TCS/TIT-302

Roll No. | | | | | | | | | | |

ODD SEMESTER EXAMINATION 2019-20
B. TECH III SEM (Old Syllabus)
Computer Based Numerical Statistical Techniques

[3 HOURS] [Total Marks: 50]

Total no. of printed pages: 2

Note: Attempt all the questions. All questions carry equal marks

Q1. Attempt any four parts of the following: **(2.5*4=10)**

a) What are the different **types** of errors?

b) Explain the following graphs with diagram:

I. Histogram

II. Frequency Curve

c) Write the algorithm of Bisection method.

d) Define difference table. Draw general forward difference table?

e) Define Normalization? What are the different arithmetic operation we can apply with normalized floating point numbers? Explain all with example.

Q2. Attempt any four parts of the following: **(2.5*4=10)**

a) Why predictor-corrector methods is useful. Explain it. What are the 2 important predictor-corrector methods?

b) Write the algorithm for Newton- Raphson Method.

c) Difference between ungrouped and grouped data of frequency distribution?

d) Define unique solution, Infinite solution and no solution of linear equation?

e) Use the method of substitution to solve each other of the pair of simultaneous equations:

$11y + 15x = -23$

$7y - 2x = 20$

Q3. Attempt any two parts of the following: **(5*2=10)**

a) Write the proper algorithm of Euler's method.

b)

Compute the value of f(x) for x = 2.5 from the following table:

x:	1	2	3	4
f(x):	1	8	27	64

Using Lagrange's interpolation method.

c) Explain Simpson's one-third rule (n = 2) when putting n=2 in Newton-Cote's quadrature formula.

Q4. Attempt any two parts of the following: **(5*2=10)**

a) Write the algorithm for Newton- Raphson Method.

b) A real root of the equation f(x)= x^3 -5x+1=0 . Perform three iteration of the secant method. Take the values 0,1.

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c) Solve the system of linear equation :
X+ 2y-z=-4 ;
2x+y+z=-2;
x+2y+z=2 ;

Q5. Attempt any two parts of the following: **(5*2=10)**

a) Find

$\frac{dy}{dx}$ at x = 0.1 from the following table:

x:	0.1	0.2	0.3	0.4
y:	0.9975	0.9900	0.9776	0.9604

By using Newton's forward difference interpolation differentiation formula.

b) Find a real root of 2x – log10 x = 7 correct to four decimal places using the iteration method.
Take x= 3 , 4.

c) Explain the following terms:
1. Regression analysis
2. ANOVA
3. Test of Significance
4. CHI-SQUARE TEST
5. t-test
