

FIRST SEMESTER EXAMINATION

Paper Code: <BCA-102> Programming in C

Maximum Marks: 40

Time: 2 Hours

COURSE OUTCOMES:

CO1: Understand the basics of the C programming language and its application.

CO2: Implement decision making, branching, and looping structures.

CO3: Manage large amounts of data using arrays and structures.

CO4: Discuss pointer-based solutions.

CO5: Develop recursive functions for solving problems.

CO6: Discuss file management techniques in C.

Note: Attempt all questions. Internal choice is indicated. (Total: 40 Marks)

SECTION A

Q. No.	Questions	Marks	Unit No.	CO Mapped	Bloom's Level
Q1	Answer all parts (Short Notes / Conceptual):	10	1	CO1	2
(a)	Explain the significance of reserved keywords in C. Why cannot keywords be used as identifiers?	2	1	CO1	1
(b)	Discuss the role and significance of whitespace characters and escape sequences in C.	2	1	CO1	2
(c)	Differentiate between prefix and postfix increment/decrement operators with an evaluation snippet.	2	1	CO1	2
(d)	Distinguish between type casting (explicit conversion) and type promotion (implicit conversion).	2	1	CO1	2
(e)	Explain the working and necessity of the ternary conditional operator (?:) with general syntax.	2	1	CO1	2

SECTION B

Q. No.	Questions	Marks	Unit No.	CO Mapped	Bloom's Level
Q2.	(a) Describe the compilation pipeline of a C program (Preprocessing, Compiling, Assembling, Linking). (b) Write an expression evaluation trace showing step-by-step precedence for: $x = 5 + 3 * 2 - 8 / 4 + (6 \% 4)$.	10	1	CO1	3
OR					
	(a) Explain the four storage classes in C (auto, register, static, extern) with scope, visibility, and default initial values. (b) Differentiate between #include <file.h> and #include "file.h".	10	1	CO1	2
Q3.	Explain the difference between entry-controlled (while, for) and exit-controlled (do-while) loops. Write a complete C program to check whether a given integer is an Armstrong number or a Palindrome.	10	2	CO2	3
OR					
	(a) Explain multi-way branching using switch-case statement and importance of break and default. (b) Write a menu-driven C program to perform basic arithmetic operations using switch-case.	10	2	CO2	3
Q4.	(a) Write a C program to multiply two 2D matrices after verifying their order compatibility. (b) Explain the difference between call-by-value and call-by-reference with example programs using pointers.	10	3	CO3	3
OR					
	(a) Differentiate between structure and union in terms of memory allocation and member access.	10	4	CO4	3