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(An Autonomous Institution)

Regulations: A22

Code No:9HC15 **Date: 06-August-2024 (FN)**

B.Tech II-Year II- Semester External Examination, August-2024 (Regular)

PROBABILITY AND STATISTICS (EEE,CSE,IT)

Time: 3 Hours **Max.Marks:60**

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A Max.Marks: 6x2=12

ANSWER ALL QUESTIONS, EACH QUESTION CARRIES 2 MARKS.

		BCLL	CO(s)	Marks
1	Define Discrete and Continuous random variables.	L1	CO1	[2M]
2	Define interval estimation and point estimation.	L2	CO2	[2M]
3	Define Type-I and Type-II error.	L1	CO3	[2M]
4	Write the testing process for student's t-test.	L1	CO4	[2M]
5	Define positive and negative correlation.	L2	CO5	[2M]
6	Write the normal equations of the curve y = a+bx by using method of least squares.	L2	CO6	[2M]

Part – B Max.Marks: 6x8=48

ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 8 MARKS.

		BCLL	CO(s)	Marks
7.	Out of 800 families with 5 children each, Test how many would you expect to have (a) 3 boys (b) 5 girls (c) either 2 or 3 boys (d) At least one boy , Assume equal Probability for boys and girls.	L2	CO1	[8M]
	OR			
8	In normal distribution, 31% of the items are under 45 and 8% are over 64. find the mean and variance of the distribution.	L3	CO1	[8M]
9.	A population consists of 5 numbers 2, 3,6, 8 and 11 consider all possible samples of size 2 which can be drawn (i) with replacement (ii) without replacement from this population, Evaluate to find (a) The Mean of the population (b) The Standard Deviation of the Population (c) Mean of the sampling distribution of Means (d) The Standard Deviation of the Sampling Distribution of Means	L4	CO2	[8M]
	OR			
10	A random sample of size 81 was taken whose variance is 20.25 and mean is 32 construct a 98% confidence Interval.	L3	CO2	[8M]
11.	Random samples of 400 men and 600 women were asked whether they would like to have a Flyover near their residence. 200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women in favour of the proposal are same,test at 5% Level (Difference of two proportions).	L3	CO3	[8M]
	OR			

12 A sample of 400 items is taken from a population whose standard deviation is 10.The mean of the sample is 4. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval for the population. L3 CO3 [8M]

13. Two independent Samples of sizes 8 and 7 items respectively. L3 CO4 [8M]

Sample-I	11	11	13	11	15	9	12	14
Sample-II	9	11	10	13	9	8	10	----

Is the difference between the means of the Samples Significant? Test at 5% L.O.S.

OR

14 A set of 5 similar coins is tossed 320 times and result is L4 CO4 [8M]

No. of heads	0	1	2	3	4	5
Frequency	6	27	72	112	71	32

Test the hypothesis at 5% level of significance.

15. Calculate the coefficient of correlation between the two variables x and y. L3 CO5 [8M]

x	55	56	58	59	60	60	62
y	35	38	38	39	44	43	44

OR

16 Obtain the rank correlation coefficient for the following data L3 CO5 [8M]

x	68	64	75	50	64	80	75	40	55
y	62	58	68	45	81	60	68	48	50

17. Heights of fathers and Sons(in inches) are given in the following table L3 CO6 [8M]

Heights of father	65	66	67	67	68	69	71	73
Heights of Son	67	68	64	68	72	70	69	70

Form the two lines of regression and calculate the expected average heights of the Son when the height of the father is 67.5.

OR

18 Fit a parabola $y = a + bx + cx^2$ to the following data. L3 CO6 [8M]

x	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

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