Q.P. Code:18HS0833 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations July-2022

PROBABILITY & STATISTICS, NUMERICAL METHODS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

PART-A

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

1	a	State Baye's Theorem.	L1	2M
	b	Define Poisson Distribution.	L1	2M
	c	Write the formulas for correlation, rank correlation.	L1	2M
	d	Write Simpson formulae.	L1	2M
	e	Write the standard five-point formula.	L1	2M

PART-B

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

UNIT-I

2	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.	L1	5M
	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 the other with replacement.	L1	5M

OR

3		Two dice are thrown. Let X assign to each point (a, b) in S the maximum of its numbers i.e., X(a, b) = max (a,b). Find the probability distribution. X is a random variable with X(S) = {1,2,3,4,5,6}. Also find the mean and variance of the distribution.	L1	10M

UNIT-II

4	a	Construct a Binomial distribution to the following frequency distribution	L5	5M

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

	b	The mean and variance f a binomial distribution are 4 and $\frac{4}{3}$. Find $p(X \geq 1)$	L1	5M

OR

5		Derive mean and variance of Normal distribution.	L3	10M

UNIT-III

6	a	Find arithmetic mean to the following data using step deviation method.	L1	5M

Marks	10-20	20-30	30-40	40-50	50-60
Frequency	5	8	25	22	10

	b	Find the median to the following data.	L1	5M

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

OR

7		Compute Karl Pearson and Bowley's coefficient of Skewness to the following data.	L2	10M

Class intervals	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	2	6	11	20	40	75	45	25	18	8

UNIT-IV

8	Find a real root of the equation $xe^x - \cos x = 0$ using Netwon-Raphson method	**L1**	**10M**

OR

9	Evaluate $\int_0^1 \frac{1}{1+x}dx$ by using (i) Simpson's $\frac{1}{3}$ rule (ii) Simpson's $\frac{3}{8}$ rule and compare the result with actual value.	**L5**	**10M**

UNIT-V

10	**a**	Tabulate y(0.1), y(0.2) and y(0.3) using Taylor's series method, given that $y' = y^2 + x$ and y(0)=1	**L3**	**5M**
	b	Using Euler's method, find an approximate value of corresponding to x=1 given that $\frac{dy}{dx} = x + y$ and y=1 when x=0.	**L3**	**5M**

OR

11	Using the 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) and y(0.4)	**L3**	**10M**

END