


National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Probability & Statistics	Course Code:	MT2005
	Degree Program:	BS CS/SE	Semester:	Spring 2022
	Exam Duration:	60 Minutes	Total Marks:	40
	Paper Date:	22-03-22	Weight	15
	Section:	ALL	Page(s):	2
	Exam Type:	Midterm - I		

Student : Name: _____ Roll No. 2 Section: _____

- Instruction/Notes:
1. Attempt all the questions on the answer book and show proper working.
 2. Use of Scientific calculator is allowed but Exchange of calculators or use of programmable calculators is not allowed.
 3. Students are not allowed to write anything on the question paper except roll number.
 4. If you have any ambiguity in the data then do not ask anything from invigilator, just make assumption and continue solving your paper.

Q 1.

[Points = 5 + 5]

(A) Choose the correct answer.

- Which of the following is not the characteristic of the arithmetic mean?
 - a) It is influenced by the extreme values .
 - b) Sum of the deviations taken from mean is zero.
 - c) Fifty percent of the observations will always larger than the mean.
 - d) Sum of squared deviations from mean is always minimum.
- If a distribution has zero standard deviation, then which of the following is true?
 - a) All observations are positive
 - b) All observations are Negative
 - c) All observations are equal
 - d) Number of positive and negative values are equal.
- If the original unit of the data is measured in kilogram (kg), then variance is measured in
 - a) Pounds
 - b) kg
 - c) kg^2
 - d) Dimensionless form
 - e) None of the above.
- Which of the following is not a measure of dispersion?
 - a) Range
 - b) Standard Deviation
 - c) Second Quartile
 - d) Coefficient of variation
- If both the dependent and independent variables increase simultaneously, the coefficient of correlation will be in the range of
 - a) 0 to 1
 - b) 0 to -1
 - c) 1 to 2
 - d) None

(B) Choose True / False in the following statements.

- Arithmetic mean is not affected by extreme values. True / False
- The value which occurs most frequently in the data is known as median. True / False
- If the distribution of the scores is symmetric, then median and mode will be same. True / False
- If the distribution is skewed to left, then generally mean > median > mode. True / False
- The coefficient of variation is absolute measure of dispersion. True / False

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Q 2.

[Points = 15 + 5]

(A) Find *Median*, *sixth Percentile* and *Mode* of the following data.

Earnings	18-25	25-40	40-46	46-50	50-60	60-70	70-75
Workers	35	25	28	30	20	18	5

(B) A manufacturer of laptops is interested in determining the life time of a certain type of laptop battery.

A sample of 10 Dell laptops battery having life in hours are:

117, 118, 111, 125, 126, 171, 110, 122, 116 and 132.

- Compute variation in data given related to batteries of Dell laptops.
- If similar sample of 10 HP laptops batteries showed an average life in hours 121.7 with standard deviation of 19.8.

Suppose a person is interested to buying a laptop which is more consistent in its life time of a battery, which laptop would you suggest to buy and why?

Q 3.

[Points = 5 + 5]

(A) For 5 pair of observations, it is given that A.M. of X series is 2 and A.M. of Y series is 15. It is also known that $\sum xy = 242$, $\sum x^2 = 30$. Fit an appropriate curve for the data taking X as the independent variable.

(B) Following data is recorded on a random sample of 6 students who took admission in the university.

The data includes their grades obtained in pre-admission exam and in the final exam in their first semester.

Pre Admission Test Grade	25	10	15	25	15	30
Final exam Grade	24	14	16	30	25	35

Calculate the co-efficient of correlation between grades of both exams and interpret its value.

Hint: Formula for coefficient of correlation is:

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] [n \sum Y^2 - (\sum Y)^2]}}$$