

CBCS SCHEME



USN

--	--	--	--	--	--	--	--	--	--

MBA104

First Semester MBA Degree Examination, Dec.2024/Jan.2025 Business Statistics

Time: 3 hrs.

Max. Marks: 100

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

			M	L	C																																	
Q.1	a.	Define Statistics.	3	L1	CO1																																	
	b.	Mean and standard deviations of two distribution of 100 and 150 items were 50, 5 and 40, 6 respectively, find the mean and standard deviation of all the 150 items taken together.	7	L2	CO1																																	
	c.	Prices of a particular commodity in 5 years in two cities are given below: <table><tr><td>Price in city A :</td><td>20</td><td>22</td><td>19</td><td>23</td><td>10</td></tr><tr><td>Price in city B :</td><td>10</td><td>20</td><td>18</td><td>12</td><td>15</td></tr></table> Find which city has more stable prices.	Price in city A :	20	22	19	23	10	Price in city B :	10	20	18	12	15	10	L3	CO2																					
Price in city A :	20	22	19	23	10																																	
Price in city B :	10	20	18	12	15																																	
Q.2	a.	Define types of correlation with an example.	3	L1	CO1																																	
	b.	The measure of skewness for a certain distribution is -0.8. If the lower and upper quartiles are 44.1 and 56.6 respectively, find the median.	7	L2	CO1																																	
	c.	Find out Karl Pearson's co-efficient of correlation from the following data of marks obtained by 10 students in a class test. <table><tr><td>Marks in economics:</td><td>45</td><td>70</td><td>65</td><td>30</td><td>90</td><td>40</td><td>50</td><td>75</td><td>85</td><td>60</td></tr><tr><td>Marks in accountancy :</td><td>35</td><td>90</td><td>70</td><td>40</td><td>95</td><td>40</td><td>60</td><td>80</td><td>80</td><td>50</td></tr></table>	Marks in economics:	45	70	65	30	90	40	50	75	85	60	Marks in accountancy :	35	90	70	40	95	40	60	80	80	50	10	L3	CO2											
Marks in economics:	45	70	65	30	90	40	50	75	85	60																												
Marks in accountancy :	35	90	70	40	95	40	60	80	80	50																												
Q.3	a.	Explain the significance of measuring dispersion.	3	L1	CO1																																	
	b.	Discuss difference between parametric and non-parametric test.	7	L1	CO1																																	
	c.	Ten competitors in a chess tournament are ranked by three judges in the following order: <table><tr><td>Judge 1 -</td><td>1</td><td>5</td><td>4</td><td>8</td><td>9</td><td>6</td><td>10</td><td>7</td><td>3</td><td>2</td></tr><tr><td>Judge 2 -</td><td>4</td><td>8</td><td>7</td><td>6</td><td>5</td><td>9</td><td>10</td><td>3</td><td>2</td><td>1</td></tr><tr><td>Judge 3 -</td><td>6</td><td>7</td><td>8</td><td>1</td><td>5</td><td>10</td><td>9</td><td>2</td><td>3</td><td>4</td></tr></table> Use the rank correlation coefficient to discuss which pair of judges have the nearest approach.	Judge 1 -	1	5	4	8	9	6	10	7	3	2	Judge 2 -	4	8	7	6	5	9	10	3	2	1	Judge 3 -	6	7	8	1	5	10	9	2	3	4	10	L3	CO2
Judge 1 -	1	5	4	8	9	6	10	7	3	2																												
Judge 2 -	4	8	7	6	5	9	10	3	2	1																												
Judge 3 -	6	7	8	1	5	10	9	2	3	4																												

