

Code No: 21BA1T5

**I MBA - I Semester Regular/ Supplementary Examinations
FEBRUARY - 2023**

QUANTITATIVE ANALYSIS FOR BUSINESS DECISION

Duration: 3 Hours

Max. Marks: 70

- Note: 1. This question paper contains three Parts-A, Part-B and Part-C.
 2. Part-A contains 8 short answer questions. Answer any **Five** Questions.
 Each Question carries 2 Marks.
 3. Part-B contains 5 essay questions with an internal choice from each unit.
 Each Question carries 10 marks.
 4. Part-C contains one Case Study for 10 Marks.
 5. All parts of Question paper must be answered in one place

BL – Blooms Level

CO – Course Outcome

PART - A

		BL	CO
1. a)	Explain about Spearman's rank correlation.	L1	CO1
1. b)	Infer Baye's theorem.	L2	CO3
1. c)	What are type I and type II errors?	L1	CO2
1. d)	Explain the steps in the mathematical formulation of LP for product mix problems.	L2	CO4
1. e)	Summarize the Characteristics of Transportation Problem.	L2	CO5
1. f)	Define standard deviation.	L1	CO1
1. g)	Differentiate between small sample and large sample.	L2	CO2
1. h)	Explain the concept of game.	L2	CO5

PART – B

		BL	CO	Max. Marks
<u>UNIT – I</u>				
2.	From the following data of income distribution, Calculate arithmetic mean, median mode and draw the inferences.	L3	CO1	10 M

	Income (Rs.)	No. of Persons				
	Below 30	16				
	Below 40	36				
	Below 50	61				
	Below 60	76				
	Below 70	87				
	Below 80	95				
	Below 90	05				

OR

3.	<p>Results of a survey conducted to study the relationship between expenditure (in Rs) on accommodation and expenditure on food and entertainment are given below.</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Mean</th> <th>Standard deviation</th> </tr> </thead> <tbody> <tr> <td>Expenditure on accommodation</td> <td>173</td> <td>63.15</td> </tr> <tr> <td>Expenditure on food and entertainment</td> <td>47.8</td> <td>22.98</td> </tr> <tr> <td>Coefficient of correlation</td> <td>0.57</td> <td></td> </tr> </tbody> </table> <p>Calculate the regression equation and estimate the expenditure on food and entertainment if the expenditure on accommodation is Rs.200.</p>		Mean	Standard deviation	Expenditure on accommodation	173	63.15	Expenditure on food and entertainment	47.8	22.98	Coefficient of correlation	0.57		L3	CO1	10 M
	Mean	Standard deviation														
Expenditure on accommodation	173	63.15														
Expenditure on food and entertainment	47.8	22.98														
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UNIT – II

4.	Examine the types and concepts of probability distributions.	L4	CO3	10 M
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OR

5.	Explain how the measurement of area under normal curve is analyzed.	L4	CO3	10 M
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UNIT-III

6.	What is a hypothesis? Demonstrate the types of hypothesis used in research along with the steps in procedure of hypothesis testing.	L3	CO2	10 M
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OR				
7.	Illustrate the differences between one dependent and two dependent samples.	L3	CO2	10 M
<u>UNIT – IV</u>				
8.	Solve the following LPP by graphical method. Maximize $Z=5x_1+3x_2$ subject to the constraints $3x_1+5x_2\leq 15; 5x_1+2x_2\leq 10$ and $x_1, x_2\geq 0$	L3	CO4	10 M
OR				
9.	A firm produces three products A, B and C by using two processes, process I and process II. To manufacture one unit of product A, 0.2 hours of process I time and 0.4 hours of process II time are necessary. Similarly, one unit of product B demands 0.1 hours from process I and 0.3 hours from process II, while a unit of product C requires only 0.5 hours from process I. During the next two months 300 hours of process I time and 240 hours of process II time will be available for manufacturing the three products. Profit contributions per unit of A, B and C respectively are Rs.2, Rs.5 and Rs.8. All units produced can be sold. The company wants to know how many units of each product should be produced in order to maximize profit from their production during the next 2 months. Formulate the linear programming model and solve the LPP by using simplex method.	L3	CO4	10 M
<u>UNIT – V</u>				
10.	Calculate initial basic feasible solution to the following transportation problem by using (a) North-west corner rule (b) Least cost method (c) Vogel's approximation method	L3	CO5	10 M

Destination								
Source	D ₁	D ₂	D ₃	D ₄	Supply			
S ₁	21	16	15	3	11			
S ₂	17	18	14	23	13			
S ₃	32	27	18	41	19			
Demand	6	10	12	15				

OR

11.	<p>A Company has to assign four workers A, B, C, D to four jobs W,X,Y and Z respectively. The cost matrix is given below. Calculate the minimum cost of assigning the jobs.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Worker/ Jobs</th> <th>W</th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1000</td> <td>1200</td> <td>400</td> <td>900</td> </tr> <tr> <td>B</td> <td>600</td> <td>500</td> <td>300</td> <td>800</td> </tr> <tr> <td>C</td> <td>200</td> <td>300</td> <td>400</td> <td>500</td> </tr> <tr> <td>D</td> <td>600</td> <td>700</td> <td>300</td> <td>1000</td> </tr> </tbody> </table>	Worker/ Jobs	W	X	Y	Z	A	1000	1200	400	900	B	600	500	300	800	C	200	300	400	500	D	600	700	300	1000	L3	CO5	10 M
Worker/ Jobs	W	X	Y	Z																									
A	1000	1200	400	900																									
B	600	500	300	800																									
C	200	300	400	500																									
D	600	700	300	1000																									

PART –C

		BL	CO	Max. Marks																					
12.	<p>Calculate the value of the correlation coefficient from the following table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Subject</th> <th>Age X</th> <th>Glucose level Y</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>43</td> <td>99</td> </tr> <tr> <td>2</td> <td>21</td> <td>65</td> </tr> <tr> <td>3</td> <td>25</td> <td>79</td> </tr> <tr> <td>4</td> <td>42</td> <td>75</td> </tr> <tr> <td>5</td> <td>57</td> <td>87</td> </tr> <tr> <td>6</td> <td>59</td> <td>81</td> </tr> </tbody> </table>	Subject	Age X	Glucose level Y	1	43	99	2	21	65	3	25	79	4	42	75	5	57	87	6	59	81	L3	CO1	10 M
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