?

(f) What is a pointer ?

(g) If *a* is an integer variable, then $a = \frac{7}{2}$ will return the value _____.

(Fill in the blank)

(h) Mention *any two* reserved words.

2. Answer *any two* questions : 2×2=4

(a) Determine the value of the logical expression $b > c \ \&\& \ c < 0 \ || \ a > 0$ for $a = 5$, $b = 10$, $c = -6$.

(b) What is an operating system ? Mention *any two* operating systems commonly used.

(c) Give the equivalent C expression for
$$e^{x+y} - \sin\left(\sqrt{|x + ny|}\right) + \log 2a$$

3. Answer *any two* questions : 5×2=10

(a) Write an algorithm and draw the flowchart to find the sum and product of three given numbers.

(b) What is a variable ? What are the basic data types ? How does the type float differ from double in C language ?

(c) How does $x++$ differ from $++x$? Explain the ternary operator.

4. Answer **any two** questions : 5×2=10

   (a) Give the general syntax of the if-else statement. Use it to write a C program to find the biggest of three given numbers.

   (b) Discuss the use of break and continue statements with examples.

   (c) Using switch statement, write a C program to find the value of y :

   $$y = \begin{cases} 1+x & \text{when } n=1 \\ x+\dfrac{x}{n} & \text{when } n=2 \\ 1+x^n & \text{when } n=3 \\ 1+nx & \text{when } n>3 \text{ or } n<1 \end{cases}$$

5. Answer **any two** questions : 5×2=10

   (a) Differentiate between built-in-functions and user-defined functions. Give the form of function declaration.

(b) Write a C program to add two matrices of order $m \times n$.

(c) Using recursive function, write a C program to display the first n terms of the Fibonacci series.