

First Semester MBA Degree Examination, June/July 2025 Statistics for Managers

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FOUR full questions from Q.No.1 to Q.No.7.
2. Question No. 8 is compulsory.
3. M : Marks , L: Bloom's level, C: Course outcomes.
4. Statistical Table may be allowed.*

			M	L	C																		
Q.1	a.	State the relationship between Mean, Median and Mode.	3	L1	CO1																		
	b.	Calculate missing frequencies of below table : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Variable</td> <td style="width: 10%;">0-10</td> <td style="width: 10%;">10-20</td> <td style="width: 10%;">20-30</td> <td style="width: 10%;">30-40</td> <td style="width: 10%;">40-50</td> <td style="width: 10%;">50-60</td> <td style="width: 10%;">60-70</td> </tr> <tr> <td>Frequency</td> <td>10</td> <td>20</td> <td>?</td> <td>40</td> <td>?</td> <td>25</td> <td>15</td> </tr> </table> Median = 35 , Total frequency = 170.	Variable	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Frequency	10	20	?	40	?	25	15	7	L2	CO2		
	Variable	0-10	10-20	20-30	30-40	40-50	50-60	60-70															
Frequency	10	20	?	40	?	25	15																
c.	Blood Serum Cholesterol levels of 10 persons are as under : 240 , 260 , 290 245 , 255 , 288 , 272 , 263 , 277 and 251. Calculate SD with the help of Assumed Mean = 264.	10	L2	CO2																			
Q.2	a.	Distinguish between Positive , Negative and Zero correlation.	3	L4	CO2																		
	b.	Calculate Karl Pearson's coefficient of correlation for following data : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Roll No. of student</td> <td style="width: 10%;">1</td> <td style="width: 10%;">2</td> <td style="width: 10%;">3</td> <td style="width: 10%;">4</td> <td style="width: 10%;">5</td> </tr> <tr> <td>Marks in Accountancy</td> <td>48</td> <td>35</td> <td>17</td> <td>23</td> <td>47</td> </tr> <tr> <td>Marks in Statistics</td> <td>45</td> <td>20</td> <td>40</td> <td>25</td> <td>45</td> </tr> </table>	Roll No. of student	1	2	3	4	5	Marks in Accountancy	48	35	17	23	47	Marks in Statistics	45	20	40	25	45	7	L3	CO2
	Roll No. of student	1	2	3	4	5																	
Marks in Accountancy	48	35	17	23	47																		
Marks in Statistics	45	20	40	25	45																		
c.	From the following data obtain two regression equations (X on Y and Y on X) : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">X</td> <td style="width: 10%;">6</td> <td style="width: 10%;">2</td> <td style="width: 10%;">10</td> <td style="width: 10%;">4</td> <td style="width: 10%;">8</td> </tr> <tr> <td>Y</td> <td>9</td> <td>11</td> <td>5</td> <td>8</td> <td>7</td> </tr> </table>	X	6	2	10	4	8	Y	9	11	5	8	7	10	L4	CO4							
X	6	2	10	4	8																		
Y	9	11	5	8	7																		
Q.3	a.	What is Bernoulli Experiment?	3	L1	CO1																		
	b.	The mean of a Binomial distribution is 6. The standard deviation is $\sqrt{2}$. Find n & P.	7	L3	CO2																		
	c.	The probability that a bomb dropped on a bridge hits it is 0.4. Eight bombs are dropped on the bridge. Two bomb - hits are enough to destroy the bridge. Find the probability that i) All the bomb bit the bridge ii) Two bombs hit the bridge iii) The bridge is destroyed.	10	L4	CO3																		

