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Total No. of Pages : 02

Total No. of Questions : 09

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 $\int_0^6 \frac{dx}{1+x^2}$ 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.

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 :

$$2x + y + z = 10$$

$$3x + 2y + 3z = 18$$

$$x + 4y + 9z = 16$$

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 :

$$I = \int_1^2 \frac{2x}{1+x^4} dx$$

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

x	1	2	3	4	5
y	1.8	5.1	8.9	14.1	19.8

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	1	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.