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March 2023
B.Tech. 1st Semester
Programming for Problem Solving (ESC 103)

Time : 3 Hours]   [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*

2. *Answer any four questions from Part-B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Define Registers.

    (b) Differentiate between algorithm and flowchart.

    (c) What are Keywords? Explain with example.

    (d) What is the usage of goto and continue instruction in C?

    (e) Name and define any *two* categories of errors in a program.

(f) Write the output of following program

```
main()
    { int x=5,*a;
    a=&x;
    printf("%d",x++);
    getch();
    }
```

(g) Define Strings with example.

(h) Write the complexity of Selection Sort.

(i) Differentiate between Linker and Loader.

(j) Draw the flowchart for finding greatest between three numbers.

PART-B

2. (a) Explain with proper diagram the memory hierarchy of a computer system. (5)

   (b) What are Switch_Case instruction in C. Write a program to generate simple calculator (addition, subtraction, multiplication etc.) using Switch case. (10)

3. (a) What is an Operating System? Write all its functions and explain Memory management in detail. (10)

(b) WAP to check whether a year entered by user is Leap or not. (5)

4. WAP for creating array of structure of students of your having following data elements : student name, student roll no, semester, branch. Create an array of 50 students. The program should take input and also print the output for the same. (15)

5. (a) Differentiate between call by value and call by reference of passing parameters in functions. WAP to Swap two numbers using call by reference. (10)

   (b) Write a program to calculate factorial of a number using loops. (5)

6. (a) Write a program to calculate length of a string without using string inbuilt functions. (10)

   (b) Write a program to implement Insertion sort. (5)

7. Differentiate between : (15)

   (i) High Level language and Low Level Language.

   (ii) Compiler and Interpreter

   (iii) while and do_while loop

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