



Daffodil International University
Faculty of Science & Information Technology
Department of Information Technology & Management
Mid-Term Examination, Spring 2025
Course Code: STA-101; Course Title: Statistics I
Sections & Teachers: MKH

Time: 1:30 Hrs

Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	A research team wants to analyze the average monthly internet usage of students of private universities to improve digital learning resources. They randomly select 429 students from different faculties and survey them about their internet usage in gigabytes. The team then calculates the average internet usage from this sample (25.7 GB) and estimates the usage of population (28.4 GB). Identify Population, Parameter, Sample, Statistic, Source of data, Sampling technique, Variable and its level of measurement	[Marks-4]	CO-1 Level-1
	b)	Recall a brief note on the shape of the distribution	[Marks-2]	
2.	a)	A researcher collects data on the monthly electricity bills (in dollars) of 13 households in a city. The recorded electricity bills (in dollars) are: 25, 30, 35, 40, 38, 45, 42, 50, 45, 55, 60, 65, 120 (i) Apply with explain the appropriate measures of central tendency for the data (ii) Determine the standard deviation of monthly electricity bills	[Marks-4] [Marks-3]	CO-2 Level-3
	b)	(i) Determine the most paying 30 percentile cut off points of the data (2a)	[Marks-2]	
		(ii) Explore extreme value (if any) from the data (2a) using boxplot	[Marks-5]	
3.	a)	Figure out the skewness of the study time (in hour) and comment on the findings - 0.5, 0.9, 1.5, 0.7, 1.4, 1.9, 2.0, 1.3	[Marks-5]	CO-4 Level-4

Formula

Arithmetic Mean

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

Harmonic Mean

$$HM = \frac{n}{\frac{1}{x_1} + \frac{1}{x_2} + \dots + \frac{1}{x_n}}$$

Quartile

$$Q_i = \frac{i \times n}{4}$$

Standard deviation

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

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Geometric Mean,

$$G.M. = (x_1 \cdot x_2 \cdot x_3 \dots x_n)^{\frac{1}{n}}$$

Skewness

$$St_s = \frac{3(\text{Mean} - \text{Median})}{s}$$