QP CODE: 24803630

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Reg No : .....

Name : .....

INTEGRATED MSC DEGREE EXAMINATION, JUNE 2024

Fifth Semester

INTEGRATED MSC BASIC SCIENCE-STATISTICS

CORE - IST5CR05 - STATISTICAL COMPUTING USING PYTHON

2020 Admission Onwards

98CF3555

Time: 3 Hours Weightage: 30

(Answer any **THREE** questions. Each question carries a weight of **10**)

1. (a)Draw a multiple-bar diagram depicting the following data

Year	1993	1994	1995	1996
Export (million rs)	70	78	84	80
Import (million rs)	68	70	72	82

How we can draw this diagram in Python?

(b) Draw a pie chart of the following data

Accident due to:-

Falling objects 8; Falls 4; Machinery 6; Fire 7; Cuts and bruises 10; Traffic 5

Give the program to draw this diagram in Python.

2. Observe the following data:

Size	5	8	10	12	19	20	32
Frequency	2	3	5	8	6	4	2

(a) Compute quartiles.

(b) Compute the 75th percentile.

(c) Explain the procedure and give the program to find quartiles and percentiles in Python,

3. (a) Find the coefficient of correlation between x and y, and interpret the result.

x	1.2	1.1	1.9	1.8	1.0	0.9
y	15	10	20	10	10	5

How can you solve this using Python?

(b) Draw a scatter diagram using the following data showing the average price and demand of a particular commodity in a region:

Average price (Rs)	11	19	15	13	17
Demand (kgs)	30	18	24	29	24

Give the program to draw this diagram in Python.

4. (a) The variable X follows a normal distribution with a mean of 45 and SD of 10
   Find the probability that
   (i)X>60
   (ii) 40<X<56
   How we can find the above probabilities in Python?

   (b)How we can visualize a normal distribution in Python?

5. (i) Explain the estimation
   (ii) A random sample of size 20 from a normal population gives the following observations:
   1, 1, 1, 1. 2, 2, 2, 3, 3, 3, 3, 3, 4, 4, 5, 5, 5, 7, 8, 10
   Calculate 90% C. I for the population mean.
   (iii) How we can solve this problem in Python?

6. (i) Explain the procedure of testing the mean of a normal population, population variance unknown.
   (ii) A random sample of 10 tins of oil filled in by an automatic machine gave the following weights in kg.
   2.05, 2.01, 2.04, 1.98, 1.98, 1.96, 2.01, 1.99, 2.04, 2.02
   Can we accept at a 5% level of significance, the claim that the average weight of the tin is 2 kg?
   (iii) How we can solve the above problem in Python?