



Daffodil International University
 Department of Computer Science and Engineering
 Faculty of Science & Information Technology
 Mid Term Examination, Spring-2026
 Course Code: STA 227, Course Title: Statistics and probability

Time: 1.5 Hour

Marks: 25

Total Marks-25

1.	a)	what is Variable? Give some examples.	[2]										
	b)	Write down types of variables. And describe the types of variables?	[3]										
2.	a)	what is the central tendency?	[2]										
	b)	Write types of measurement of central tendency?	[3]										
3.	a)	What is the Arithmetic mean?	[2]										
	b)	write down the advantage and disadvantage of Arithmetic mean?	[3]										
4	a)	The following data are direct solar intensity measurements (watts/m ²) on different days at a location in southern Spain: 120,145,170,185 and 195 Write down the sample standard deviation equation and calculate the sample mean and sample standard deviation.	[2]										
	b)	Write down the Population standard deviation equation and calculate the population standard deviation.	[3]										
5	a)	The following data set showed the category of performance-oriented mobility assessment (POMA) level of respondents; <table><tr><td>POMA classification</td><td>Frequency</td></tr><tr><td>No Risk (16-20)</td><td>25</td></tr><tr><td>Minimal Risk (21-25)</td><td>35</td></tr><tr><td>Medium Risk (26-30) → 26-30</td><td>61</td></tr><tr><td>High Risk (31-35)</td><td>120</td></tr></table>	POMA classification	Frequency	No Risk (16-20)	25	Minimal Risk (21-25)	35	Medium Risk (26-30) → 26-30	61	High Risk (31-35)	120	[2]
	POMA classification	Frequency											
No Risk (16-20)	25												
Minimal Risk (21-25)	35												
Medium Risk (26-30) → 26-30	61												
High Risk (31-35)	120												

		Calculate relative and Cumulative frequency of this group data.	
	b)	Calculate relative and median of this group data.	3

Formula

Measures of Central Tendency

Mean

A.M= $\bar{x} = \frac{x_1+x_2+\dots+x_n}{n}$

W.M= $\bar{x} = \frac{w_1x_1+w_2x_2+\dots+w_nx_n}{w_1+w_2+\dots+w_n}$

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

H.M= $\frac{n}{\frac{1}{x_1} + \frac{1}{x_2} + \dots + \frac{1}{x_n}}$

Measures of Location

Quartile

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

Deciles

$D_i = \frac{i \times n}{10}$

Percentile

$P_i = \frac{i \times n}{100}$

Measure of Dispersion

Range= $X_{max} - X_{min}$

Mean Deviation, M.D = $\frac{\sum_{i=1}^n |x_i - \bar{x}|}{n}$

Population variance

$\sigma^2 = \frac{\sum_{i=1}^N (X_i - \mu)^2}{N}$

Population standard deviation, $\sqrt{\sigma^2}$

Sample variance

$S^2 = \frac{\sum_{i=1}^N (X_i - \bar{X})^2}{n-1}$

Sample standard deviation, $\sqrt{S^2}$

Coefficient of variation for

Hypothesis testing

Z test statistics

$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$

t test statistics

$t = \frac{\bar{X} - \mu}{\frac{s}{\sqrt{n}}}$

Shape of the distribution

Coefficient of Skewness, Sk= $\frac{3 \times (\text{Mean} - \text{Median})}{\text{Standard deviation}}$

Kurtosis $\beta_2 = \frac{\mu_4}{\mu_2^2}$

!!! BEST TEACHER DIU !!!