Q.4	a.	What is time series?	3	L1	CO2																																			
	b.	Discuss various methods that can be used for determining trend.	7	L2	CO2																																			
	c.	Calculate 5 - yearly and 7 - yearly moving average for the following data of the number of commercial and industrial failures in a country during 1988 to 2003. <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Year</td> <td style="width: 10%;">1988</td> <td style="width: 10%;">1989</td> <td style="width: 10%;">1990</td> <td style="width: 10%;">1991</td> <td style="width: 10%;">1992</td> <td style="width: 10%;">1993</td> <td style="width: 10%;">1994</td> <td style="width: 10%;">1995</td> </tr> <tr> <td>No. of Failures</td> <td>23</td> <td>26</td> <td>28</td> <td>32</td> <td>20</td> <td>12</td> <td>12</td> <td>10</td> </tr> <tr> <td>Year</td> <td>1996</td> <td>1997</td> <td>1998</td> <td>1999</td> <td>2000</td> <td>2001</td> <td>2002</td> <td>2003</td> </tr> <tr> <td>No. of Failures</td> <td>9</td> <td>13</td> <td>11</td> <td>14</td> <td>12</td> <td>9</td> <td>3</td> <td>1</td> </tr> </table>	Year	1988	1989	1990	1991	1992	1993	1994	1995	No. of Failures	23	26	28	32	20	12	12	10	Year	1996	1997	1998	1999	2000	2001	2002	2003	No. of Failures	9	13	11	14	12	9	3	1	10	L4
Year	1988	1989	1990	1991	1992	1993	1994	1995																																
No. of Failures	23	26	28	32	20	12	12	10																																
Year	1996	1997	1998	1999	2000	2001	2002	2003																																
No. of Failures	9	13	11	14	12	9	3	1																																
Q.5	a.	What are Type - I and Type = II error?	3	L1	CO2																																			
	b.	The life time of electric bulbs for a random samples of 10 form a large consignment gave the following data : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Item</td> <td style="width: 10%;">1</td> <td style="width: 10%;">2</td> <td style="width: 10%;">3</td> <td style="width: 10%;">4</td> <td style="width: 10%;">5</td> <td style="width: 10%;">6</td> <td style="width: 10%;">7</td> <td style="width: 10%;">8</td> <td style="width: 10%;">9</td> <td style="width: 10%;">10</td> </tr> <tr> <td>Life in '000 hours</td> <td>4.2</td> <td>4.6</td> <td>3.9</td> <td>4.1</td> <td>5.2</td> <td>3.8</td> <td>3.9</td> <td>4.3</td> <td>4.4</td> <td>5.6</td> </tr> </table> [Note : Table value of t @ 5% is 2.262] Can we accept the hypothesis that the average life time of bulbs in 4,000 hrs.	Item	1	2	3	4	5	6	7	8	9	10	Life in '000 hours	4.2	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6	7	L4	CO4													
	Item	1	2	3	4	5	6	7	8	9	10																													
Life in '000 hours	4.2	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6																														
c.	In an anti malarial campaign in a certain area, quinine was admistered to 812 persons out of a total population of 3248. The number of fever cases is shown below : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Treatment</td> <td style="width: 10%;">Fever</td> <td style="width: 10%;">No Fever</td> <td style="width: 10%;">Total</td> </tr> <tr> <td>Quinine</td> <td>20</td> <td>792</td> <td>812</td> </tr> <tr> <td>No Quinine</td> <td>220</td> <td>2216</td> <td>2436</td> </tr> <tr> <td>Total</td> <td>240</td> <td>3008</td> <td>3248</td> </tr> </table> Discuss the usefulness of quinine in checking malaria. [Table value @ 5% = 3.84].	Treatment	Fever	No Fever	Total	Quinine	20	792	812	No Quinine	220	2216	2436	Total	240	3008	3248	10	L4	CO4																				
Treatment	Fever	No Fever	Total																																					
Quinine	20	792	812																																					
No Quinine	220	2216	2436																																					
Total	240	3008	3248																																					
Q.6	a.	What is Statistics?	3	L1	CO1																																			
	b.	The mean height of 25 male workers in a factory is 61 inches and the mean height of 35 female workers in the same factory is 58 inches. Find the combined mean of 60 workers in the factory. CMRIT LIBRARY BANGALORE - 560 037	7	L2	CO2																																			
	c.	Calculate mode from following data : <table border="1" style="margin: 5px 0; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Marks</td> <td style="width: 10%;">0-10</td> <td style="width: 10%;">10-20</td> <td style="width: 10%;">20-30</td> <td style="width: 10%;">30-40</td> <td style="width: 10%;">40-50</td> </tr> <tr> <td>No. of students</td> <td>3</td> <td>5</td> <td>7</td> <td>10</td> <td>12</td> </tr> <tr> <td>Marks</td> <td>50-60</td> <td>60-70</td> <td>70-80</td> <td>80-90</td> <td>90-100</td> </tr> <tr> <td>No. of students</td> <td>15</td> <td>12</td> <td>6</td> <td>2</td> <td>8</td> </tr> </table>	Marks	0-10	10-20	20-30	30-40	40-50	No. of students	3	5	7	10	12	Marks	50-60	60-70	70-80	80-90	90-100	No. of students	15	12	6	2	8	10	L5	CO4											
Marks	0-10	10-20	20-30	30-40	40-50																																			
No. of students	3	5	7	10	12																																			
Marks	50-60	60-70	70-80	80-90	90-100																																			
No. of students	15	12	6	2	8																																			

Q.7	a.	What is Baye's Theorem?	3	L1	CO1																								
	b.	In a Poisson Distribution $P[X=2] = P[X=3]$. Find $P[X=4]$. (Note : $e^{-3} = 0.0498$).	7	L4	CO4																								
	c.	Discuss applications of statistics in Business Economics , Physical science , Research and Natural science.	10	L2	CO2																								
CMRIT LIBRARY BANGALORE - 560 037																													
Q.8	a.	From the prices of shares X and Y below, find out which is more stable in value : <table border="1" style="margin: 10px auto;"> <tr> <td>X</td> <td>35</td> <td>54</td> <td>52</td> <td>53</td> <td>56</td> </tr> <tr> <td>Y</td> <td>108</td> <td>107</td> <td>105</td> <td>105</td> <td>106</td> </tr> <tr> <td>X</td> <td>58</td> <td>52</td> <td>50</td> <td>51</td> <td>41</td> </tr> <tr> <td>Y</td> <td>107</td> <td>104</td> <td>103</td> <td>104</td> <td>101</td> </tr> </table>	X	35	54	52	53	56	Y	108	107	105	105	106	X	58	52	50	51	41	Y	107	104	103	104	101	10	L5	CO4
	X	35	54	52	53	56																							
Y	108	107	105	105	106																								
X	58	52	50	51	41																								
Y	107	104	103	104	101																								
b.	Explain in detail procedure of hypothesis testing.	10	L2	CO3																									
