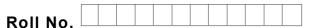


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Total No. of Pages : 02

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### B.Tech.(EE) PT (Sem.-6) NUMERICAL AND STATISTICAL METHODS Subject Code : BTEE-505 M.Code : 72790

Time : 3 Hrs.

Max. Marks: 60

#### **INSTRUCTIONS TO CANDIDATES :**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

#### **SECTION-A**

- 1. Write briefly :
  - a) Define Relative and percentage error.
  - b) Discuss convergence of Bisection method.
  - c) Evaluate  $\Delta(e^x \log 3x)$ .
  - d) Evaluate  $\int_{0}^{0} \frac{dx}{1+x^2}$  by trapezoidal method.
  - e) Discuss Picard method.
  - f) Define Expectation.
  - g) Write Pdf of Geometric distribution.
  - h) Define critical region in sampling.
  - i) Find the least square fit of  $y = ax^{b}$ .
  - j) Discuss Gauss Seidel method.

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#### **SECTION-B**

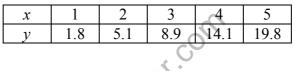
- 2. Develop Newton Iterative formula for finding  $\sqrt{N}$ , *N* being the positive integer. Hence evaluate  $\sqrt{13}$ .
- 3. Solve using Gauss elimination method :

2x + y + z = 103x + 2y + 3z = 18x + 4y + 9z = 16

- 4. A curve passes through the points (0, 18), (1, 10), (3, -18) and (6, 90). Using Lagrange formula, find the slope of the curve at x = 4.
- 5. Using Gauss-Legendre 2-point formula, evaluate :

$$\mathbf{I} = \int_{1}^{2} \frac{2x}{1+x^4} dx$$

6. Using method of Least squares fit the curve  $y = ax + bx^2$  to the following table



## SECTION-C

- 7. Given  $\frac{dy}{dx} = \frac{y-x}{y+x}$ , y(0) = 1. Find y(0, 4) using Runge Kutta Method of fourth order with the step size of 0.2.
- 8. A set of five coins is tossed 320 times and the customers

No. of Heads	:0	N	2	3	4	5
Frequency :	6	27	72	112	71	32

Given that  $\chi_{0.05}$  for 5 degrees of freedom is 11.07. Test the goodness of fit of Binomial distribution.

- 9. a) In a normal distribution, 31% of the item are under 45 and 8% are over 64. Find the mean and S.D. of the distribution.
  - b) In 240 sets of 12 tosses of a coin, in how many cases one can expect 7 heads and 5 tails.

# NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.

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