

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-I INFORMATION TECHNOLOGY : WINTER: 2025
SUBJECT: STRUCTURED PROGRAMMING

Day : Friday
Date : 12/12/2025

W-27659-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

NB :

1. Assume suitable data, if necessary.
2. Draw neat labelled diagrams WHEREVER necessary.
3. Figures to the right indicate FULL marks for the question.
4. All questions are COMPULSORY.

- Q. 1 What is an algorithm? List and explain the characteristics of a good algorithm. Also, write an algorithm to find the sum of the first 10 natural numbers. (10)
- OR**
- Q. 1 Differentiate between syntax errors and semantic errors in programming. Give two examples of each. How can such errors be identified and corrected during program testing? (10)
- Q. 2 Explain the main features of the C programming language. Also, describe the role of header files and pre-processor directives in C with examples. (10)
- OR**
- Q. 2 Explain the structure of a C program. Describe the role of libraries, declarations, constants, and variables with examples. (10)
- Q. 3 Explain different loop control structures in C. Compare for, while, and do-while loops with examples. Also explain the use of break, continue, and nested loops. (10)
- OR**
- Q. 3 Explain the switch case control structure in C. How is it different from if-else statements? Write a C program using switch to display the day of the week based on a number from 1 to 7. (10)
- Q. 4 Explain the switch case control structure in C. How is it different from if-else statements? Write a C program using switch to display the day of the week based on a number from 1 to 7. (10)
- OR**
- Q. 4 Write a program to illustrate iterative method and recursive function use for finding a factorial of number. (10)
- Q. 5 Define a structure for Student with Sno, Sname, marks of three subjects ,avg. Write a C program to read 4 students information calculate average and display 4 students information. (10)
- OR**
- Q. 5 Write a C function that takes two strings as input and concatenates them into a new dynamically allocated string, without using standard library functions. The function (10)

should return a pointer to the newly created string. The calling function should then print the concatenated string and free the allocated memory.

Q. 6 Consider a text file named "data.txt" that contains a list of integers, each on a new line. Write a C function that reads these integers from the file and calculates their sum. The function should take the filename as an argument and return the sum. Remember to handle file opening, closing and errors appropriately. (10)

OR

Q. 6 Explain the purpose and usage of following file functions : fprintf(), fscanf(). How do they differ from fputs() / fgets() and fread() / fwrite() ? (10)

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