

Reg. No:

--	--	--	--	--	--	--	--	--	--

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

**B.Tech II Year II Semester Regular Examinations October-2020
PROBABILITY & STATISTICS, NUMERICAL METHODS**

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

- 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 exactly 2 girls are selected. 2M
- b Write the types of random variables. 2M
- c Obtain mode of the values 10,12,15,20,12,16,18,15,12,10,16,20,12,24. 2M
- d Write the formula to find the root of an equation by Regula Falsi method. 2M
- e Write the diagonal five-point formula. 2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

- 2 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. 4M
- b State and prove Baye's Theorem. 6M

OR

- 3 a The probability that students A, B, C, solve the problem are $\frac{1}{3}$, $\frac{2}{5}$, $\frac{1}{5}$ and $\frac{1}{4}$ respectively. If all of them try to solve the problem, what is the probability that the problem is solved. 5M
- b Find the mean and variance of the uniform probability distribution given by 5M
- $$f(x) = \frac{1}{n} \text{ for } x = 1, 2, \dots, n.$$

UNIT-II

- 4 a Derive mean and variance of Poisson distribution. 6M
- b Fit a Binomial distribution to the following frequency distribution: 4M

x	0	1	2	3	4	5
f	2	14	20	34	22	8

OR

- 5 a An insurance agent policies of 5 men all of identical age and good in health. The probability that a man of this age will be alive 30 years is $\frac{2}{3}$. Find the probability that in 30 years. (i) At least one man (ii) Almost three will be alive. 5M
- 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

UNIT-III

- 6 a 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. 5M
- b Find the median to the following data 5M

x	5	8	11	14	17	20	23
f	2	8	12	20	10	6	3

OR

- 7 a Find two regression equations from the following data: 6M

X	10	25	34	42	37	35	36	45
Y	56	64	63	58	73	75	82	77

- b From the following regression equations, calculate \bar{X}, \bar{Y} and r $20X-9Y=107,$ 4M
 $4X-5Y= -33.$

UNIT-IV

- 8 a Find the root of the equation $xe^x = 2$ using false position method. 6M

- b Compute $\int_3^7 x^2 \log x dx$ using trapezoidal rule with 10 sub divisions. 4M

OR

- 9 a Using Newton's forward interpolation formula and the given table of values 5M

x	1.1	1.3	1.5	1.7	1.9
f(x)	0.21	0.69	1.25	1.89	2.61

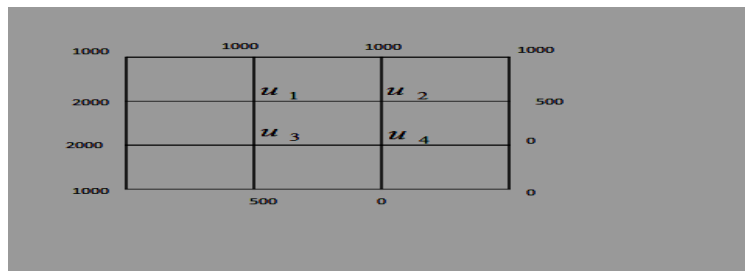
Obtain the value of f(x) when x=1.4

- b Evaluate $\int_0^1 \frac{1}{1+x} dx$ Using Simpson's $\frac{3}{8}$ rule and compare the result with actual value. 5M

UNIT-V

- 10 a Tabulate y (0.1), y (0.2), and y (0.3) using Taylor's series method, given 5M
 $y' = y^2 + x$ and $y(0) = 1.$

- b Evaluate the function u(x, y) satisfying $\nabla^2 u = 0$ at the pivotal points given the 5M
 boundary values as follows:



OR

- 11 a Using R-K method of 4th order, solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}, y(0)=1$ find y(0.2). 5M

- b Using Euler's method, find an approximate value of y corresponding to $x=1$ given 5M
 that $\frac{dy}{dx} = x + y$ and $y = 1$ when $x = 0.$

END