PVP24

Code No: **24BA1T5**

I MBA - I Semester - Regular Examinations
DECEMBER 2024

QUANTITATIVE ANALYSIS FOR BUSINESS DECISION

Duration: 3 Hours Max. Marks: 70

Note: 1. This question paper contains two Parts: Part-A and Part-B.
2. Part-A contains 5 essay questions with an internal choice from each unit. Each Question carries 12 marks.
3. Part-B contains one Case Study for 10 Marks.
4. All parts of Question paper must be answered in one place

BL – Blooms Level CO – Course Outcome

PART - A

<table>
<tr><th></th><th></th><th></th><th>BL</th><th>CO</th><th>Max. Marks</th></tr>
<tr><td colspan="6"><u>UNIT – I</u></td></tr>
<tr><td rowspan="2">1.</td><td>a)</td><td>Explain the role of measures of central tendency in summarizing business data.</td><td>L2</td><td>CO1</td><td>6 M</td></tr>
<tr><td>b)</td><td>Calculate the median and mode for the following data:
<table>
<tr><td>Marks</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td></tr>
<tr><td>No. of Students</td><td>5</td><td>10</td><td>20</td><td>25</td><td>15</td><td>10</td><td>5</td></tr>
</table></td><td>L3</td><td>CO1</td><td>6 M</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>2.</td><td>a)</td><td>Discuss the different types of skewness and how they impact data analysis.</td><td>L2</td><td>CO1</td><td>6 M</td></tr>
</table>

	b)	Find the Spearman's rank correlation coefficient for the following data: <table><tr><td>x</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td></tr><tr><td>y</td><td>100</td><td>80</td><td>60</td><td>40</td><td>20</td></tr></table>	L3	CO1	6 M
		UNIT – II			
3.	a)	In a bolt factory machines A, B, C manufacture 20%, 30% & 50% of the total of their output and 6%, 3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probability that is manufactured by machine A.	L3	CO3	6 M
	b)	A company manufactures an average of 5 defective units per batch of 100. Using the Poisson distribution, calculate the probability of finding exactly 3 defective units in a batch.	L3	CO3	6 M
		OR			
4.	a)	Out of 800 families with 5 children each, how many would you except to have 3 boys. Assume equal probability for boys and girls.	L2	CO3	6 M
	b)	If the height of employees in a factory is normally distributed with a mean of 170 cm and a standard deviation of 10 cm, what is the probability that an employee selected at random is between 160 cm and 180 cm?	L4	CO3	6 M
		UNIT-III			
5.	a)	Define and explain the Z-test. When would you use it in business research?	L1	CO2	6 M

	b)	Test the significance of the difference between the means of two independent samples. Sample 1 has a mean of 50 and variance of 25 and Sample 2 has a mean of 55 and variance of 30. The sample sizes are 40 and 35 respectively. Use α=0.05.	L4	CO2	6 M
		OR			
6.	a)	Explain the steps involved in hypothesis testing.	L3	CO2	6 M
	b)	It is claimed that a random sample of 49 tyres has a mean life of 15,200 km. Test whether a sample is taken from a population having mean 15,150 km and a Standard Deviation of 1200 km at 0.05 level.	L4	CO2	6 M
		UNIT – IV			
7.	a)	Solve the following Linear Programming Problem using the graphical method: Maximize $Z = 6x_1 + 4x_2$ Subject to: $2x_1+x_2 \leq 102$ $x_1+2x_2 \leq 8$ $x_1,x_2 \geq 0$	L3	CO4	6 M
	b)	Discuss the applications of linear programming problem.	L2	CO4	6 M
		OR			
8.	a)	Explain the concept of a feasible region in linear programming. How is it used to find the optimal solution?	L2	CO4	6 M
	b)	Discuss slack and surplus variables in linear programming problem.	L2	CO4	6 M

<table>
<tr><td colspan="6"><u>UNIT – V</u></td></tr>
<tr><td rowspan="2">9.</td><td>a)</td><td>Explain the concept of dominance in game theory. How can it be used to simplify decision-making?</td><td>L2</td><td>CO2</td><td>6 M</td></tr>
<tr><td>b)</td><td>Define and discuss the components of a two-person zero-sum game.</td><td>L4</td><td>CO2</td><td>6 M</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td rowspan="2">10.</td><td>a)</td><td>Solve the following transportation problem using the Vogel’s Approximation Method (VAM):
<table>
<tr><td>Sources</td><td>D1</td><td>D2</td><td>D3</td><td>Supply</td></tr>
<tr><td>S1</td><td>8</td><td>6</td><td>10</td><td>100</td></tr>
<tr><td>S2</td><td>9</td><td>12</td><td>7</td><td>120</td></tr>
<tr><td>S3</td><td>6</td><td>4</td><td>9</td><td>80</td></tr>
<tr><td>Demand</td><td>110</td><td>90</td><td>100</td><td></td></tr>
</table></td><td>L3</td><td>CO5</td><td>6 M</td></tr>
<tr><td>b)</td><td>Discuss about i) Least cost method and
ii) North-West corner rule</td><td>L2</td><td>CO5</td><td>6 M</td></tr>
</table>

PART – B

	CASE STUDY	BL	CO	Max. Marks
11.	A company produces two products X and Y. The profit per unit of X is $50 and of Y is $40. Each unit of X requires 2 hours of labor and 3 units of raw materials, while each unit of Y requires 1 hour of labor and 2 units of raw materials. The company has a total of 60 hours of labor and 90 units of raw materials. Formulate this as a Linear Programming Problem and solve it to maximize the profit.	L3	CO4	10 M