

Code:20ES1102

I B.Tech - I Semester – Regular Examinations – JULY 2021**PROBLEM SOLVING & PROGRAMMING WITH PYTHON**
(Common to EEE, ME, ECE)

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

UNIT – I

1. a) Develop a script to glide the sprite along the sides of a triangle. The first vertex of the triangle is (-100, -100). The second vertex is (200, -100). The third vertex is (50, 100). 7 M
- b) Develop a script to calculate the average of the given numbers using the following statements
Ask the user for a value of A
Ask the user for a value of B
Compute V as the average
Report the average to the user
Run the program for different A's and B's. 7 M
- OR
2. a) Write a script to do the following
Sprite starts at home base at $x = -100$; $y = -50$
Sprite says "I hit the ball" for 2 seconds
Sprite runs (east) 200 steps to 1st base
Sprite runs 200 steps to 2nd base (north: left turn from 1st base)
Sprite doubles size
Sprite says "I hit a double" for 5 seconds. 7 M
- b) Describe the steps to draw a hexagon in Scratch. 7 M

UNIT – II

3. a) Design a flowchart in raptor environment to find the smallest number among three given numbers? 7 M
b) Write the pseudocode to display first 'n' Fibonacci numbers. 7 M

OR

4. a) Write an algorithm to find the GCD of given two numbers? 7 M
b) Compare the features of algorithm, flowchart and pseudocode. 7 M

UNIT-III

5. a) Develop a Python program to print the following string in a specific format (see the output).

Sample String : "Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are"

Output :

Twinkle, twinkle, little star,

How I wonder what you are!

Up above the world so high,

Like a diamond in the sky.

Twinkle, twinkle, little star,

How I wonder what you are

7 M

- b) Predict the output of the following code with Explanation

```
>>> s='CBJ345'  
>>> total=0  
>>> count=0  
>>> for i in range(len(s))  
    if s[i].isalpha():  
        continue  
    total=total+int(s[i])  
    count=count+1  
>>> print(total,count)
```

7 M

OR

6. a) Develop a Python program to calculate number of days between two dates.
Sample dates : (2014, 7, 2), (2014, 7, 11)
Expected output : 9 days 7 M
- b) Write the syntax of for loop in python, use for loop to print the following pattern.
- ```

**
*
```
- 7 M

### UNIT – IV

7. a) Define a method. Give the general form of a method call and explain the following methods with an example  
(i) islower() (ii) find(s) (iii) count(s) 7 M
- b) Using string method write an expression that produces:
- (i) The number of o's in potato
  - (ii) The index of first occurrence of o in potato
  - (iii) A copy of 'potato' capitalized
  - (iv) Copy of ' potato' with the leading whitespace removed 7 M

OR

8. a) Find and write the output of the following python code:
- ```
def fun(s):  
    k=len(s)  
    m=" "  
    for i in range(0,k):  
        if(s[i].isupper()):  
            m=m+s[i].lower()  
        elif s[i].isalpha():  
            m=m+s[i].upper()  
        else:  
            m=m+'bb'  
    print(m)  
fun('school2@com')
```
- 7 M

- b) Develop a Python function to multiply all the numbers in a list.

Sample List : (8, 2, 3, -1, 7)

Expected Output : -336

7 M

UNIT – V

9. a) Consider the following list: $p = [2, 4, 3, 6, 7, 8, 14, 19]$

Give the outputs of the following

(i) $p[0:3]$ (ii) $p[0:-1]$ (iii) $p[::-1]$ (iv) $p[-1:-4]$ (v) $p[:]$
(vi) $p[:4]$ (vii) $p[0:]$

7 M

- b) Develop a function in python to count the number of lines in a text file 'STORY.TXT' which is starting with an alphabet 'A' .

7 M

OR

10. a) Develop a Python program to get a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples.

Sample List : [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)]

Expected Result : [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]

7 M

- b) Write a Python script to concatenate following dictionaries to create a new one.

Sample Dictionary :

dic1={1:10, 2:20}

dic2={3:30, 4:40}

dic3={5:50,6:60}

Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

7 M