Q.P. Code: 19HS0835 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations July-2021

PROBABILITY & STATISTICS

(Common to CSE & CSIT)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 **a** A class consists of 6 girls and 10 boys. If a committee of 3 is chosen at random from the class, find the Probability that (i) 3 boys are selected (ii) exactly 2 girls are selected. **6M**

b Two cards are selected at random from 10 cards numbered 1 to 10. Find the probability that the sum is even if (i) The two cards are drawn together. (ii) The two cards drawn one after other with replacement. **6M**

OR

2 A random variable X has the following probability function **12M**

X	0	1	2	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

Determine (i) K (ii) Evaluate $P(X\geq 6)$ and $P(0<x<5)$

(iii) If $P(X \leq K) > \frac{1}{2}$ find minimum value of K (iv) Variance

UNIT-II

3 **a** Derive mean and variance of Binomial distribution. **6M**

b 20% of items produced from a factory are defective. Find the probability that in a sample of 5 chosen at random (i) one is defective (ii)$P(1<x<4)$ **6M**

OR

4 Find the mean and variance of a Normal distribution in which 7% of items are under 35 and 89% are under 63. **12M**

UNIT-III

5 **a** Find mode to the following data **6M**

X	0-10	10-20	20-30	30-40	40-50	50-60	60-70
F	4	13	21	44	33	22	7

b The first four moments of a distribution about the value 5 of the variables are 2,20,40 and 50.Calculate mean,variance, β_1 *and* β_2 of the distribution. **6M**

OR

6 **a** The first four moments of a distribution about value of the variable are -1.5, 17, -30 and 108.Find the moments about mean, β_1 *and* β_2 .Also find moments about origin. **6M**

b Obtain the rank correlation coefficient for the following data : **6M**

X	10	12	15	22	28	30	45	60	72
Y	32	35	42	48	52	30	65	68	70

UNIT-IV

7 **a** By method of least squares fit a straight line to the following data **6M**

x	1	2	3	4	5
y	14	27	40	55	68

b Find the curve of best fit of the type $y = a\,e^{bx}$ to the following data by method of least Squares. **6M**

x	1	5	7	9	12
y	10	15	12	15	21

OR

8 **a** In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers? **6M**

b A sample of 64 students have mean weight of 70 kgs. Can this be regarded as a sample from a population with mean weight 56kgs and standard deviation 25kgs. **6M**

UNIT-V

9 The nicotine in milligrams of two samples of tobacco were found to be as follows. **12M**

Sample A	24	27	26	21	25	--
Sample B	27	30	28	31	22	36

Can it be said that the two samples have come from the same normal population.

OR

10 **a** Find the maximum difference that we can expect with probability 0.95 between the mean of samples of sizes 10 and 12 from a normal population if their standard deviations are found to be 2 and 3 respectively. **6M**

b The number of automobile accidents per week in a certain community are as follows: 12, 8, 20,2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period. **6M**

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