

7. (a) Discuss different file handling operations in C. Write a C program to read and write student records to a file. 10
- (b) Explain the difference between Linear Search and Binary Search with an example. 5



May 2025

B. Tech. (Second Semester)

Programming for Problem Solving

(ESC-103/CSU-101-V)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) What is an Algorithm ? Give an example. 1.5
- (b) Differentiate between iteration and recursion with an example. 1.5
- (c) Define a variable. How is it different from a constant ? 1.5

- (d) What is the purpose of loops in programming? 1.5
- (e) What are the basic data types in C? 1.5
- (f) How do you declare and initialize an array in C? 1.5
- (g) What is the difference between while loop and do-while loop? 1.5
- (h) What is a Pointer? How is it different from a normal variable? 1.5
- (i) Explain the use of the 'return' statement in functions. 1.5
- (j) What are the advantages of using functions in C? 1.5

Part B

2. (a) Write an algorithm and draw a flowchart to find the largest of three numbers. 10
- (b) Write a C program to swap two numbers without using a third variable. 5

3. (a) Explain different types of loops in C with suitable examples. 5
- (b) Write a C program to check whether a number is prime or not. 10
4. (a) Write a C program to find the sum of all elements in a 1D array. 7
- (b) Implement a C program to add two matrices using a 2D array. 8
5. (a) What is a structure in C? Write a program to store and display details of three students using structures. 5
- (b) Explain the concept of sorting with C program of Bubble, Section and Insertion Sort. 10
6. (a) What is Recursion? Write a recursive function in C for Fibonacci Series. 10
- (b) What is a Pointer? Write a C program to find the sum of two numbers using pointers. 5