Q.P. Code: 16HS613 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

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

PROBABILITY & STATISTICS

(Common to CE, EEE, ME, CSE, CSIT & AGE)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1 **a** State and prove Baye's theorem. **7M**

The probability that students A,B,C,D solve the problem are $\frac{1}{3}$, $\frac{2}{5}$, $\frac{1}{5}$ and $\frac{1}{4}$ **5M**

b respectively If all of them try to solve the problem, what is the probability that the problem is solved.

OR

2 Two dice are thrown X assign to each point if S is the sum of the variable on the faces. Find mean and variance of the random variable. **12M**

UNIT-II

3 **a** 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. **7M**

b Two dice are thrown five times. Find the probability of getting 7 as sum i) at least once (ii) $p(1<x<5)$. **5M**

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 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 die is thrown 264 times with the following results. Show that the die is biased. (ψ^2 = 11.07 at 5 d.f & 5% L.S) **12M**

Number on the die	1	2	3	4	5	6
Frequency	40	32	28	58	54	52

UNIT-IV

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

OR

8 Analyze the variance in Latin square of yields (in quintals) of wheat where A,B,C,D represent the different manners used **12M**

D222	A221	C223	B222
B224	C223	A222	D225
A220	B219	D220	C221
C222	D223	B221	A222

Test whether the different manures used have given significantly different yields.

UNIT-V

9 The following are the figures give the number of defectives in 20 samples, containing 2000 items. **12M**

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

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

OR

10 A textile company wishes to implement a quality control program on a certain garment with respect to the number of defects found in the final production. A garment was sampled on 33 consecutive hours of production. The number of defects found per garment is given hereunder. **12M**

Defects: 5,1,7,1,0,2,3,4,0,3,2,4,3,4,4,1,4,2,1,3,4,3,11,3,7,8,5,6,1,2,4,7,3

Compute the upper and lower 3-sigma control limits for monitoring the number of defects.

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