

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-I Semester (CSE/IT/ECE/CE/BT/BI)

COURSE CODE (CREDITS): 24BS1MA511 (3)

MAX. MARKS: 15

COURSE NAME: Statistical Methods for Data Analysis

COURSE INSTRUCTORS: BKP

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

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

Q. No.	Question	CO	Marks
Q1.	<p>A search engine evaluates the performance of two different ranking algorithms based on the number of relevant documents retrieved in 5 trials each. The results are:</p> <ul style="list-style-type: none"> Algorithm A: 42, 45, 47, 44, 46 Algorithm B: 40, 55, 35, 60, 50 <p>(a) Compute the mean and standard deviation for both algorithms. (b) Which algorithm shows more stability in performance? Justify your answer.</p>	1	4
Q2.	<p>The response times (in milliseconds) of a web server to 10 consecutive user requests are: 120, 150, 130, 170, 160, 140, 155, 135, 200, 210</p> <p>(a) Calculate the coefficient of skewness using Karl Pearson's method. (b) Calculate the coefficient of kurtosis. (c) Interpret the results: Is the distribution of response times positively/negatively skewed? Is it leptokurtic, mesokurtic, or platykurtic?</p>	1	5
Q3.	<p>A data analyst monitors the response times (in milliseconds) of an API during 12 calls: 120, 125, 118, 130, 128, 122, 135, 124, 500, 127, 121, 126</p> <p>(a) Using the Inter quartile Range (IQR) method, detect if any observation is an outlier. (b) Comment on why detecting and handling outliers is important in machine learning model training.</p>	1	3

Q4.	A cloud service claims that the average response time for processing a user request is 150 milliseconds. A researcher collects a random sample of 36 requests and finds the sample mean = 155 ms with population standard deviation = 12 ms. At the 5% significance level, test whether the observed data provides sufficient evidence to conclude that the true mean response time is different from 150 ms.	2	3
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UNIT TEST-1 EXAMINATION- AUG-2025