

(2½ Hours)

[Total Marks: 75]

- N. B.: (1) **All** questions are **compulsory**.
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt any three of the following:** 15
 - a. Explain the different types of programming language.
 - b. Explain the different steps in the program development cycle.
 - c. Draw the flowchart and pseudo code of program that doubles a number.
 - d. Describe the structure of a C program.
 - e. What are the various data types in C? Explain them.
 - f. What is a statement in C? Explain the different classes of statement in C.

2. **Attempt any three of the following:** 15
 - a. Write a program in C to swap two numbers without using third variable.
 - b. Describe the five arithmetic operators in C.
 - c. Explain the conditional operator in C.
 - d. Explain the getchar and putchar functions used in C programming language.
 - e. Write a short note on scanf function.
 - f. Explain the gets and puts functions used in C programming language.

3. **Attempt any three of the following:** 15
 - a. Explain if-else statement with an example.
 - b. Write a program in C to find the sum of squares of digits of a number.
 - c. What is the difference between while and do-while loop in C?
 - d. Explain the function with an example.
 - e. Write a program in C to find the factorial of a number using recursion.
 - f. Explain call by value and call by reference.

4. **Attempt any three of the following:** 15
 - a. What is meant by the storage class of a variable?
 - b. Write a short note on Global variable.
 - c. Write a program in C to calculate successive Fibonacci numbers.
 - d. What are preprocessor directives in C? Explain #include and #define in C.
 - e. Write a program in C to arrange the 'n' numbers stored in the array in ascending order.
 - f. What is a two dimensional array? How can they be declared and initialized in C?

5. **Attempt any three of the following:** 15
 - a. Explain the term pointers with an example.
 - b. Write a C program to perform addition of two pointer variable.
 - c. Write a short note on pointer arithmetic.
 - d. Differentiate between structure and union.
 - e. What is an array within the structure and array of structure?
 - f. Explain nested structure in C with an example.
