2019

MATHEMATICS

(Major)

Paper : 6.3

(Computer Programming in C)

Full Marks : 40

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. Answer any *six* of the following as directed : 1×6=6

(a) ROM is a permanent storage medium.

(State True or False)

(b) Library functions are included in the header file ____.

(Fill in the blank)

(c) The output of $(3 < 2) || (4 > 3)$ is ____.

(Fill in the blank)

(d) Justify why 7 days is not an identifier.

(e) Write the form of scanf( ) function.

(f) C language is a fourth-generation language.

(Write True or False)

(g) Which statement is used to exit from a statement block in the switch statement?

(h) What is a compiler?

2. Answer the following questions : 2×2=4

(a) What are an object program and a source program?

(b) Draw the flowchart to find the sum of given three numbers.

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

(a) Convert the following mathematical expressions into C expressions : 1+2+2=5

(i) $p = x^{\sqrt{y}} + y^{\sqrt{x}}$

(ii) $q = \sin a \cos b - |g - h| + \sqrt{ab} + \log(\cos x)^2$

(iii) $r = \sqrt{1+x^3} + \dfrac{\log \cos 2x}{1+|y|} + e^x$

(b) Write a C program to find the value of y using switch statement, where

$$y(x, n) = \begin{cases} 1 + x^n & , \text{when } n = 1 \\ 1 + 1/x^n & , \text{when } n = 2 \\ 1 + nx & , \text{when } n > 2 \text{ or } n < 1 \end{cases}$$

(c) Differentiate built-in functions and user-defined functions. Distinguish between local and global variables in C.

4. Answer any *four* of the following questions : 5×4=20

(a) Using two-dimensional array, write a C program to subtract two matrices of order 4×3.

(b) Write a note on conditional statement and its various types.

(c) Using recursive function, write a C program to find

$${}^{n}C_r = \frac{\lfloor n}{\lfloor r \, \lfloor n-r}$$

(d) (i) What is a constant? Explain the constants used in C.

(ii) What is a variable? How are the variables declared in C? 3+2=5

(e) Using while loop, write a C program to generate and print Fibonacci series up to the term *n*.

(f) What are the various storage classes in C? Discuss their uses and scope.

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