

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3EXAMINATION- 2025

PhD - HSS

COURSE CODE (CREDITS): 18P1WGE101

MAX. MARKS: 25

COURSE NAME: Research Methodologies including Quant. Methods and Computer App.

COURSE INSTRUCTORS: Anupriya Kaur

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*

Q.No	Question	CO	Marks
Q1	A national electronics chain experiments with three pricing strategies—Value Pricing, Psychological Pricing, and Bundle Pricing—across four metropolitan cities. After eight weeks, the chain notices variations in average weekly conversion rate but cannot determine whether these differences arise from the pricing strategy, the city-specific market characteristics, or a combination. Management needs statistical confidence before scaling. <i>Explain how Two-Way ANOVA (with interaction) can evaluate whether pricing strategy influences conversion rate, whether cities differ independently, and whether an interaction exists. Discuss how results guide region-specific pricing and expansion strategy.</i>		5
Q2	An online marketplace for handcrafted products collected seller performance metrics, customer behavior variables, and product attributes. Before modeling, the CXO wants diagnostic understanding. <i>Explain how advanced descriptive statistics—skewness, kurtosis, , cross-tabs, and outlier profiling—can reveal underlying marketplace problems or opportunities. Discuss how insights guide seller development, product curation, and loyalty strategy.</i>		5
Q3	An EdTech company promotes its learning platform through <b>five channels</b> —Google Search Ads, Meta Ads, YouTube influencers, WhatsApp campaigns, and referral incentives. It also tracks <b>internal factors</b> such as content difficulty, student grade level, free-trial conversion rate, and monthly active users. Despite higher marketing spending, new paid subscriptions fluctuate unpredictably. Management wants to identify which factors truly drive subscription numbers. <i>(a) Explain why multiple regression analysis is suitable for identifying the factors that influence monthly subscriptions.</i> <i>(b) Identify the dependent variable and the main independent variables the company should include in the regression model.</i> <i>(c) Describe how regression results can help determine:</i> <i>Which marketing channels significantly impact subscriptions,</i> <i>Whether any channels show diminishing returns,</i> <i>Whether any channels work better in combination.</i>		5
Q4	A life insurance company studies buyers vs. dropouts using variables like income stability, dependency ratio, digital literacy, risk tolerance, and agent interaction frequency. <i>Explain how discriminant analysis identifies variables that differentiate buyers from dropouts. Discuss how findings help build a risk-focused targeting model, improve lead scoring, and</i>		5

	<i>personalize onboarding journeys.</i>		
Q5	<p>A D2C wellness brand has data on lifestyle, psychographics, behavior signals, and content engagement. It wants persona-based marketing.</p> <p><i>Explain how hierarchical + K-means hybrid clustering can identify meaningful customer segments. Discuss how segments guide product bundling, website journey redesign, and targeted communication strategies.</i></p>		5