

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech- VI Semester (CSE/IT)

COURSE CODE (CREDITS): 19B1WCI637 (2)

MAX. MARKS: 35

COURSE NAME: Statistics and Exploratory Data Analytics

COURSE INSTRUCTORS: Meghna Dhalaria

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Calculator is allowed

Q.No	Question	CO	Marks																
Q1	<p>a. Calculate Bowley's Coefficient of skewness based on quartiles and median from following data</p> <table><tr><th>Variable</th><th>Frequency</th></tr><tr><td>10-20</td><td>358</td></tr><tr><td>20-30</td><td>2417</td></tr><tr><td>30-40</td><td>976</td></tr><tr><td>40-50</td><td>129</td></tr><tr><td>50-60</td><td>62</td></tr><tr><td>60-70</td><td>18</td></tr><tr><td>70-80</td><td>10</td></tr></table> <p>b. Find the coefficient of variation of a frequency distribution given that its mean is 120, mode is 123 and karl pearson's coefficient of skewness is -0.3.</p>	Variable	Frequency	10-20	358	20-30	2417	30-40	976	40-50	129	50-60	62	60-70	18	70-80	10	1	[5]
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Q2	<p>a. A manufacturer of light bulbs claims that an average 2% of the bulbs manufactured by his firm are defective. A random sample of 400 bulbs contained 13 defective bulbs. On the basis of this sample, can you support the manufacturer's claim at 5% level of significance? [Note: At 5% level of significance the tabulated value is 1.645]</p> <p>b. In an anti-malarial campaign in certain area, quinine was administered to 812 persons out of a total population of 3248. The number of fever cases is given in contingency table:</p> <table><tr><th>Treatment</th><th>Fever</th><th>No Fever</th><th>Total</th></tr><tr><td>Quinine</td><td>20</td><td>792</td><td>812</td></tr><tr><td>No Quinine</td><td>220</td><td>2216</td><td>2436</td></tr><tr><td>Total</td><td>240</td><td>3008</td><td>3248</td></tr></table>	Treatment	Fever	No Fever	Total	Quinine	20	792	812	No Quinine	220	2216	2436	Total	240	3008	3248	1	[4]
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	Discuss the usefulness of quinine in checking malaria [Note: Tabulated value is 3.84]		
Q3	<p>a. Find Singular Value Decomposition (SVD) of a Matrix.</p> $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$ <p>b. Differentiate between the following terms: Box Cox and Yeo Johnson Transformation</p>	3	[6] [3]
Q4	<p>a. A soap manufacturing company was distributing a particular brand of soap through a large number of retail shops. Before a heavy advertisement campaign, the mean sales per shop were 140 dozens. After the campaign a sample of 26 shops was taken and the mean sales figure was found to be 147 dozen with SD 16. Can you consider the advertisement is effective? [Note: Tabulate value is 1.78]</p> <p>b. The first four central moments of a distribution are 0, 2.5, 0.7 and 18.75. Examine the skewness and Kurtosis of the distribution.</p>	1	[4] [3]
Q5.	<p>a. Differentiate between the following terms: Dendrogram and Tree-map.</p> <p>b. How can you determine the optimal number of clusters using the Silhouette Coefficient method?</p>	2, 4	[2] [2]