R16

Reg. No: ☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Regular & Supplementary Examinations May 2019
PROBABILITY & STATISTICS
(Common to AGE,CE,EEE,CSE,CSIT & MECH)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1 a 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

b Determine (i) P(B/A) (ii) P(A/B^C) if A and B are events with P(A) = 1/3 , P(B) = 1/4, P(AUB)=1/2   6M

OR

2 A random variable X has the following probability function

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) P(X ≥ 6) (iii) P(0<X<5) and (iv) if P(X ≤ K) > 1/2, find the minimum value of K   12M

UNIT-II

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

b Out of 800 families with 5 children each, how many would you expect to have (a)3 boys (b)5 girls (c)either 2 or 3 boys. Assume equal probabilities for boys and girls.   6M

OR

4 In a sample of 1000 cases, the mean of certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal find (i) How many students score between 12 and 15. (ii) How many students score above 18? (iii) How many students score below 18?   12M

UNIT-III

5 a A Sample of 64 students has a mean weight of 70 k.gms. Can this be regarded as a sample from a population with mean weight 65 k.gms and S.D 25 k.gms with level of significance.   6M

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

OR

6 A random sample of 10 boys had the following I.Q's : 70,120,110,101,88,83,95,98,107 and 100
i) Do these data support the assumption of a population mean I.Q of 100?
ii) Find a reasonable range in which most of the mean I.Q values of samples of 10 boys lie.   12M

UNIT-IV

7 Define ANOVA. Describe briefly the technique of ANOVA for one-way classification.   12M

OR

8 Three samples each of size 5 were drawn from 3 uncorrelated normal populations with equal variances. Test the hypothesis that the population means are equal at 5% level.

Sample-1	10	12	9	16	13
Sample-2	9	7	12	11	11
Sample-3	14	11	15	14	16

12M

UNIT-V

9   Ten samples each of size 5 drawn at regular intervals from a manufacturing process. The sample means chart and their range are given below.

Sample no.	1	2	3	4	5	6	7	8	9	10
Mean ($\bar{x}$)	49	45	48	53	39	47	46	39	51	45
Range (R)	7	5	7	9	5	8	8	6	7	6

Calculate the control limits in respect of mean chart and R- chart comment on the state of control.   12M

OR

10   The following are the figures of defectives in 22 lots each containing 2000 rubber belts:
425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356 , 402, 216, 264, 126, 409, 193, 326, 280, 389, 451, 420. Draw control chart for fraction defective and comment on the state of control of the Process.   12M

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