R16

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations March-2021
PROBABILITY & STATISTICS
(Common to CE, EEE, ME, CSE, AGE & CSIT)

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	State and Prove Baye's theorem	6M

OR

2　The probability density f(x) of a continuous random variable is given by
$$f(x) = c\,e^{-|x|}, -\infty < x < \infty.$$ Show that c=1/2 and find that the mean and variance of the distribution. Also find the probability that the variate lies between 0 and 4.　**12M**

UNIT-II

3　Derive mean and variance of Normal distribution　**12M**

OR

4　a　Fit a Poisson distribution to the following frequency distribution:　**6M**

X	0	1	2	3	4
F	109	65	22	3	1

　b　If the mean of a Poisson distribution is 1.8 then find P(X>1)　**6M**

UNIT-III

5　On the basis of their total scores, 200 candidates of a civil service examination are divided into two groups, the upper 30% and the remaining 70%. Consider the first question of the examination. Among the first group, 40 had the correct answer, whereas among the second group, 80 had the correct answer. On the basis of these results, can one conclude that the first question is not good at discriminating ability of the type being examined here?　**12M**

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 this 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 different machines are used for a production. On the basis of the outputs, test whether the Machines are equally effective.

OUTPUTS		
Machine 1	Machine 2	Machine 3
10	9	20
5	7	16
11	5	10
10	6	4

12M

UNIT-V

9   The following data shows the values of sample mean and range for 10 samples for size 6 each. Calculate the central limits for mean chart and R- chart and draw the control charts and comment on the state of control.   **12M**

Sample no.	1	2	3	4	5	6	7	8	9	10
Mean ($\bar{x}$)	43	49	37	44	45	37	51	46	43	47
Range (R)	5	6	5	7	7	4	8	6	4	6

OR

10   The following are the figures give the number of defectives in 20 samples, containing 2000 items.

425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 326, 280, 389.   **12M**

Draw control chart for fraction defective and comment on the state of control of the Process.

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