19P339 (Pages: 2) Name……..

Reg. No……

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CBCSS-PG)

CC19P CSS3 E01f - NUMERICAL AND STATISTICAL METHODS

(Computer Science)

(2019 Admission Regular)

Time: Three Hours Maximum: 30 Weightage

PART A

Answer any ***four*** questions. Each question carries 2 weightage.

1. Write down classical definition of probability.
2. Explain about interpolation method and its types.
3. Find the roots of equation $x^2 - 3 = 0$ using bisection method.
4. Differentiate linear and non-linear equations.
5. Explain trapezoidal rule.
6. Explain duality in LPP.
7. What do you mean by significant digits?

(4 x 2 = 8 Weightage)

PART B

Answer any ***four*** questions. Each question carries 3 weightage.

8. Find a root of an equation f(x) = $x^3 - x - 1$ using Newton Raphson method?
9. Solve the linear programming problem graphically.

   Minimize $z = x + 2y$

   Subject to $2x + y \geq 3$

   $x + 2y \geq 6$

   $x, y \geq 0$
10. Explain addition and multiplication theorem on probability.
11. Differentiate absolute and relative errors?
12. Construct Lagrange's interpolation polynomial.
13. Write down a short note about probability mass function and probability density function in probability theory.
14. Explain Simpson's 1/3 rule.

(4 x 3 = 12 Weightage)

PART C

Answer any ***two*** questions. Each question carries 5 weightage.

15. Solve the following transportation problem using least cost method.

	1	2	3	4	Supply
1	3	5	7	6	50
2	2	5	8	2	75
3	3	6	9	2	25
Demand	20	20	50	60	

16. Use the classical Runge-Kutta Method to estimate $y(0.4)$ when $y'(x) = x^2 + y^2$ with $y(0)=0$ by taking h=0.1.
17. Solve Equations 2x+5y=16,3x+y=11 using Gauss Seidel method.
18. Find solution using Newton's Forward Difference formula when x = 1895

x	1891	1901	1911	1921	1931
f(x)	46	66	81	93	101

(2 x 5 = 10 Weightage)

****