



Paper ID : 261245

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Subject Code:BCS201

Roll No:

B.TECH.

**(SEM. II) THEORY EXAMINATION 2025-26
PROGRAMMING FOR PROBLEM SOLVING****TIME: 3 HRS****M.MARKS: 70****Note:** Attempt all Sections. In case of any missing data; choose suitably.**SECTION A****1. Attempt all questions in brief.****02 x 7 = 14**

Q no.	Question	CO	Level
a.	What is the purpose of a linker and loader in program execution?	CO-1	K1
b.	Explain Syntax and Logical errors with suitable example.	CO-2	K1
c.	Predict the output of below program. <pre>#include<stdio.h> int main() { int n; for(n = 7; n!=0; n--) printf("n = %d", n--); return 0; }</pre>	CO-3	K1
d.	State the difference between call by value and call by reference.	CO-4	K1
e.	What is a macro? Give an example of a simple macro definition.	CO-5	K1
f.	Name any four fundamental data types in C.	CO-1	K1
g.	Define Explicit type conversion with suitable code.	CO-2	K1

SECTION B**2. Attempt any three of the following:****07 x 3 = 21**

Q no.	Question	CO	Level
a.	Describe the four storage classes in C. Explain their scope and lifetime with suitable examples.	CO-1	K3
b.	Define static and dynamic array. Write a C program that uses a structure to store and display details of an employee (ID, name, salary).	CO-3	K3
c.	Give the difference between else if and switch case statement. Also convert the following program by switch statement <pre>#include <stdio.h> int main() { int i ; scanf("%d",&i) if (i == 10) printf("Not Eligible"); else if (i == 15) printf("wait for three years"); else if (i == 20) printf("You can vote"); else printf("Not a valid age"); return 0; }</pre>	CO-3	K3
d.	Write a detailed note on the stages of program execution: Preprocessing, Compilation, Assembly, Linking, and Loading. Mention the role of each tool involved	CO-1	K2



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e.	Explain the concept of dynamic memory allocation. Write a C program that dynamically allocates memory for one integer using malloc (), assigns a value, prints it, and then frees the memory.	CO-5	K3
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SECTION C**3. Attempt any one part of the following:****07 x 1 = 07**

Q no.	Question	CO	Level
a.	Explain different types of errors in C language. Also draw a flowchart and write an algorithm to calculate the factorial of a given number.	CO-1	K3
b.	Explain the basic structure of a computer system. Describe the functions of CPU, memory, input devices, and output devices.	CO-1	K3

4. Attempt any one part of the following:**07 x 1 = 07**

Q no.	Question	CO	Level
a.	Explain the different types of operators in C. Write a C program that checks whether an entered character is a vowel or a consonant using a switch-case statement.	CO-2	K3
b.	What is meant by operator precedence and associativity? Evaluate the following expression step by step, clearly showing the order of operations: $x = 5 * 2 - 8 / 4 + 3 > 6 \&\& 1$	CO-2	K3

5. Attempt any one part of the following:**07 x 1 = 07**

Q no.	Question	CO	Level
a.	Explain the difference between while and do while loop. Write a C program to find the second largest element in an integer array of size n.	CO-3	K3
b.	Explain the difference between integer and string. Also write a program in C to remove all repeated characters from a string, keeping only the first occurrence.	CO-3	K3

6. Attempt any one part of the following:**07 x 1 = 07**

Q no.	Question	CO	Level
a.	Define recursive function. Write a recursive function to compute the GCD of two numbers. Trace the function call for gcd(48, 18) and show the intermediate recursion steps.	CO-4	K3
b.	Write a C program to implement Binary Search on a sorted array. Explain why the array must be sorted for binary search to work and mention its complexity.	CO-4	K3

7. Attempt any one part of the following:**07 x 1 = 07**

Q no.	Question	CO	Level
a.	Explain the different file opening modes in C (r, w, a, r+, w+, a+). What is the difference between text files and binary files? Give one example of opening a file in "append" mode.	CO-5	K3
b.	Write a C program to accept a text file name from the user and display its entire contents on the screen. Use appropriate file I/O functions and handle the end-of-file condition correctly.	CO-5	K3