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18CPS13/23

First/Second Semester B.E. Degree Examination, July/August 2022 C Programming for Problem Solving

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Write basic structure of 'C' program and explain its different sections. (08 Marks)
- b. Describe the various types of computers. (06 Marks)
- c. Define a token. Explain the different tokens available in C language. (06 Marks)

OR

- 2 a. Define a variable. Explain the rules for constructing variables in 'C' language? Give example for valid and invalid variables. (08 Marks)
- b. What is a data type? Explain all the basic data types available in C language with example. (08 Marks)
- c. List all the operators used in C language and evaluate following expressions:
 - (i) $x = a - \frac{b}{3} - c * 2 - 1$ when $a = 9, b = 12, c = 3$
 - (ii) $10! = 10 \text{ !! } 5 < 4 \ \&\& \ 8$ (04 Marks)

Module-2

- 3 a. What are formatted and unformatted I/O functions? Explain them with syntax. (08 Marks)
- b. Write a 'C' program to find area and circumference of a circle. (06 Marks)
- c. What is looping? Explain for () loop with syntax and example. (06 Marks)

OR

- 4 a. What is branching? List and explain all the branching statements with syntax. (10 Marks)
- b. Write a C program to compute roots of a quadratic equations for non-zero coefficients of a, b and c. (06 Marks)
- c. Bring out differences between while () loop and do... while () loop. (04 Marks)

Module-3

- 5 a. What is an array? Explain how 1D and 2D arrays are declared and initialized? (08 Marks)
- b. Write a program to sort a given array of integers in ascending order using Bubble sort technique. (08 Marks)
- c. Explain the declaration and initialization of string variables. (04 Marks)

OR

- 6 a. Define a string. List all the string manipulation functions. Explain any 4 with examples. (10 Marks)
- b. Write C programs for,
 - (i) Linear search.
 - (ii) Binary search.
 (Consider Integer data as input) (10 Marks)



Module-4

- 7 a. What are user defined functions? List and explain all the categories of user defined functions based on return type and parameters. (10 Marks)
b. Write a program to find factorial of a number using function. (05 Marks)
c. Write a program to find GCD and LCM of two integer numbers using functions. (05 Marks)

OR

- 8 a. Explain Pass by value and pass by reference with syntax and examples for each. (10 Marks)
b. What is recursion? What are the elements for recursion? Explain. (05 Marks)
c. Write a C recursive program to compute the Fibonacci series upto n terms. (05 Marks)

Module-5

- 9 a. Define a structure. Explain the syntax of structure declaration in C with example. (06 Marks)
b. List and explain types of structures with their syntax. (06 Marks)
c. Write a C program to implement structures to read, write and compute average marks and the students scoring above and below average marks for class of N students. (08 Marks)

OR

- 10 a. What is a Pointer? Show how pointer variables are declared and initialized? List advantages and disadvantages of pointers. (08 Marks)
b. What is preprocessor directive? Explain any two preprocessor directives in C. (06 Marks)
c. Write a C program to swap contents of two variables using pointer technique. (06 Marks)

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