

UNIT – IV

8. Write detail note on different measures of central tendency.

9. Write note on :

- (i) Large sample test for single proportion.
- (ii) Tests for single mean.

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Roll No. ....

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B. Tech. 4th Semester (EE)  
Examination – July, 2021

MATHEMATICS-III (Numerical Methods, Probability & Statistics)

Paper : BSC-MATH-204-G

Time : Three Hours ]

[ Maximum Marks : 75

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.*

1. (a) State Regula-Falsi method.
- (b) Write Newton's forward difference formula.
- (c) Write Trapezoidal rule of numerical integration.
- (d) Define transcendental equation.

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(e) Explain Taylor's series method for ordinary differential equations.

(f) Write one dimensional heat equation.

(g) Define conditional probability.

(h) Define discrete random variables.

(i) Define skewness.

(j) Define hypothesis.

#### UNIT - I

2. Find the positive root of  $x^3 - 2x - 5 = 0$  by :

(i) Bisection method

(ii) Newton's method

3. Given the values :

$x$  : 5 7 11 13 17

$f(x)$  : 150 392 1452 2366 5202

Evaluate  $f(9)$ , using Newton's divided difference formula.

3100-1500-(P-4)(Q-9)(21) (2)

#### UNIT - II

4. Apply Runge-Kutta method to find an approximate value of  $y$  for  $x = 0.2$  in steps of 0.1, if  $\frac{dy}{dx} = x + y^2$ , given that  $y = 1$ , where  $x = 0$ .

5. Solve the Poisson equation :

$$U_{xx} + U_{yy} = -81xy, \quad 0 < x < 1, \quad 0 < y < 1 \text{ given that:}$$

$$u(0, y) = 0, \quad u(x, 0) = 0, \quad u(1, y) = 100, \quad u(x, 1) = 100 \text{ and}$$

$$h = \frac{1}{3}.$$

#### UNIT - III

6. Explain various discrete probability distributions in short.

7. Write short note on :

(i) Expectation of discrete random variables.

(ii) Variance of a sum of discrete random variables.

3100-1500-(P-4)(Q-9)(21) (3)

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