Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Regular Examinations July-2021
NUMERICAL METHODS, PROBABILITY & STATISTICS
(Common to CE, ME and AGE)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1   Find a positive root of $f(x) = e^x - 3$ correct to two decimal places by using   L1   **12 M**
    Bisection method.

OR

2   **a**   Using Newton-Raphson method, find the reciprocal of 12.   L3   **6M**

    b   Find a real root of the equation $x \tan x + 1 = 0$ using Newton – Raphson method.   L1   **6M**

UNIT-II

3   Using Euler's method, find an approximate value of y corresponding to $x = 1$ given   L3   **12 M**
    that $\dfrac{dy}{dx} = x + y$ and $y = 1$ when $x = 0$ taking step size $h = 0.1$.

OR

4   Evaluate $\displaystyle\int_0^1 \dfrac{1}{1+x}\,dx$ L5   **12 M**

    i) by Trapezoidal rule and Simpson's $\dfrac{1}{3}rd$ rule and

    ii) Using Simpson's $\dfrac{3}{8}th$ rule and compare the result with actual value.

UNIT-III

5   Compute Karl Pearson and Bowley's coefficient of Skewness to the following data   L6   **12 M**

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

OR

6   Two dice are thrown. Let A be the event that the sum of the point on the faces is 9.   L1   **12 M**
    Let B be the event that at least one number is 6.

    Find **i)** $P(A \cap B)$ **ii)** $P(A \cup B)$ **iii)** $P(A^c \cup B^c)$ **iv)** $P(A^c \cap B^c)$ **v)** $P(A \cap B^c)$

UNIT-IV

7 A random variable X has the following probability function   L5   12 M

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) Mean   iii) variance.   iv) if $P(X \leq K) > 1/2$,

find the Minimum value of K.

OR

8 A random variable x has the following probability distribution function   L6   12 M

x	-3	-2	-1	0	1	2	3
P(x)	k	0.1	k	0.2	2k	0.4	2k

Find i) k ii) Mean iii) Variance.

UNIT-V

9 Fit a Binomial distribution to the following frequency distribution: L5   12 M

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

OR

10 Find two regression equations from the following data: L1   12 M

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

*** END ***