END SEMESTER EXAMINATION Jan-2023
PROGRAM: B.Tech.
SEMESTER-II

Course: Computational Thinking and Problem-Solving Using Python **Course Code: 22CSE101**

Program: B.Tech (All Branches)

Max. Marks: 100 **Max. Time: 3 hours**

Exam ID:

1. Write your ID number in the question paper at the place specified for it
2. Ensure that you have entered all the details on the answer book and have obtained Invigilator's signature
3. Do not write/mark anything on the question paper
4. Using question paper for rough work is strictly prohibited

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Section – A (Answer all questions. Each question carries 5 marks) (5X5=25)

No.	Question	CO	Marks
Q.1	Draw the flow chart symbol for the following operations: (a) Input/Output (b) Flow Lines (c) Decision Making (d) Start/End (e) Direction of Process Flow	CO1	5
Q.2	Design/Develop an algorithm to find distance between two points. Convert your algorithms into a python program.	CO1	5
Q.3	Outline the Object-Oriented Programming concepts? Explain its 4 main pillars.	CO1	5
Q.4	Write a python program to check if a number palindrome or not.	CO2	5
Q.5	Illustrate difference, looping structures in python with example for each.	CO2	5

Section – B (Answer all questions. Each question carries 10 marks) (5X10=50)

No.	Question	CO	Marks
Q.6	Explain nested-if and draw the flow chart of nested-if with an example.	CO1	10
Q.7	Differentiate direct recursion and indirect recursion with an example.	CO2	10
Q.8	Define the below operations on string with an example of each: (a) Indexing (b) Slicing (c) Concatenation (d) Repetition	CO2	10
Q.9	Demonstrate the python program to print 2×2 matrix multiplication.	CO2	10
Q.10	Show the working of the following file handling operations: (a) r: (b) w: (c) a: (d) r+: (e) w+: (f) a+:	CO3	10

Section – C (Answer any one question. Question carries 25 marks) (1X25=25)

No.	Question	CO	Marks
Q.11	You are a marvel fan and want to create a list of superheroes as follows: Avengers = ['Iron Man', 'Captain America', 'Black Widow', 'Hulk', 'Thor', 'Hawkeye'] Using the list operations write a python program for the following: (a) Calculate how many members are there in the avengers team. (b) Iron Man created a new member name as Spider Man, in the above list. Add him to the existing list. (c) Captain America is the Leader of the Avengers; You need to add him before the Iron Man. So, remove him from the list and add before the Iron Man. (d) You don't like Thor and Hulk together because they get angry easily and fight with each other. So, you must separate them from each other. To separate them either move "Black Widow "or "Hawkeye" in between them. (e) After Avengers: End Game the original six avengers are retired, now you need to remove them from your list and add new superheroes like Doctor Strange, Vision, Wanda, Kate, Bishop, and Ant-man.	CO2	25
	OR		

| Q.12 | Write a python function that will take n as input and print the pattern of n rows such that if the n is even, the output should be flipped.

Example:

n =3

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* *
* * *

n=4

* * * *
* * *
* *
* | CO2 | 25 |