



## End Term (Odd) Semester Examination December 2024

Roll no. ....

Name of the Course and semester: BCA (AI & DS) / BCA I SEM

Name of the Paper: Foundation of Computer Programming

Paper Code: TBD102 / TBC102

Time: 3 hour

Maximum Marks: 100

### Note:

- (i) All the questions are compulsory.
- (ii) Answer any two sub questions from a, b and c in each main question.
- (iii) Total marks for each question is 20 (twenty).
- (iv) Each sub-question carries 10 marks.

### Q1.

(2X10=20 Marks)(CO1)

- a. What are preprocessor directives in C? Why and When do we use #define, #include directive?
- b. Explain the syntax and usage of the ternary operator (? :) in C. Write a program using the ternary operator to:
  - Find the largest of three numbers.
  - Check whether a given year is a leap year or not.

- c. Explain the syntax of the for, while, and do-while loops with examples. Write a program to calculate the sum of the first 10 natural numbers using a loop.

### Q2.

(2X10=20 Marks)(CO2)

- a. Define a structure named Student with fields for student ID, name, age, and marks in three subjects. Write a program to input data for 5 students, calculate their average marks, and display the details of the student with the highest average marks.
- b. With the help of a program explain the concept of Call by value and Call by reference.
- c. Explain any five string manipulation library functions in detail with examples.

### Q3.

(2X10=20 Marks)(CO3)

- a. What are storage classes in C? Discuss the four types with examples.
- b. Discuss the differences between malloc, calloc, realloc, and free with examples.
- c. What are functions and its types? Write a C program to find the entered number is a prime number or not by creating a function.

### Q4.

(2X10=20 Marks)(CO4)

- a. Write a C program to sort an array of integers using the Bubble Sort algorithm.
- b. What do you mean by an array in C language? What are the different types of arrays? Explain with example.
- c. Write a program to perform the multiplication of two matrices.

### Q5.

(2X10=20 Marks)(CO5)

- a. Explain the concept of Recursion by writing a program to find the factorial of a number using recursion.
- b. What are command-line arguments in C, and why are they used? Write a program that accepts two numbers as command-line arguments and prints their sum.
- c. What is File Handling? What are the various functions used in File handling. Briefly explain.