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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**  
(An Autonomous Institute Affiliated to AKTU, Lucknow)

**BCA**

**SEM: I - THEORY EXAMINATION (2025 - 2026)**

**Subject: C Programming**

**Time: 3 Hours**

**Max. Marks: 100**

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

20

1. Attempt all parts:-

1-a. In C, the smallest unit of a program is known as: [CO1, K2]

1

- (a) Keyword
- (b) Identifier
- (c) Token
- (d) Constant

1-b. Identify the invalid identifier in C from the given options [CO1, K2]

1

- (a) \_value
- (b) total1
- (c) 1total
- (d) value\_total

1-c. The relational operator != represents: [CO2, K1]

1

- (a) Greater than
- (b) Equal to
- (c) Not equal to
- (d) Assignment

1-d. Identify the loop that executes at least once even if the condition is false. [CO2, K2]

1

- (a) for
- (b) while
- (c) do-while
- (d) nested loop

1-e. Select the correct declaration of a 3×4 integer matrix. [CO3, K1]

1

- (a) int mat(3,4);  
 (b) int mat[3];  
 (c) int mat[3][4];  
 (d) int mat[4][3];
- 1-f. Identify the function that copies source string into destination. [CO3, K3] 1  
 (a) strcat()  
 (b) strlen()  
 (c) strcmp()  
 (d) strcpy()
- 1-g. A recursive function is one that: [CO4, K3] 1  
 (a) Calls itself  
 (b) Calls another function repeatedly  
 (c) Never ends  
 (d) Cannot return
- 1-h. Memory allocated at compile time is called: [CO4, K3] 1  
 (a) Dynamic memory  
 (b) Static memory  
 (c) Heap memory  
 (d) Temporary stack
- 1-i. If a variable is declared as static inside a function, what is its lifetime? [CO5, K3] 1  
 (a) Until function ends  
 (b) Until program ends  
 (c) Until block ends  
 (d) Only once
- 1-j. What happens when a file is opened in "w" mode? [CO5, K2] 1  
 (a) Error  
 (b) Truncated to zero  
 (c) Appended  
 (d) Read only
2. Attempt all parts:-
- 2.a. Describe the purpose of printf() and scanf() functions. [CO1, K2] 2  
 2.b. Construct a C statement to determine if a number is divisible by both 3 and 5 [CO2, K3] 2  
 2.c. Explain the syntax for declaring a structure in C. [CO3, K2] 2  
 2.d. Define dynamic memory allocation with example. [CO4, K3] 2  
 2.e. Describe command-line arguments in C. [CO5, K2] 2
- SECTION-B** 30
3. Attempt all parts:-
- 3.a. Answer any one of the following:-
- 3.a.(i) Describe flowchart to find the largest of three numbers. [CO1, K3] 6

3.a.(ii)	Describe a C program to find the area of a circle using standard I/O functions. [CO1, K3]	6
3.b.	Answer any one of the following:-	
3.b.(i)	Explain the role of switch statement in C programming with a simple example. [CO2, K2]	6
3.b.(ii)	Explain how nested loops work with an example program. [CO2, K4]	6
3.c.	Answer any one of the following:-	
3.c.(i)	Illustrate multiplication of two matrices using two-dimensional arrays. [CO3, K3]	6
3.c.(ii)	Construct a program that shows how a union can store different data types at the same memory location. [CO3, K3]	6
3.d.	Answer any one of the following:-	
3.d.(i)	Demonstrate the use of malloc() and calloc() with suitable examples. [CO4, K3]	6
3.d.(ii)	Explain call by reference with a program that swaps two numbers. [CO4, K4]	6
3.e.	Answer any one of the following:-	
3.e.(i)	Develop the syntax and use of fopen() and list common file modes used in C. [CO5, K2]	6
3.e.(ii)	Explain the use of ftell() and fseek() with an example. [CO5, K4]	6
<b><u>SECTION-C</u></b>		<b>50</b>
4.	Answer any <u>one</u> of the following:-	
4-a.	Design an algorithm, pseudocode, and flowchart for a program that finds the greatest common divisor (GCD) of two numbers. [CO1, K3]	10
4-b.	Analyze the difference between declarative, procedural, and object-oriented approaches and justify why C is procedural. [CO1, K4]	10
5.	Answer any <u>one</u> of the following:-	
5-a.	Create a program to print the multiplication table of a number using a loop. [CO2, K3]	10
5-b.	Create a program in C to count the number of digits, sum of digits, and reverse of digits of a given number using loop. [CO2, K3]	10
6.	Answer any <u>one</u> of the following:-	
6-a.	Develop a C program to count the number of vowels and consonants in a given string. [CO3, K3]	10
6-b.	Explain the difference between structure and union with appropriate memory layout diagrams. [CO3, K2]	10
7.	Answer any <u>one</u> of the following:-	
7-a.	Construct a program demonstrating passing an array to a function and modifying its elements. [CO4, K2]	10
7-b.	Develop a program that expands a dynamically allocated array using realloc() while preserving existing data. [CO4, K2]	10
8.	Answer any <u>one</u> of the following:-	
8-a.	Develop a program to demonstrate the difference between auto, static, and register variables. Analyze the output. [CO5, K3]	10

8-b. Develop a program that reads student records from a file and displays them in a formatted way. [CO5, K3]

10

REG\_JULY\_DEC\_2025