INTRODUCTION TO PYTHON PROGRAMMING

TOTAL MARKS:30 **DURATION: 2 HOURS**

Instructions

1. *Candidates should answer all the questions in the same order provided in the question paper.*
2. *Any activity that compromises the integrity of the examination will not be permitted.*
3. *Students should complete the examination within the provided timeline.*
4. *Candidates are expected to check and ensure that the correct answer file (in. ipynb format) is uploaded in LMS.*

SECTION A: 5 MARKS

1. Write a Python program which calculates the area of various geometrical figures as given below: The program should ask the user about the geometrical figure for which he wants to calculate the area. Take the inputs accordingly and calculate the area. (units/metrics like mm, cm can be included as per the programmer's choice) (5 marks)

1. the formula to calculate the area of a square is Area=(Side of a square)**2
2. The formula to calculate the area of a cirlce is Area=(pi)*(radius)**2
3. The formula to calculate the area of a triangle is Area=0.5*Base *Height
4. The formula to calculate the area of a cylinder is Area=2*pi*radius*height+2*pi*(radius**2)

Sample Input and Output:

Please enter the name of the geometrical figure for which you want to calculate the area CYLINDER

Enter the radius of a cylinder 3

Enter the height of a cylinder 5

The area of the cylinder 150.72

SECTION B: 10 MARKS

2. India conducted a survey on Data Science colleges in India. Let us assume that the survey was conducted in an 'n' number of institutes. The experts were asked to rank the institutes based on three different metrics. The metrics are facilities, academics, and infrastructure. The maximum score in each category is as follows. (10 Marks)

Facilities = 25

Academics = 50

Infrastructure = 25

At the end of the survey, the scores of the individual metrics are added up to get the total score and the institutes are ranked based on the total score. The institute that scores the highest score is ranked 1st. The next highest score is given the rank 2 and so on. Write a program to read the scores of the three metrics for each institute, store the scores in a list. Make a list of individual score list for 3 institutes. Print only the Total score in the sorted (Descending) order.

Input format:
First-line contains the number of institutes

Next line contains the scores for Facilities of Institute 1
Next line contains the scores for Academics of Institute 1
Next line contains the scores for Infrastructure of Institute 1
Next line contains the scores for Facilities of Institute 2
Next line contains the scores for Academics of Institute 2
Next line contains the scores for Infrastructure of Institute 2
Next line contains the scores for Facilities of Institute
Next line contains the scores for Academics of Institute
Next line contains the scores for Infrastructure of Institute

Note: Facilities = 25 if your giving above 25 code will display: "score can't exceed 25, please enter again"
Academics = 50 if your giving above 50 code will display: "score can't exceed 50, please enter again"
Infrastructure = 25 if your giving above 25 code will display: "score can't exceed 25, please enter again"

Output format:

List of total scores in the descending order sample input:

3
20
20
20
22
22
22
21
21
21

sample output: [66,63,60]

SECTION C: 15 MARKS

3. In a pathology lab test, there are n number of samples for testing the health condition of a patient, each slide has 5 components, Sugar level, Blood pressure, Heartbeat rate, weight and fat percentage, based on input as provided by the patient's blood report. (15 marks)

1. Create a sample input for a healthy patient and also take random samples from a patient like "Sugar level":15, "Blood pressure":32, "Heartbeat rate":71, "weight":65, "fat percentage":10.
2. Compare inputs with healthy patient data. If the patient data is not matching with the healthy patient's data, provide a warning.
3. Provide difference in readings to the patient.

Sample Output:
Sugar level56
Blood pressure120
Heartbeat rate45

weight67
fat percentage67
{'Sugar level': -41, 'Blood pressure': -88, 'Heartbeat rate': 26, 'weight': -2, 'fat percentage': -57}
Sugar level -41
The sugar level is -41 less than the ideal value
Blood pressure -88
Blood pressure is -88 less than the ideal value
Heartbeat rate 26
Heartbeat rate is 26 less than the ideal value
weight -2
weight is -2 less than the ideal value
fat percentage -57

fat percentage is -57 less than the ideal value