


<b>Name:</b> <b>Enrolment No:</b>			
<p style="text-align: center;"><b>UPES</b>  <b>End Semester Examination, May 2025</b></p> <p> <b>Course: BA for Industries and Functional Areas</b>      <b>Semester: VI</b>  <b>Program: BTech CSE Data Science</b>      <b>Time: 03 hrs.</b>  <b>Course Code: CSBA3019_3</b>      <b>Max. Marks: 100</b>  <b>Calculators Allowed: Yes</b>  <b>Instructions:</b> Please attempt according to the time provided and given weightage. </p>			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	Identify three major challenges sales and marketing departments face in managing customer relationships in the digital age.	4	CO1
Q 2	Explain the difference between probability and likelihood in the context of data analytics with clear examples.	4	CO2
Q 3	Explain the role of financial analytics in improving customer lifetime value (CLV). Provide a real-life example from any organization.	4	CO3
Q 4	Explain the concept of feature extraction in machine learning and data analytics with relevant examples	4	CO4
Q 5	Define Human Capital.	4	CO4
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q 6	A diagnostic test for a rare condition has: <ul style="list-style-type: none"> <li>Prevalence: 1% of the population.</li> <li>Test accuracy: 98% true positive rate, 5% false positive rate.</li> </ul> <b>Task:</b> Calculate the probability that a patient has the condition given a positive test result.	10	CO4
Q 7	Explain the steps an e-commerce brand should take to improve ad performance and address a declining ROI. Focus on strategies for optimizing ad targeting, budget allocation, and overall campaign effectiveness to enhance returns.	10	CO3
Q 8	Compare and contrast the roles of linear regression and logistic regression in banking analytics. Discuss the types of problems (classification or prediction) each method addresses and explain how	10	CO5

	they can support decision-making in areas such as credit scoring, loan approval, and customer segmentation.																			
Q 9	<p><b>A.</b> A telecom company observes call drop rates (X: drops per 100 calls) and customer churn (Y: 1=Yes, 0=No):</p> <p><b>Task:</b></p> <table><thead><tr><th>Customer</th><th>Call Drops (X)</th><th>Churned (Y)</th></tr></thead><tbody><tr><td>1</td><td>2</td><td>0</td></tr><tr><td>2</td><td>4</td><td>0</td></tr><tr><td>3</td><td>6</td><td>1</td></tr><tr><td>4</td><td>8</td><td>1</td></tr><tr><td>5</td><td>10</td><td>1</td></tr></tbody></table> <p>1. Build a logistic regression model for churn probability. 2. Estimate churn risk for 7 call drops per 100 calls.</p> <p><b>OR</b></p> <p><b>B.</b> The HR department implemented an employee wellness program with a total investment of ₹1,20,000. As a result, the company observed a reduction in absenteeism and an increase in productivity, leading to a net profit gain of ₹36,000. Calculate the ROI for the wellness program.</p>	Customer	Call Drops (X)	Churned (Y)	1	2	0	2	4	0	3	6	1	4	8	1	5	10	1	10   
Customer	Call Drops (X)	Churned (Y)																		
1	2	0																		
2	4	0																		
3	6	1																		
4	8	1																		
5	10	1																		

	<div> <div>53065</div> <div>63575</div> </div> <p><b>Task:</b></p> <ol style="list-style-type: none"> <li>1. Derive the regression equation (<math>Y = a + bX</math>).</li> <li>2. Predict sales if the ad spend is \$40,000.</li> </ol>		
Q 11	<p><b>A.</b></p> <p>You are given employee data that includes age, tenure, performance rating, salary, and resignation status. Explain how you would calculate key insights such as the average tenure and resignation rate. Given that 60% of employees with a performance rating below 3 and tenure under 2 years resigned last year, discuss the implications of this trend. If a new policy reduces the resignation rate to 30% in the next quarter, describe how you would measure the success of this policy.</p> <p>.</p> <p><b>OR</b></p> <p><b>B.</b></p> <p>A traditional retailer adopts omnichannel marketing and AI-powered financial tools to compete with e-commerce giants. The CFO leads this transformation but faces resistance from legacy teams.</p> <p><b>Tasks:</b></p> <ol style="list-style-type: none"> <li>1. Analyze how <i>smarter shopping experiences</i> could reduce operational costs and increase conversion rates.</li> <li>2. Outline a plan for the CFO to address <i>employee resistance</i> by aligning digital tools with the <i>four finance profiles</i></li> <li>3. Design a <i>dashboard</i> that tracks both marketing and financial KPI to measure transformation success.</li> </ol>	<p><b>20</b></p> <p><b>20</b></p>	<p><b>CO3</b></p> <p><b>CO5</b></p>