Reg. No.												

Question Paper Code	12981

MBA - DEGREE EXAMINATIONS, NOV / DEC 2024

First Semester

Master of Business Administration

20MBT104 - BUSINESS STATISTICS AND ANALYTICS FOR DECISION MAKING

Regulation – 2020

(Use of Statistical Tables is permitted)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	State Baye's theorem.	2	K1	CO1
2.	Given that $P(A) = 3/8$, $P(B) = 5/8$ and $P(AUB) = 3/4$. Calculate$P(A/B)$.	2	K2	CO1
3.	State Central Limit Theorem.	2	K1	CO2
4.	Define sampling.	2	K1	CO2
5.	Define Type-I and Type- II error.	2	K1	CO3
6.	Define critical region.	2	K1	CO3
7.	Define non-parametric test.	2	K1	CO4
8.	Determine the number of runs for M W MM WW MM WWW M WW MM WW MMM and also find their mean.	2	K2	CO4
9.	Define positive and negative correlation.	2	K2	CO5
10.	List out the components of time series.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a)	Out of 320 families with 5 children each, what percentage would be expected to have (i) 2 boys and 3 girls (ii) at least one boy?	13	K3	CO1
	OR			
b)	The following table shows the frequency distribution of the diameters of 40 containers. Find the mean & Mode of the following data.	13	K3	CO1

Diameter (mm)	35 – 39	40 – 44	45 – 49	50 – 54	55 – 60
Frequency	6	12	15	10	7

12. a)	An economist wishes to estimate the average family income in a certain population. The population standard deviation is known to be \$4500 and the economist use a random sample of size $n = 225$. Using central limit theorem find the probability that the sample mean will fall within and 800 of the population mean?	13	K3	CO2

OR

b) A large drug store wants to estimate average weekly sales for a brand of soap. A random sample of 13 weeks gives the following numbers: 123, 110, 95, 120, 87, 89, 100, 105, 98, 88, 75, and 125, 101. Find 90% and 95% confidence interval for average weekly sales. *13 K3 CO2*

13. a) The time taken by workers in performing a job by method I and method II is given below: *13 K3 CO3*

Method I	20	16	26	27	23	22	
Method II	27	33	42	35	32	34	38

Do the data show that the variances of time distribution from population from which these samples are drawn do not differ significantly?

OR

b) The following data relate to the marks obtained by 11 students in two tests one before and the other after an intensive coaching. Do the data indicate that the students have benefitted by coaching? *13 K3 CO3*

Test I:	19	23	16	24	17	18	20	18	21	19	20
Test II:	17	24	20	24	20	22	20	20	18	22	19

14. a) Find if there is an association between extravagance in fathers and extravagance in sons from the following data *13 K3 CO4*

	Extravagant father	Miserly father
Extravagant son	327	741
Miserly son	545	234

Determine the coefficient of association also.

OR

b) Below is the table of observed frequencies along with the frequency to the expected under a normal distribution.(Given at $n = 5, D(0.1) = 0.510$). *13 K3 CO4*

a) Calculate the Kolmogorov Smirnov test statistic.

b) Can we conclude that this distribution does in fact a normal

Test Score	51-60	61-70	71-80	81-90	91-100
Observed frequency	25	85	400	380	110
Expected frequency	40	110	500	290	60

distribution?

15. a) Find the coefficient of correlation between x and y from the following data *13 K3 CO5*

x	65	66	67	67	68	69	70	72
y	67	68	65	68	72	72	69	71

OR

b) From the following data calculate the four-year moving average and determine the trend values. Find the short-term fluctuations plot the original values and the trend on a graph. *13 K3 CO5*

Year:	1958	1959	1960	1961	1962
Value:	50	36.5	43	44.5	38.9
Year:	1963	1964	1965	1966	1967
Value:	38.1	32.6	41.7	41.0	33.8

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

16. a) Four farmers each used four types of manures for a crop and obtained the yields (in quintals) as below: *15 K3 CO3*

Treatments					
Farmers		1	2	3	4
	A	22	16	21	12
	B	23	17	19	13
	C	21	14	18	11
	D	22	15	19	10

If there any significant difference between i) farmers ii) manures.