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## **ROLL NO:**

*(To fill the roll no. is compulsory)*

### **ODD SEMESTER EXAMINATION - 2024-25**

**B.C.A**

**Semester: I**

**SUBJECT CODE: BCA107**

**PROGRAMMING IN C**

**Time: 3 Hours**

**Maximum Marks: 70**

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**NOTE: THE QUESTION PAPER CONTAINS THREE SECTIONS.**

**ATTEMPT ALL THE SECTIONS.**

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## **SECTION-A**

*NOTE: Attempt all parts of the following questions. (14 Marks)*

### **Q. 1. Answer the following questions: (7 × 1 = 7 Marks)**

- a) What is the purpose of the `main()` function in a C program?
- b) Define a constant and explain its use in C.
- c) What is a preprocessor directive? Give an example.
- d) What is the use of the `%` operator in C?
- e) Explain the term "implicit type casting" in C with an example.
- f) What is the purpose of `printf()` and `scanf()` functions in C?
- g) What is an enum in C? Provide a simple example.

### **Q. 2. Answer the following questions: (7 × 1 = 7 Marks)**

- a) What is the difference between an integer and a floating-point variable?
  - b) How do you declare and initialize a 2D array in C?
  - c) What does the `continue` statement do in a loop?
  - d) Write the output of the expression `5 + 2 * 3 - 4 / 2.`
  - e) Define a recursive function with an example.
  - f) Explain the difference between actual and formal arguments.
  - g) What are logical operators in C? Give two examples.
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## **SECTION-B**

*NOTE: Attempt all the questions. (7 × 2 × 2 = 28 Marks)*

**Q. 3.**

(i)

- a) Explain what a pointer is in C. Write a program to swap two numbers using pointers.

**OR**

- b) Describe the `if-else` statement in C with an example program to check if a number is even or odd.

(ii)

- a) Write a program to print the Fibonacci series up to nn terms using a `for` loop.

**OR**

- b) Explain the difference between `while` and `do-while` loops with suitable examples.

**Q. 4.**

(i)

- a) What is a structure in C? Write an example to store and display details of a student.

**OR**

- b) Write a C program to calculate the average of an array's elements.

(ii)

- a) What is the purpose of the `sizeof()` operator? Demonstrate its usage with examples.

**OR**

- b) Write a program to find the factorial of a number using recursion.
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**SECTION-C**

*NOTE: Attempt all questions. (14 × 2 = 28 Marks)*

**Q. 5.**

- a) What is dynamic memory allocation? Write a program to allocate memory for an integer array using `malloc()` and free the memory afterward.

**OR**

- b) Discuss file handling in C. Write a program to write a string to a file and then read it back.

**Q. 6.**

- a) Explain the difference between `call by value` and `call by reference` with examples.

**OR**

- b) Write a program to perform matrix multiplication using functions.
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