

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

*First Semester**Master of Business Administration*

BA4101 / PMBT2401 – STATISTICS FOR MANAGEMENT

(Statistical Table 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.	State the Baye's theorem.	L1	1	2
2.	If $npq = 2$, and $np = 4$, then find n , p and q values in Binomial distribution.	L2	1	2
3.	Define sampling distribution.	L1	2	2
4.	Define estimation.	L1	2	2
5.	Define null hypothesis.	L1	3	2
6.	When you identify whether the sample size is small or large?	L1	3	2
7.	Define rank sum test.	L1	4	2
8.	Write the formula for Kruskal Wallis test.	L1	4	2
9.	Write the use of regression.	L1	5	2
10.	Write the interpretation of the correlation coefficient values?	L1	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 i Verify that the following functions are probability mass functions, and determine the requested probabilities. <table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>P(x)</td><td>1/8</td><td>2/8</td><td>2/8</td><td>2/8</td><td>1/8</td></tr></table> (1) $P(X \leq 0)$ (2) $P(X > -2)$ (3) $P(-1 \leq X \leq 1)$ (4) cdf of X	x	-2	-1	0	1	2	P(x)	1/8	2/8	2/8	2/8	1/8	L3	1	8
x	-2	-1	0	1	2											
P(x)	1/8	2/8	2/8	2/8	1/8											
	ii In a recruitment test, a student either guesses or copies or knows the answer to a multiple choice question with four choices. The probability that he makes a guess is 1/4 and the probability that he copies the answer is 1/5. The probability that his answer is correct, given that he copied it is 1/7. Find the probability that he knew the answer to the question, given that he correctly answered it.	L3	1	8												

Or

- b i The number of telephone calls that arrive at a phone exchange is often modeled as a Poisson random variable. Assume that on the average there are 10 calls per hour. L3 1 8

(1). What is the probability that there are 3 or less calls in one hour?
(2). What is the probability that there are exactly 15 calls in two hours?

- ii In an IQ test administered to 2000 students, the average score was 52 and standard deviation 24. Find : L3 1 8

(1). The number of students exceeding a score of 60
(2). The number of students lying between a score 40 and 64

12. a State and explain Central limit theorem with its applications. L2 2 16

Or

- b i In a sample of 1000 people in Maharashtra, 540 are rice eaters and the rest are wheat eaters, Can we assume that both rice and wheat are equally popular in this State at 1% level of significance? L3 2 8

- ii Twenty people were attacked by a disease and only 18 survived, Will you reject the hypothesis that the survival rate, if attacked by this disease, is 85% in favour of the hypothesis that it is more, at 5% level. (Use large sample test). L3 2 8

13. a i The mean of two large samples of sizes 1000 and 2000 are 67.5 and 68.0 respectively. Test the equality of means of the two populations each with standard deviation 2.5. L3 3 8

- ii Given a sample mean 83, a sample standard deviation of 12.5 and a sample size of 22, test the hypothesis that the value of the population mean is 70 against the alternative that it is more than 70. Use the 0.025 level of significance. L3 3 8

Or

- b There are three main brands of a certain powder. A set of its 120 sales is examined and found to be allocated among four groups (A,B,C,D) and brands (I,II, and III) as shown below : L3 3 16

Brands	Groups			
	A	B	C	D
I	0	4	8	15
II	5	8	13	6
III	18	19	11	13

Is there any significant difference in brands preference? Answer at 5% level using one way ANOVA.

14. a i 4 coins were tossed 160 times and the following results were obtained. L3 4 8

No.of Heads	0	1	2	3	4
Observed Frequency	17	52	54	31	6

Test the goodness of fit.

- ii Apply Mann-Whitney U test to determine if there is a significant difference in the age distribution of the two groups L3 4 8
Day College :26 18 25 27 19 30 34 21 33 31
Evening College :32 24 23 30 40 41 42 39 45 35

Or

- b Melisa's Boutique has three mall locations. Melisa keeps a daily record for each location of the number of customers who actually make a purchase. A sample of those data follows. Using the Kruskal Wallis test, can you say at the 0.05 level of significance that her stores have the same number of customers who buy? L3 4 16

X mall	99	64	101	85	79	88	97	95	90	100
Y mall	83	102	125	61	91	96	94	89	93	75
Z mall	89	98	56	105	87	90	87	101	76	89

15. a i Compute the co-efficient of correlation between X and Y, using the following data L3 5 8

X 1 3 5 7 8 10

Y 8 12 15 17 18 20

- ii Consider the following data obtain the two regression equations : L3 5 8

X	5	3	10	8	9
Y	8	12	6	5	14

Or

- b Find the standard error of estimate of y on x and x on y from the following data : L3 5 16

X	1	2	3	4	5
Y	2	5	9	13	14