1 of 3

Q.4	a.	Define mode and give 2 suitable examples.	3	L1	CO1																														
	b.	Define the following terms: i) Independent events ii) Mutually exclusive events iii) Equally likely event.	7	L1	CO1																														
	c.	Calculate seasonal indices for the rainfall (in mm) in Karnataka given by simple average method. <table><tr><td>Years</td><td>I</td><td>II</td><td>III</td><td>IV</td></tr><tr><td>2017</td><td>118.4</td><td>260</td><td>379.4</td><td>70</td></tr><tr><td>2018</td><td>85.8</td><td>185.4</td><td>407.1</td><td>8.7</td></tr><tr><td>2019</td><td>129.8</td><td>336.5</td><td>403.1</td><td>12</td></tr><tr><td>2020</td><td>283.4</td><td>360.7</td><td>472.1</td><td>14.3</td></tr><tr><td>2021</td><td>849.1</td><td>308.5</td><td>828.8</td><td>15.9</td></tr></table>	Years	I	II	III	IV	2017	118.4	260	379.4	70	2018	85.8	185.4	407.1	8.7	2019	129.8	336.5	403.1	12	2020	283.4	360.7	472.1	14.3	2021	849.1	308.5	828.8	15.9	10	L4	CO3
Years	I	II	III	IV																															
2017	118.4	260	379.4	70																															
2018	85.8	185.4	407.1	8.7																															
2019	129.8	336.5	403.1	12																															
2020	283.4	360.7	472.1	14.3																															
2021	849.1	308.5	828.8	15.9																															

Q.5	a.	Define Hypothesis.	3	L1	CO1																																																								
	b.	A factory has two machines, machine I produces 30% of the items of output and machine II produces 70% of the items. Further 5% of the items produced by the machine I were defective and only 1% produced by machine II were defective. If the defective item is drawn at random, what is the probability that it was produced by machine I?	7	L2	CO3																																																								
	c.	Random samples drawn from normal population are:															-----------	----	----	----	----	----	----	----	----	----	----	----	----		Sample 1:	20	16	26	27	23	22	18	24	25	19				Sample 2:	27	33	42	35	32	34	38	28	41	43	30	37	Obtain estimate of variance of 2 population and test whether 2 populations are same.	10	L3	CO2
Q.6	a.	Define normal distribution.	3	L1	CO1																																																								
	b.	An intelligent quotient of 16 students from one area of a city showed a mean of 107 and SD of 10. While the IQ of 14 students from another area of the city showed mean of 112 and SD of 8. Is there a significance difference between the IQ's of the 2 groups at 0.01 level of significance?	7	L2	CO1																																																								
	c.	Explain steps in formulation of hypothesis.	10	L2	CO1																																																								
Q.7	a.	Define time series analysis.	3	L1	CO1																																																								
	b.	Below are given figures of production (in 000's tons) of a sugar factory.										--------------	------	------	------	------	------	------	------		Year :	1999	2000	2001	2002	2003	2004	2005		Production :	77	88	94	85	91	98	90	i) Fit a straight line by the least square and show the trend values. ii) What is the monthly increase in production?	7	L3	CO2																				

2 of 3

c.	On an average a printer makes 4 printing mistakes while printing one page. What is the probability that a randomly observed page is free from mistakes? Among 300 pages, how many pages would you expect mistakes [$e^{-4} = 0.0183$].	10	L1	CO2
----	--	----	----	-----

Q.8	<p style="text-align: center;"><u>CASE STUDY (Compulsory)</u></p>																									
a.	<p>Construct 5 year moving average of number of students studying in the college, they are:</p> <table><tr><td>Years :</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><td>2004</td><td>2005</td></tr><tr><td>No. of students :</td><td>332</td><td>317</td><td>357</td><td>392</td><td>402</td><td>405</td><td>410</td><td>427</td><td>405</td><td>431</td></tr></table>	Years :	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	No. of students :	332	317	357	392	402	405	410	427	405	431	10	L1	CO2
Years :	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005																
No. of students :	332	317	357	392	402	405	410	427	405	431																
b.	<p>Solve the problem using 3years moving average method.</p> <table><tr><td>Years :</td><td>1999</td><td>2000</td><td>2001</td><td>2002</td><td>2003</td><td>2004</td><td>2005</td></tr><tr><td>Duration :</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr></table>	Years :	1999	2000	2001	2002	2003	2004	2005	Duration :	-3	-2	-1	0	1	2	3	10	L3	CO2						
Years :	1999	2000	2001	2002	2003	2004	2005																			
Duration :	-3	-2	-1	0	1	2	3																			

* * * * *