Reg. No.															

Question Paper Code	14299

MBA - DEGREE EXAMINATIONS, NOV / DEC 2025

First Semester

Master of Business Administration

24MBT104 - BUSINESS STATISTICS AND ANALYTICS FOR DECISION MAKING

Regulations - 2024

(Use of *Statistical Tables* are permitted)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Define mutually independent and mutually exclusive events.	2	K1	CO1
2.	If $P(A) = 1/3, P(B) = 3/4$ and $(AUB) = 11/12$. Find $P(A/B)$.	2	K2	CO1
3.	State Type I and Type II error.	2	K1	CO2
4.	Define Central limit theorem.	2	K1	CO2
5.	Mention the uses of t test.	2	K1	CO3
6.	State the difference between Completely Randomized Design and Randomized Block Design.	2	K2	CO3
7.	What are the primary shortcomings of nonparametric tests?	2	K1	CO4
8.	State the term run with an example.	2	K1	CO4
9.	Define time series and give one example.	2	K1	CO5
10.	Write the line of regression equations of Y on X and X on Y.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	In a bolt factory machines A, B, C manufacture respectively 25, 35 and 40 percent of the total. Of their output 5, 4 and 2 percent are defective bolts respectively. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machines A, B or C?	13	K3	CO1
		OR			
	b)	In a test of 2000 electric bulbs it was found that the life of a particular make was normally distributed with an average life of 2040 hours and Standard Deviation of 60hrs. Estimate the number of bulbs likely to burn for (i) More than 2150 hrs. (ii) Less than 1950 hrs. (iii) More than 1920 hrs but less than 2160 hrs.	13	K3	CO1
12.	a)	The mean strength of a certain cutting tool is 41.5hrs with a standard deviation of 2.5 hrs. What is the probability that a random sample of size 50 drawn from this population will have a mean between 40.5hrs and 42hrs?	13	K3	CO2
		OR			

b) A sample of 100 measurements at breaking strength of cotton threads gave a mean of 7.4 and a standard deviation of 1.2. Find 95% confidence limits for the mean breaking strength. *13 K3 CO2*

13. a) Intelligence test given to two groups of boys and girls, Is the difference in the mean score of boys and girls statistically significant? Test at 5% level of significance. *13 K3 CO3*

Gender	Mean score	SD	Sample size
Girls	75	10	50
Boys	70	12	100

OR

b) Analyze the technique of two ways ANOVA to the following data showing the yields of 3 varieties of a crop each from 4 blocks and test whether the mean yields of the varieties are equal or not. Test at 5% Level of significance. *13 K3 CO3*

Varieties	I	II	III	IV
A	4	8	6	8
B	5	5	7	8
C	6	7	9	5

14. a) Kevin Morgan, national sales manager of an electronics firm, has collected the following salary statistics on his field sales force earnings. He has both observed frequencies and frequencies expected if the distribution of salaries is normal. At the 0.10 level of significance, can Kevin conclude that the distribution of sales force earnings is normal by Kolmogorov-Smirnov test for goodness of fit? *13 K3 CO4*

	Earnings (in thousands)						
	25-30	31-36	37-42	43-48	49-54	55-60	61-60
O_i	9	22	25	30	21	12	6
E_i	6	17	32	35	18	13	4

OR

b) From the maths class of 12 equally capable students using a programmed material. Five are selected at random and given additional instructions by the teacher. Use Mann Whitney U test at 5% level of significance to test whether the additional instructions are effective. *13 K3 CO4*

Sample 1	87	69	78	91	80	-	-
Sample 2	75	88	64	82	93	79	67

15. a) Calculate the 4 yearly moving averages for the following data. *13 K3 CO5*

Year	1	2	3	4	5	6	7	8	9	10
Sales	20	21	23	22	25	24	27	26	28	30

OR

b) Find the equation of regression line for the following data. Obtain an estimate of Y which should correspond to the value $X = 6.2$. *13 K3 CO5*

X:	1	2	3	4	5	6	7	8	9
Y:	9	8	10	12	11	13	14	16	15

PART - C (1× 15 = 15 Marks)
(Compulsory)

16. Examine whether the nature of the area is related to voting preference in this election. Test at 5% level of significance. *15 K3 CO4*

Votes for area	**A**	**B**
Rural	620	380
Urban	550	450