Q.P. Code: 19HS0832 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations August-2021

PROBABILITY, NUMERICAL METHODS AND TRANSFORMS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

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 (i) 3 boys are selected (ii) Exactly 2 girls are selected. **6M**

b Three students A, B, C are in running race. A and B have the same Probability of winning and each is twice as likely to win as C. Find the Probability that B or C wins. **6M**

OR

2 In a bolt factory machines A, B, C manufacture 20%, 30% and 50% of the total of their output and 6%, 3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that it is manufactured from (i) Machine A (ii)Machine B (iii) Machine C **12M**

UNIT-II

3 By applying Bisection method to find a positive root of $x^3 - x - 1 = 0$ correct to two decimal places. **12M**

OR

4 From the following table values of x and $y=\tan x$, find the values of y when $x=0.12$ and $x=0.28$. **12M**

x	0.10	0.15	0.20	0.25	0.30
y	0.1003	0.1511	0.2027	0.2553	0.3093

UNIT-III

5 Solve $y^1 = x+y$, given y (1)=0 find y(1.1) and y(1.2) by Taylor's series method **12M**

OR

6 Evaluate $\int_0^1 \frac{1}{x+1} dx$ by (i) Trapezoidal rule (ii) Simpson's 1/3 rule (iii) Simpson's 3/8 rule and compare the result with actual value **12M**

UNIT-IV

7 **a** Find the Laplace transform of $f(t) = t^2 e^{2t} \sin 3t$ **6M**

b Show that $\int_0^\infty t^2 e^{-4t} \sin 2t \, dt = 11/500$ using Laplace Transform **6M**

OR

8 Applying Laplace transform method to solve $y^{11} - 3y^1 + 2y = 4t + e^{3t}$ where $y(0) = 1, y^1(0) = 1$ **12M**

UNIT-V

9 **a** Find Z –transform of the following $(i)\ e^{-an}\ (ii)n\ e^{-an}\ (iii)n^2\ e^{-an}\ (iv)n\ a^n$ **6M**

b Evaluate $Z^{-1}\left[\frac{z^2}{(z-1)(z-3)}\right]$, Using Convolution theorem **6M**

OR

10 Apply Z-transform solve $y_{n+2} - 6y_{n+1} + 8y_n = 2^n + 6n$ **12M**

*** END ***