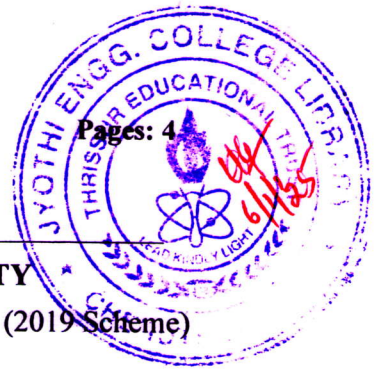D

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S6 (S, FE) / S4 (PT) (S, FE) Examination December 2024 (2019 Scheme)

Course Code: CST362

Course Name: PROGRAMMING IN PYTHON

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 3 marks.   Marks

1	Assuming num=125, determine the value of each of the following Python expressions. (i) num//100 (ii) num%100 (iii) not((num<45.9)&(6*2<=13))	(3)
2	Which of the following can be used as valid variable identifier(s) in Python? (i) 4thSum (ii) Data (iii) Number#	(3)
3	Write the output for the following python statements. t1= (10, 20, 30,40) print (t1[:3]) print(t1[:])	(3)
4	List one similarity and one difference between List and Dictionary datatype	(3)
5	What are lossless and lossy compression methods of images?	(3)
6	Explain three GUI window attribute?	(3)
7	What is the use of __init__() function? Give example.	(3)
8	Explain abstract class with an example.	(3)
9	What will be the output of the following code?	(3)

import pandas as pd

import numpy as np

data = np.array(['a1','b1','c1','d1','e1'])

S= pd.Series(data, index = [1001, 1002, 1003, 1004, 1005])

print(S[[1002, 1003, 1004]])

10   Explain following python functions: (3)

    i)   getcwd() ·

    ii)   mkdir()

    iii)   walk()

PART B
Answer one full question from each module, each carries 14 marks.

Module I

11 a) Describe the waterfall model of software development process with a neat   (8)
    figure.?

   b) Using while loop write a python program to print the multiplication table of a   (6)
    given number.?

OR

12 a) Describe Arithmetic Operators, Comparison Operators, Logical Operators and   (8)
    Bitwise operators in detail with examples.?

   b) Report the Value for sin(x) up to n terms using the series   (6)
$$sin(x) = \frac{x}{1!} - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \cdots \quad \text{where x is in degrees}$$

Module II

13 a) Write Python program using function to generate a dictionary that contains   (7)
    (*i: i*i*) such that *i* is a number ranging from 1 to 6.?

   b) Write Python program that accepts a sentence and calculate the number of   (7)
    words, digits, uppercase letters and lowercase letters.?

OR

14 a) Alice was asked to accept a list of even numbers but she did not put the relevant   (7)
    condition while accepting the list. Write a user-defined function oddtoeven(L)
    that accepts the List L as an argument and converts all the odd numbers into
    even by multiplying them by 2.?

   b) Write a python program to read numbers from a file named num.txt. Write all   (7)
    positive numbers from num.txt to file named positive.txt and all negative
    numbers to negative.txt.?

Module III

15 a) Describe any two image processing libraries in python, with illustration of two   (7)
    methods of each library.

b) Write a GUI program to display an image with title? (7)

OR

16 a) Write a GUI application that serves as interest calculator. Your GUI must take Principle, Rate of interest and time in years as inputs from the user. It must let the user choose whether they want to calculate Simple interest or Compound interest and the final output is displayed in a single output filed accordingly? (8)

b) Write a python program to draw a parallelogram using turtle and fill with a color (6)

Module IV

17 a) Write any two types of inheritance in Python? Give an example for each. (8)

b) Write Python Program to simulate a Bank Account with support for depositMoney, withdrawMoney and showBalance Operations.? (6)

OR

18 a) Write Python code to overload "+", and "-" operators by providing the methods __add__, __sub__.? (8)

b) What is the use of exceptions? Write a Python code to raise an exception using the **raise** keyword.? (6)

Module V

19 a) Assume a data frame df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indexes shown below (8)

	CITY	MAXTEMP	MINTEMP	RAINF
C1	DELHI	40	32	24.
C2	BENGALURU	31	25	36.
C3	CHENNAI	35	27	40.
C4	MUMBAI	29	21	35.
C5	KOLKATA	39	23	41.

Give the output of the questions

i) df1.shape

ii) df1[1:2]

iii) df1.loc['C1':'C3','City']

iv) df1.iloc[2]

b) Write a Python program to plot the bar graph to depict the popularity of various (6) programming languages. Label the graph with x-axis, y-axis, x-ticks,y-ticks, legend and title.

Data :

Programming languages: Python, C++, Java, Perl, Scala, Lisp
Usage= 10,8,6,4,2,1

OR

20 a) Consider the following record in dataframe IPL (8)

Player	Team	Category	BidPrice	Runs
Hardik Pandya	Mumbai Indians	Batsman	13	1000
KL Rahul	Kings Eleven	Batsman	12	2400
Andre Russel	Kolkata Knight riders	Batsman	7	900
Jasprit Bumrah	Mumbai Indians	Bowler	10	200
Virat Kohli	RCB	Batsman	17	3600
Rohit Sharma	Mumbai Indians	Batsman	15	3700

i) Write a command to Print total players per team.

ii) Write a command to Find player who had highest BidPrice from each team.

iii) Write a command to Find average runs of each team.

iv) Write a command to Sort all players according to BidPrice.

b) Using Numpy write a program to (6)

1) find transpose of a matrix

2) find trace of a matrix

3) create identity matrix

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