

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***MBA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***First Semester**Master of Business Administration***BA4101 / PMBT2401 - Statistics for Management****(Statistical tables can be permitted)***Regulations – 2021 & 2024**Duration : 3 Hrs**Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	A city has, on an average, twelve traffic deaths every three months. Predict the probability that in one month, there are exactly four traffic deaths.	L4	1	2
2.	List out the properties of normal distribution.	L1	1	2
3.	What are the advantages of random sampling?	L2	2	2
4.	Distinguish between point and interval estimate.	L2	2	2
5.	State the concept of two types of error in testing of hypothesis.	L1	3	2
6.	Differentiate null hypothesis from alternative hypothesis.	L2	3	2
7.	List out the uses of chi square test.	L1	4	2
8.	Under what conditions do we apply the sign test?	L2	4	2
9.	Sketch the following correlations (i) linear and perfect (ii) uncorrelated.	L1	5	2
10.	Distinguish between correlation and regression.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a In a certain group, probability that a person is a graduate is 0.4 and that he is not is 0.6. 75% of the graduates and 35% of the under-graduates have their IQ above 110. A person was selected at random from this group, and was found to have this IQ above 110. Determine using Baye's theorem the probability that he was graduate.	L3	1	16
	Or			
	b The average daily sale of 500 branches of a large chain of white goods is 150 thousand and a standard deviation of 15 thousand. Assuming the distribution of sales to be normal, estimate how many branches have daily sales.	L3	1	16
	a. More than 160 thousand			
	b. Less than 145 thousand			
	c. Between 120 and 165 thousand			

12. a i BSES uses a sample survey to determine the average consumption per month. They surveyed 200 households and find that the average electricity consumed is 9.5 units. The standard deviation is 2.1. Set up the confidence limits on the basis of 95 percent level of confidence as well as 99 %.
- L3 2 8
- ii Discuss the methods and techniques of sampling.
- L2 2 8
- Or
- b i You are conducting a survey to assess customer satisfaction for a new product launched by your company. You want to ensure that your findings are statistically significant and representative of your customer base. What sampling method would you employ? Determine the sample size.
- L3 2 8
- ii A local grocery store selling generic garbage bags is interested in determining the average maximum weight that can be put into a generic bag without its breaking. If the standard deviation of garbage breaking weight is 1.2 kg, determine the number of bags that must be tested in order for the store manager to be 95 % confident that the sample average breaking weight is within 0.5 kg of the true average?
- L3 2 8
13. a A firm allows its employees to pursue additional income earning activities such as consultancy, tuitions etc. The average weekly earning through these activities is Rs.5000 per month. A new HR manager feels that this amount may have changed. For verifying his doubt, he has taken a random sample of 45 employees & computed the average additional income of these 45 employees. The sample mean is computed as Rs.5500 and the sample S.D Rs.1000. Use $\alpha = 0.10$ to test whether the additional average income has changed in the population.
- L4 3 16
- Or
- b The intelligence quotients (IQs) of 16 students from one area of a city showed a mean of 107 and a standard deviation of 10, while the IQs of 14 students from another area of the city showed a mean of 112 and a standard deviation of 8. Is there a significant difference between the IQs of the two groups at 0.01 level of significance?
- L4 3 16
14. a Three methods of training were done and the scores of each method were tested for quality of performance.
- L3 4 16

Method Type	Scores
Method A	80, 83, 79, 85, 90, 68
Method B	82, 84, 60, 72, 86, 67, 91
Method C	93, 65, 7, 78, 88

Use Kruskal-Wallis Test to determine, at the 0.05 level of significance, whether there is any difference in the effectiveness of the three methods.

Or

- b The Phosphate contents of two brands of fertilizers, measured in milligrams, were found to be as follows: L3 4 16

Brand A :	2.1	4.0	6.3	5.4	4.8	3.7	6.1	3.3		
Brand B :	4.1	0.6	3.1	2.5	4.0	6.2	1.6	2.2	1.9	5.4

Using U test, test the hypothesis, at the 0.05 level of significance, that the average phosphate contents of the two brands are equal against the alternative that they are unequal.

15. a A survey was conducted to study the relationship (p between the sales and advertising expenditure. Estimate (i) the sales for advertising expenditure of Rs.90 lakh (ii) the advertising expenditure for a sales target of Rs.25 crore, and (iii) their correlation. Use regression technique to solve the problem. L3 5 16

Sales (Rs.crore)	10	11	13	15	16	19	14
Ad.Exp.(Rs.Lakh)	60	62	65	70	73	75	71

Or

- b The scores on each question for a random sample of 8 of the group are as shown below. L3 5 16

Student	1	2	3	4	5	6	7	8
Q1	42	68	32	84	71	55	55	70
Q2	39	75	43	79	83	65	62	68

Calculate the (i) Karl Pearson's coefficient of correlation and (ii) Spearman rank correlation coefficient between the scores on the two questions.