Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

EXCEL ENGINEERING COLLEGE, KOMARAPALAYAM
(AUTONOMOUS)

B.E. / B.Tech. DEGREE SEMESTER EXAMINATION, MAY/JUNE - 2021
First / Second Semester
B.E. - Aeronautical Engineering
20CS102 / 20CS201 – PROBLEM SOLVING USING PYTHON
(Common to All Branches)
(Regulation 2020)

Time: Three Hours   Maximum Marks: 100

Answer All Questions

PART - A (10 x 2= 20 Marks)

1	Distinguish between pseudo code and program.	CO1
2	Draw a flowchart to print the roots of a quadratic equation	CO1
3	List few properties of assignment statement in python	CO2
4	Predict the output of the following code. a = 10 b = 4 print("a & b =", a & b)	CO2
5	Define Lambda function.	CO3
6	What is the output of the following code? x = 'abcd' for i in range(len(x)): x[i].upper() print (x)	CO3
7	Why Python has tuple data type when list serves the purpose?	CO4
8	Write the snippet for sorting a list using insertion sort.	CO4
9	Differentiate between lists and tuples in python	CO5
10	Write methods to rename and delete files	CO5

PART - B   (5x16=80 Marks)

11 (a) i. Explain the rules for pseudo code   (6)   CO1

     ii. Describe the algorithm for finding sum and average of n   (10)   C02
        numbers.

<div align="center">(or)</div>

11(b) i. Explain guidelines for preparing flowcharts, benefits and   (8)   CO1
        limitation of flowcharts

     ii. Draw a flow chart to print all prime number between two   (8)   CO2
        intervals m and n.

12 (a) i. Explain about the data types supported by Python. Give   (8)
        examples.

     ii. Write a Python program that accepts an integer (n) and   (8)
        computes the value of n+nn+nnn. (Eg. Input: n=5, Expected
        Output: 5+55+555=615)

<div align="center">(or)</div>

12 (b) i. Explain in detail about the various operators in python   (8)   CO2
        with suitable Examples.

     ii. Write a Python program to check whether a given year is   (8)
        leap year or not.

13 (a) i. When will you use while loops? Write down the syntax of   (8)   CO3
        while loop and illustrate the scenario of generating infinite
        loop. Give python examples.

     ii. Differentiate between chained and nested conditional   (8)
        statements in python with examples

<div align="center">(or)</div>

13 (b) i. Illustrate the different types of formal arguments that could   (8)   CO3
        be passed to python functions with examples.

     ii. Write a Python function that takes a number as a parameter   (8)
        and checks the number is prime or not

14 (a) i. Create a Bank Account class in python that has two   (8)   CO4

methods A) withdraw (from account balance) and B) deposit (to account balance). Add necessary constructors if required. Create another class MinBal Account inherited from Bank Account and override the withdraw method to check for minimum balance before withdrawal from account. Display a message „Insufficient Fund", if minimum balance is not sustained after withdrawal, else allow withdrawal.

    ii. Write a program to perform selection sort from a list of numbers using Python   (8)

<div align="center">(or)</div>

14 (b) i. Discuss any four built-in string functions in python with example   (8)   CO4

    ii. Write a Python code that does the following with its output: (8)
A) Declare a string that holds "Monty Python's Flying Circus"
B) Print the string in uppercase
C) Split the string into words and print
D) Join the words with symbol "+"
E) Replace the word "Python" with "Java"
F) Find the word "Python"
G) Find the index of the letter "g"
H) Count the number of times, letter "n" is present in the string.

15 (a) i. Describe in detail exception handling and write a program to catch a Divide by Zero exception with finally block.   (8)   CO5

    ii. Create a dictionary d1= {0:10, 1:20} and write a python script to perform the following: (8)
A) Add element 2:30 to 'd1'
B) Concatenate the dictionary 'd1' to another dictionary d2={4:40, 3:30} to create a new dictionary 'd3'
C) Sort the dictionary 'd3' by value
D) Sum all the items in 'd3'

15 (b) i. Write the syntax of opening a file and reading from a file (8) CO5
with suitable examples.

ii. Write a program to read 75 random numbers from the user (8)
and store even numbers and odd numbers separately in
two different files.