SOMAIYA
VIDYAVIHAR UNIVERSITY
K J Somaiya School of Engineering
(formerly K J Somaiya College of Engineering)

K. J. Somaiya School of Engineering, Mumbai-77
(Somaiya Vidyavihar University)

T R U S T

Course:	Structured Programming Methodology		Semester:	I	Date:	
Division:		Batch:		SET	I	Name:	
Exam:	OST		Time:		Roll No:	

Q No	Question	Marks
1	Write a **menu-driven program** to perform various operations on a **2D array (matrix)** using **user-defined functions**. The program should allow the user to: 1. **Insert elements** into a 2D array of user-defined size (rows and columns). o Validate that the entered size is positive. 2. **Display the array** in a well-formatted matrix layout. 3. **Find the largest and smallest elements** in the array along with their positions. 4. **Count the total number of elements** and display the **count of even and odd numbers** separately. 5. **Sort all the elements** of the array in **ascending or descending order** (user's choice). 6. **Exit** the program. Use **separate functions** for each operation. OR	15
2.a	Write a program to store the **prices of *n* products** and their respective **quantities** using one-dimensional arrays. The program should: 1. Accept the number of products (*n*) from the user. 2. Input the **price** and **quantity** for each product. 3. Validate that the entered price and quantity are positive values. 4. Use a **function** named calculateTotalCost() that takes both arrays (price and quantity) as arguments and returns the **total cost** of all products. 5. Display the total cost with proper formatting.	8 7
2.b	Write a program to input marks obtained by a student in *n* subjects. Each subject has a different maximum mark. The program should: 1. Accept the marks obtained and maximum marks for each subject. 2. Validate that the entered marks do not exceed the maximum marks. 3. Calculate the **percentage** and **average marks** of the student. 4. Determine and display the **grade** based on the following criteria: o $\geq 90\% \rightarrow$ Grade A o 75–89% $\rightarrow$ Grade B o 60–74% $\rightarrow$ Grade C o 40–59% $\rightarrow$ Grade D o < 40% $\rightarrow$ Grade F	