# SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY

**Subject Code: BCS-101** **Subject: Programming for Problem Solving**

**Course: B.Tech.** **Semester: I**

## SECOND SESSIONAL EXAMINATION, EVEN SEMESTER, (2022-2023)

**Branch: Common to all Branches (CS/EC/EE/ME/CE)**

*Time* –2 hrs **Maximum Marks – 45**

## SECTION – A

**1. Attempt ALL questions in brief.**

| Q N | QUESTION | Marks | CO | BL |
|---|---|---|---|---|
| a. | Differentiate between 'break' and 'continue' statements in C. | 2 | CO3 | L4 |
| b. | What are strings in C? How they are handled in C? | 2 | CO3 | L2 |
| c. | What is recursion? State principles of recursion. | 2 | CO4 | L1 |
| d. | Describe actual and formal arguments. | 2 | CO4 | L2 |
| e. | Write various advantages of Dynamic Memory Allocation. | 2 | CO5 | L1 |
| f. | What will be the output of following program?<br>#include<stdio.h><br>#include<conio.h><br>#define PRODUCT(n) n+n*n+n<br>void main()<br>{<br>int j;<br>j = 64/PRODUCT(4)* PRODUCT(4);<br>printf("%d", j);<br>getch();<br>} | 2 | CO5 | L5 |

## SECTION – B

**2. Attempt any *ONE* part of the following:**

| Q N | QUESTION | Marks | CO | BL |
|---|---|---|---|---|
| a. | Write a program to display all the prime numbers between 500 to 1000. | 5 | CO3 | L3 |
| b. | Differentiate between structures and unions with suitable example. | 5 | CO3 | L4 |

**3. Attempt any *ONE* part of the following:**

| | | | | |
|---|---|---|---|---|
| a. | Illustrate function prototyping, function definition and function calling in C with suitable example program. | 5 | CO4 | L2 |
| b. | Differentiate between Call By Value and Call By Reference with suitable example? | 5 | CO4 | L4 |

**4. Attempt any *ONE* part of the following:**

| | | | | |
|---|---|---|---|---|
| a. | Explain working of any four functions used in File Handling. | 5 | CO5 | L2 |
| b. | What are macros in C? Explain using suitable example program. | 5 | CO5 | L2 |

## SECTION - C

**5. Attempt any *ONE* part of the following:**

| Q N | QUESTION | Marks | CO | BL |
|---|---|---|---|---|
| a. | Write a program using structure to create a database of information of 100 students entered by the user. Each student record must have information regarding his/her name, roll number, and marks. Also, print the details of all the student. | 6 | CO3 | L3 |
| b. | Write a program to multiply two matrices of 3*3. | 6 | CO3 | L3 |

**6. Attempt any *ONE* part of the following:**

| Q N | QUESTION | Marks | CO | BL |
|---|---|---|---|---|
| a. | Explain the process of Insertion sorting on a working example array. Also, give its implementation in C? | 6 | CO4 | L3 |
| b. | Write a recursive program to print the Fibonacci Series. | 6 | CO4 | L3 |

**7. Attempt any *ONE* part of the following:**

| Q N | QUESTION | Marks | CO | BL |
|---|---|---|---|---|
| a. | Write a program to copy the contents of a file named 'source.doc' and to a file named 'destination.doc'. | 6 | CO5 | L3 |
| b. | Discuss the role of calloc(), malloc(), free() and realloc() in Dynamic Memory Allocation. | 6 | CO5 | L4 |