SOMAIYA
VIDYAVIHAR UNIVERSITY
K J Somaiya School of Engineering

Course:	Programming in C			Semester:	II	Date:	
Division:		Batch:		SET	D	Name:	
Exam:	OST			Time:		Roll No:	

Q 1	Attempt Any ONE [Show all test Cases in output.]	Marks

1	Write a program to generate a diamond pattern based on user input n (1 ≤ n ≤ 50).
	
	The program should use a for loop to print the upper half and a while loop to print the lower half.
	Add a goto statement to restart the pattern generation if the user provides an invalid input (e.g., n < 1 or n > 50).
	The pattern should look like this for n = 5:
	   *
	  ***
	 *****
	  ***
	   *
	Show the output for three different values of **n**.
	Input from user 1 marks
	Upper half using for loop 3 marks
	Lower half using while loops 3 marks
	Check all test cases 1 marks
		08

2	Write a program to input a sentence (character array) of at most 20 characters and perform the following: Replace every vowel in the sentence with the next vowel in cyclic order (e.g., 'a' → 'e', 'e' → 'i', ..., 'u' → 'a'). (Using Switch-case statements) <table><tr><td>**Test Case 1:** Enter a sentence : hello world Modified sentence after vowel replacement: hillu wurld</td><td>**Test Case 2:** Enter a sentence : programming Modified sentence after vowel replacement: pregrommong</td><td>**Test Case 3:** Enter a sentence : OpenAI Modified sentence after vowel replacement: UpinEO</td></tr></table> **Input from user 1 marks** **Logic to replace vowels 5 marks** **Output and check all test cases 2 marks**	08

Q 2	Attempt Any ONE [Show all test Cases in output.]	Marks
1	Write a C program to define structure for a Hospital needs to maintain details of patients. Details to be maintained are patients ID, First name, Middle name, Surname, age, and disease. Write a C program that: Takes details of multiple patients as input. Searches for patients with a given disease. Sorts patients with that disease in ascending order of age. Displays the first five patients' details. Use functions for: ● Searching for patients by disease.	12

- Sorting patients by age.
- Displaying the final list.

Enter the disease to search: Flu

List of first 5 patients with Flu sorted by age:
1. ID: 103 | Name: Alice C. Brown | Age: 25 | Disease: Flu
2. ID: 107 | Name: David G. Martinez | Age: 35 | Disease: Flu
3. ID: 106 | Name: Michael F. Wilson | Age: 40 | Disease: Flu
4. ID: 101 | Name: John A. Doe | Age: 45 | Disease: Flu
5. ID: 105 | Name: Emily E. Davis | Age: 50 | Disease: Flu

Define structure for Hospital 2 marks
Function to search 3 marks
Function to sort 4 marks
Function to display first five patients 2 marks
Output with test cases 1 marks

| 2 | Write a C Program that uses pointers & functions to copy contact of two input strings str1 & str2 into a str3 using user defined function. (Do not use Inbuilt string functions)
 Function: concatenateStrings(str1, str2, str3) | 12 |

Enter first string: Hello Enter second string: World Concatenated String: HelloWorld	Enter first string: Ram Enter second string: Sita Concatenated String: RamSita

Input 1 marks
Logic of Copy string 2 marks [inbuilt function 0 mark]
Logic of append string 3 marks [inbuilt function 0 mark]
Use of Function and pointer 5 marks
Output with test cases 1 marks