

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 $(3 < 2) \parallel (4 > 3)$ is ____.

(Fill in the blank)

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

(2)

- (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 : $2 \times 2 = 4$

- (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 :
 $5 \times 2 = 10$

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

(3)

- (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 :
 $5 \times 4 = 20$

- (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

$${}^n C_r = \frac{|n|}{|r| |n-r|}$$

- (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.
