USN [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   **21PSP13/23**

First/Second Semester B.E. Degree Examination, Jan./Feb. 2023
Problems Solving through Programming

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Write a neat block diagram of computer and explain its components.   **(08 Marks)**
   b. Define a variable. Explain rules for specifying variables in C language.   **(06 Marks)**
   c. Write a C program to calculate simple interest. Draw the flow chart for the same. **(06 Marks)**

OR

2 a. Explain various types of computer.   **(08 Marks)**
   b. What are input devices? Explain any three types of input devices.   **(06 Marks)**
   c. What is pseudo code? Explain with an example.   **(06 Marks)**

Module-2

3 a. Explain for loop, while loop and do while loop along with syntax and example. **(08 Marks)**
   b. Write a C program to compute the roots of a quadratic equation by accepting the coefficients
      and print the appropriate message.   **(08 Marks)**
   c. Explain the formatted I/O function of C language with syntax and example.   **(04 Marks)**

OR

4 a. Explain the working of simple if-else with syntax and example.   **(06 Marks)**
   b. Develop a C program to plot a Pascal's triangle.   **(08 Marks)**
   c. Explain any three format specifiers of C language.   **(06 Marks)**

Module-3

5 a. Define an array. Explain with example how do you declare and initialize 1D array. **(08 Marks)**
   b. Write a C program to implement Bubble sort algorithm.   **(08 Marks)**
   c. Explain the working of Binary Search Technique.   **(04 Marks)**

OR

6 a. Write a C program to implement selection sort algorithm.   **(08 Marks)**
   b. Define a string. Explain any two library functions for string manipulation with syntax and
      example.   **(06 Marks)**
   c. Discuss the working of following string functions:
      (i) strcat( )   (ii) strcmp( )   (iii) strcpy( )   **(06 Marks)**

Module-4

7 a. Define a function. List and explain categories of user defined functions.   **(08 Marks)**
   b. What is recursion? Discuss its working with the help of suitable example.   **(05 Marks)**
   c. Write a program to find the factorial of a given number using function.   **(07 Marks)**

OR

8   a. Differentiate between call by value and call by reference with example.   (07 Marks)
    b. List any five built in function and explain any two.   (06 Marks)
    c. Explain various ways of passing parameters to the function.   (07 Marks)

Module-5

9   a. What is a structure? Explain syntax of structure with example.   (06 Marks)
    b. How union is different from struct? Give an example.   (06 Marks)
    c. Write a C program to read and print a record of 'n' students details. Using array of structure with four fields as rollno, name, marks, grade.   (08 Marks)

OR

10 a. Explain with example how to create structure using 'typedef'.   (06 Marks)
    b. What is a pointer? Write a C program to find sum and mean of 'n' elements in an array using pointers.   (08 Marks)
    c. Explain five preprocessor directives in C.   (06 Marks)

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