Reg. No.:

Name :

VIT® BHOPAL www.vitbhopal.ac.in

Mid-Term Examinations – October 2021

Programme	:	**B.Tech**	Semester	:	**Fall 2021-22**
Course	:	**Introduction to Problem Solving and Programming**	Code	:	**CSE1021**
Faculty	:	**Dr. Anju Shukla**	Slot/ Class No.	:	**A11+A12+A13/0756**
Time	:	**1 ½ hours**	Max. Marks	:	**50**

Answer all the Questions

Q.No.	Sub. Sec.	Question Description	Marks
1		Write an algorithm, pseudo code and draw flow chart to perform sum of cubes of the digits. For example 123= $1^3+2^3+3^3=36$	**10**
2	(a)	The two algorithms below are both intended to calculate the sum of cubes from 1 to n, where n is any positive integer.	**5**

Algorithm 1	Algorithm 2
i ← n sum ← 0 REPEAT n TIMES { sum← sum+(i * i*i) i ← i - 1 }	i ← 1 sum ← 0 REPEAT n TIMES { sum← sum + (i * i*i) i ← i + 1 }

Verify whether both algorithms calculate correct sum or not.

(b) What is the worst time complexity of the following code: **5**

```
function(int n)
{
  if (n==1)
    return;
  for (int i=1; i<=n; i++)
  {
    for (int j=1; j<=n; j++)
    {
      printf("*");
      break;
    }
  }
}
```

Show steps.

3 Write a python program to perform addition, subtraction, multiplication, integer division and modulo division on two integer and float. **10**

4	Write individual algorithm to find out the square root of a number by using both in built methods math.sqrt and math.pow.	**10**
5	Write a python program to check whether a given number is even or odd. If the number is even, print number's square and if number is odd print number's cube. For example if number is 2, it should be printed 2^2 i.e. 4, if number is 3 it should be printed 3^3 i.e. 27.	**10**

⇔⇔⇔