# ANURAG GROUP OF INSTITUTIONS

**(AUTONOMUS)**
**I-B.TECH-II-SEMESTER-2017-18**
**I-ASSIGNMENT TEST QUESTIONS**
**SUBJECT: MATHEMATICS-III**

1. Find the positive root of the equation $x\log_{10} x = 1.2$ using

   i) Bisection Method. ii) Regula Falsi Method.

2. a) Solve $x^3 - 2x - 5$ using fixed point iteration method.

   b) Explain Geometrical interpretation of Newton Raphson Method.

3. a) Find the root of the equation $xe^x - \cos x = 0$ using Newton Raphson Method.

   b) Derive the formulae to find $K^{th}$ root of a number. Hence find the value of $\sqrt[3]{2}$ using Newton Raphson Method.

4. Solve the following system of equation by L-U Decomposition Method

   $2x-3y+10z = 3$ ,$-x+4y+2z = 20$, $5x+2y+z = -12$

5. Solve the following system by a) Jacobi's Method. b) Gauss seidal Method and compare the results. $10x+y+z = 12$, $2x+2y+10z = 14$, $2x+10y+z = 13$,

6. For X = 0, 1, 2, 3, 4; f(x) = 1,14,15,5,6 find f (3) using Newton forward Interpolation and Newton Backward Interpolation formulae.

7. Find f(32) using Gauss Interpolation Formula

| x | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|
| f(x) | 354 | 332 | 291 | 260 | 231 | 204 |

8. a)Fit a polynomial for the following data by using Newton Forward interpolation Formula.

| x | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| f( x) | 1 | 3 | 7 | 13 |

b) Find y(25) using Gauss Backward Interpolation Formulae to the following data.

| x | 20 | 24 | 28 | 32 |
|---|---|---|---|---|
| F(x) | 24 | 32 | 35 | 40 |

9. a) Evaluate f(10) given f(x) = 168,192,336 at x = 1,7,15 respectively using Lagrange's Interpolation Formulae.

b) Find the missing term in the following data

| x | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| y | 1 | 3 | 9 | -- | 81 |

10.a) Find the $2^{nd}$ Difference of the polynomial $x^4-12x^3+42x^2-30x+9$ with the interval of differencing h =2.

b) Find the polynomial for the following data

| x | 1 | 2 | -4 |
|---|---|---|---|
| F(x) | 3 | -5 | 4 |