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## ROLL NO:

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

**ODD SEMESTER EXAMINATION - 2024-25**
**B.C.A AI/Cloud**
**Semester: I**
**SUBJECT CODE: BCA104**
**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) Define a variable in C and explain its significance.
b) What is the role of the `main()` function in a C program?
c) Explain the difference between logical AND (`&&`) and logical OR (`||`) operators in C.
d) What is a character constant in C? Provide an example.
e) Describe the purpose of a `do-while` loop in C.
f) What are the relational operators in C? List any three with examples.
g) What is the purpose of `getch()`?

**Q. 2. Answer the following questions: (7 × 1 = 7 Marks)**
a) What is the syntax of a `for` loop? Write a simple example.
b) Explain the term "implicit type conversion" in C.
c) How can you initialize an integer array in C?
d) Write the syntax for declaring a pointer.
e) Solve the expression: `4 + 6 / 2 * 3 - 5`.
f) What is recursion in C? Provide an example of a recursive function.
g) What is a storage class in C? List any two storage classes.

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### SECTION-B

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

**Q. 3.**

(i)

a) Differentiate between `call by value` and `call by reference` with examples.

**OR**

b) Write a program in C to check whether a number is prime using a `while` loop.

(ii)

a) Write a program to print the reverse of a given number.

**OR**

b) Explain the syntax and usage of the `switch` statement in C with an example.

**Q. 4.**

(i)

a) Explain the concept of an array of pointers with an example.

**OR**

b) Describe the difference between `break` and `continue` with an example program.

(ii)

a) Write a program to find the sum of all even numbers in an array.

**OR**

b) Explain how structures are used in C. Write a program to store and display the details of a student using a structure.

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**SECTION-C**

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

**Q. 5.**

a) What are dynamic memory allocation functions in C? Explain `malloc()` and `calloc()` with suitable examples.

**OR**

b) Write a C program to read and write data to a file using `fscanf()` and `fprintf()`.

**Q. 6.**

a) What are the differences between low-level and high-level programming languages? Provide examples.

**OR**

b) Write a program to calculate the transpose of a matrix using functions.