

Seat No: .....

Enrollment No: .....

**PARUL UNIVERSITY**  
**FACULTY OF MANAGEMENT STUDIES**  
**BBA/BBA(Hons)/Int.DBA-BBA, Summer 2024-25 Examination**

Semester: 2/6

Subject Code: 06010102DN01

Subject Name: Statistics

Date: 07-05-2025

Time: 10:30 am to 01:00 pm

Total Marks: 60

**Instructions:**

1. All questions are compulsory.
2. Make suitable assumptions whenever necessary.
3. Write the answers for both sections on separate answer sheets.

	<b>SECTION - A</b>	<b>Marks</b>	<b>CO</b>	<b>BT</b>
Q1.	Answer <b>all</b> questions	<b>(4)</b>		
i.	Describe Observations as a primary data collection method.	1	CO1	BT1
ii.	Explain the importance of statistics in understanding data.	1	CO1	BT2
iii.	Identify the test for unknown population variance and small sample size	1	CO4	BT3
iv.	Explain the methodology of normal distribution concept to identify the test for large samples	1	CO4	BT6
Q2.	Attempt Any <b>Four</b> Questions out of Five	<b>(20)</b>		
i.	Analyze the trade-offs involved when deciding whether to use primary data collection, weighing its specificity and control against its cost and time requirements.	5	CO1	BT4
ii.	Discuss the guiding principles for constructing an effective statistical table. Focus on aspects like clarity, completeness, accuracy, and ease of comparison.	5	CO1	BT2
iii.	A company claims their light bulbs have an average lifespan (population mean) of 1000 hours, with a population standard deviation of 140 hours. A sample of 49 light bulbs had an average lifespan (sample mean) of 1070 hours. Calculate the z-statistic to test the company's claim.	5	CO4	BT3
iv.	Evaluate the significance of the sample proportion formula in hypothesis testing.	5	CO4	BT5
v.	Determine the effectiveness of inferring population characteristics from a sample.	5	CO4	BT5
Q3.	Attempt Any <b>One</b> Question out of Two	<b>(6)</b>		

i.	Evaluate the potential for misinterpretation or manipulation when using graphical representations of data. Discuss common pitfalls, such as misleading scales, inappropriate chart types, cherry-picking data, or lack of context, and suggest ways to ensure ethical and accurate visual communication.	6	CO1	BT4
ii.	A study looked at the favorite sports of people. The observed counts were: Football=20, Basketball=30, Soccer=50. The expected counts were: Football=25, Basketball=35, Soccer=40. Compute the chi-square statistic to see if the current sports preferences differ significantly from the expected preferences.	6	CO4	BT3
<b>SECTION - B</b>		<b>Marks</b>	<b>CO</b>	<b>BT</b>
Q1.	Answer <b>all</b> questions	<b>(4)</b>		
i.	Compute the standard deviation of {4, 8, 12, 16, 20}.	1	CO2	BT3
ii.	Estimate the mode of {11, 11, 11, 13, 13, 15, 15, 17}.	1	CO2	BT5
iii.	State the range of values for Pearson's correlation coefficient.	1	CO4	BT1
iv.	State the advantage of using a scatter diagram in correlation analysis.	1	CO4	BT2
Q2.	Attempt Any <b>Four</b> Questions out of Five	<b>(20)</b>		
i.	Solve for the harmonic mean (HM) of the dataset: 5, 10, 20, 40.	5	CO2	BT3
ii.	Criticize the accuracy of percentile ranks for measuring student performance.	5	CO2	BT5
iii.	State the complement rule.	5	CO4	BT1
iv.	Describe the process of ranking data for Spearman's Rank Correlation, using a provided ranking example to illustrate the method.	5	CO4	BT2
v.	Using the dataset that yields a correlation coefficient of 0.96, describe Karl Pearson's Coefficient of Correlation. Explain how to compute covariance, standard deviations, and r, and interpret the result.	5	CO4	BT2
Q3.	Attempt Any <b>One</b> Question out of Two	<b>(6)</b>		
(a)	Compute standard deviation from the following dataset: [2, 4, 6, 8, 10].	6	CO2	BT3
(b)	Given: $P(\text{Spam})=0.2$ , $P(\text{Offer} \text{Spam})=0.7$ , $P(\text{Offer} \text{Not Spam})=0.1$ . Apply Bayes' Theorem to calculate the probability an email is spam given it contains the word "Offer", $P(\text{Spam} \text{Offer})$ . Show steps, including marginal probability calculation.	6	CO4	BT3