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18CPS13/23

**First/Second Semester B.E. Degree Examination, July/August 2021**  
**C Programming for Problem Solving**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

- 1 a. Explain different generations of computer. (10 Marks)  
b. With a neat block diagram of computer explain its components. (10 Marks)
- 2 a. Write the basic structure of C program. Briefly explain each section. (08 Marks)  
b. Classify the operators based on the number of operands. Explain with one example for each. (08 Marks)  
c. State whether the following are valid identifiers or not: integer, char, \_for, while. (04 Marks)
- 3 a. With neat syntax explain formatted input and output functions. (06 Marks)  
b. Compare while and do-while loops. (04 Marks)  
c. Write a C program to display the Pascal's triangle. (10 Marks)
- 4 a. With neat syntax and example, explain if, if...else and switch statements. (10 Marks)  
b. Write a C program to find the roots of a quadratic equation. (10 Marks)
- 5 a. What is string? With example, explain the following string manipulation functions strcpy, strcmp, strcat and strlen. (10 Marks)  
b. Write a C program to sort the list of numbers using bubble sort technique. (10 Marks)
- 6 a. What is an Array? Explain the declaration and initialization of one dimensional array. (10 Marks)  
b. Write a C program to search a given key element from the list of elements using binary search technique. (10 Marks)
- 7 a. With neat syntax explain the following:  
i) Function declaration  
ii) Function call  
iii) Function definition. (06 Marks)  
b. Explain global variables and static variables. (04 Marks)  
c. What is function? List and explain the categories of user defined functions. (10 Marks)
- 8 a. What is recursive function? Write a C program to find the factorial of a number using recursion. (06 Marks)  
b. Write a C program to find Fibonacci series using function. (08 Marks)  
c. Explain call by value and call by reference functions. (06 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.

- 9 a. Define structure. Explain how structure members are accessed using dot (.) operator. (04 Marks)
- b. Write a C program to accept RollNo, Name, and Marks of students and display the sum and average of the marks using structure. (10 Marks)
- c. What is pointer? With example explain how pointer variables are declared and initialized. (06 Marks)
- 10 a. What is preprocessor directive? Explain #define preprocessor directive. (04 Marks)
- b. Write a C program to compute the sum, mean and standard deviation of elements stored in an array of n real numbers using pointers. (10 Marks)
- c. With example explain structure within structure. (06 Marks)

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