

Roll No. 24001007034

Total Pages : 03

007103

December 2024

B.Tech. (First Semester)

Programming for Problem Solving (ESC103)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) Draw a flowchart to explain the procedure of compilation. **1.5**
- (b) What is virtual memory ? Why is it needed ? **1.5**
- (c) What are Strings ? Explain the difference between character arrays and strings. **1.5**
- (d) What are header files ? **1.5**
- (e) What is the difference between cold boot and warm boot ? **1.5**

- (f) Elaborate a few applications of computers
1.5
- (g) Explain the concept of pointers with the help of an example.
1.5
- (h) What do you mean by recursion ? Explain.
1.5
- (i) Explain the difference between unary and binary operators.
1.5
- (j) How many bytes are required in the memory to store an array `int i[20]` ?
1.5

Part B

2. (a) What is a flowchart ? Draw a flowchart to find the smallest of three numbers. Also write the Algorithm for the same.
10
- (b) Draw the block diagram of a computer. Also explain the difference between primary memory and secondary memory.
5
3. (a) Write a program using switch-case to find the grade of a student.
5
- (b) Write short notes on the following :
10
 - (i) Break and continue
 - (ii) Static variables
 - (iii) Struct and union.
4. What are array of structures ? Write a program using array of structures to maintain the data of 50 students in a class with their roll no, first name, last name and address.
15
5. (a) Differentiate between do-while and while loops. Use appropriate examples to demonstrate.
5
- (b) Write a program to find the difference between two matrices using functions.
10
6. (a) Write a program to arrange a given array in ascending order using quick sort. What is the time complexity of this program ?
10
- (b) Explain different iterative statements available in C with their syntax.
5
7. What is Recursion ? How is it different from iteration ? Write a program to find the factorial of a number using recursion.
15