

Reg. No.

**23204**

**Velammal College of Engineering and Technology**

Viraganoor, Madurai – 625 009

(Autonomous)

**B.E. End Semester Examinations November 2023**

**First Semester**

**Time : 3 Hours**

**Regulation 2021**

**Max. Marks 100**

**21CS101 - Problem Solving and Python Programming**

**(Common to All Branches - AI&DS, CIVIL, CSE, ECE, EEE, MECH & IT)**

**Answer ALL Questions**

**PART-A (10 x 2 = 20 Marks)**

1. Define problem solving.
2. What are the building block of algorithm?
3. List the standard data types in python.
4. Interpret the output of the following? Justify your answer.  

```
i = 1
while True:
    if i%2 == 0:
        break
    print(i)
    i += 2
```
5. Illustrate Recursion with an example.
6. Outline the chained conditional statement with example.
7. Show how to create a dictionary in python?
8. Outline the advantages of Tuples over Lists?
9. List some few common Exception types and explain when they occur?
10. How to open a new file in python?

**Part – B (5 x 13 = 65)**

11. a) Explain in detail about the building blocks of algorithm.

**OR**

- b) Outline the Algorithm, Pseudocode and draw the flowchart for Towers of Hanoi.

12. a) Illustrate in detail about function prototyping in python with suitable example program.

OR

- b) Explain in detail about the various operators in python with suitable examples.

13. a) Explain with an example while loop, break statement, continue statement, pass statement with an example.

OR

- b) i) Write a python program to find the sum of N natural numbers.

ii) Write a python code to search a string in the given list. (7 + 6 marks)

14. a) Explain in detail about

a. Creating a dictionary

b. Accessing values in a dictionary

c. Updating dictionary

d. Deleting elements from dictionary

(3 + 3 + 4 + 3 marks)

OR

- b) Outline the algorithm and Illustrate a program that uses insertion sort technique to sort an array of 10 elements.

15. a) Explain the file concept with file reading and writing operations in detail with appropriate syntax and example.

OR

- b) i) Outline a python script to copy a text file to another text file using file concept.

ii) Interpret a python program to count number of lines, words and characters in a text file.

(7 + 6 marks)

**Part – C (1 x 15 = 15)**

16. a) Write and analyze a program in python using exception handling to get student marks and calculate the relevant information.

OR

- b) Construct the university result of various colleges in department wise using read and write file.