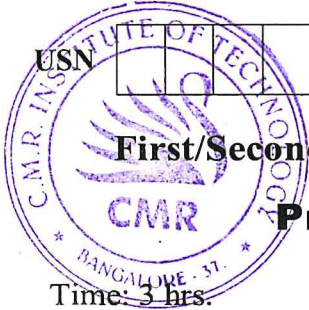


CBCS Scheme



15PCD13/23

First/Second Semester B.E. Degree Examination, July/August 2021

Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. What are variables? Explain the rules to be followed while using variables. Check whether following variable names are valid or invalid.
i) VTU@1997 ii) Pyc_123 iii) 2015_info iv) PT#55 (06 Marks)
b. Explain different data types in C with examples for each. (05 Marks)
c. Write a C program to find sum and difference of two numbers. (05 Marks)
- 2 a. Write a C program to find area and circumference of the circle. Also draw the flow chart. (06 Marks)
b. List the different types of operators in C, and explain with example bitwise and logical operators. (05 Marks)
c. With syntax and example, explain the input and output statements in C. (05 Marks)
- 3 a. Write a C program to reverse a given number and check whether it is palindrome or not. (06 Marks)
b. Differentiate between while loop and do-while loop. (05 Marks)
c. Explain the syntax of for loop and nested if-else statements. (05 Marks)
- 4 a. With suitable example, explain the switch statement in C. (06 Marks)
b. Write a C program to find largest of three numbers using ternary operator. (05 Marks)
c. Write a C program to find sum of squares of 1st n natural numbers. (05 Marks)
- 5 a. What is an array? Explain with examples how single dimensional and two dimensional arrays are declared. (06 Marks)
b. Write a C program to find factorial of a number using recursion. (05 Marks)
c. Write a C program to find 1st n numbers in the Fibonacci series. (05 Marks)
- 6 a. Write a C program to find transpose of a matrix. (06 Marks)
b. Explain any two string manipulation library functions with example. List all functions. (05 Marks)
c. Differentiate between call by reference and call by value in C function. (05 Marks)
- 7 a. Explain with example following file handling operations:
i) fopen() ii) fclose() iii) fgets() iv) fputs() (08 Marks)
b. Write a C program to maintain a record of n students details like Roll No, USN, Name, Marks and Grade, using an array of structures. Print the marks of the students reading the students name as input. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 8 a. What is structure? Explain general syntax of structure and also explain how to access members of a structure with example. (08 Marks)
- b. Write a C program to read and display a text from the file. (08 Marks)
- 9 a. Write a C program to swap two numbers without using third variable. Use pointers. (06 Marks)
- b. What is pointer? Explain how the pointer variable is declared and initialized. (05 Marks)
- c. Explain stack and queue. Mention application of each. (05 Marks)
- 10 a. What is dynamic memory allocation? Explain the different dynamic memory allocation functions in C. (08 Marks)
- b. Explain the preprocessor directives and linked lists. (08 Marks)

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