**MTMH105**

**First Semester M.TECH (Mathematics Engineering)**

**Examination Aug/Sep-2015**

**Numerical Analysis**

 **Time:-3Hours Max. Marks: -80**

**Section-A**

**Answer any five questions: (6\*5)**

Q1. Find the value of 3 from dx, using simpson’s 1/3 rule by Dividing

 the range into four equal parts. Also find the error.

Q2. Represent the function

 f (x) = x4 - 12x3 + 24x2 - 30x + 9

 and its successive differences into factorial notation.

Q3. Show that Yk+2 – 4k+1 + 4Yk = 0….(i)[K= 0,1] has the solution.

Q4. Write down the Lag range’s Interpolation formula for unequal intervals.

Q5. Use Stirling’s formula to find Y28 given:

 Y20= 49225, Y25= 48316, Y30= 47236, Y35= 45926, Y40=44306

Q6. Show that = log2 = 0.69315

Q7. Given Y20 = 24, Y24 = 32, Y28 = 35, Y32 = 40, Find y25 by Bessel formula.

Q8. Evaluate, by Simpson’s rule, using the data e = 2.72, e2 = 7.59, e3 = 20.09, e4 = 54.60 and compare it with the actual value.

**Section- B**

**Answer any two questions: (10×2)**

Q11 Solve the following system of equation by

 a) Gauss seidal Interation method.

 b) Jacobi Interative method.

 27x + 6y – z = 85,

 bx + 15y – 2z = 72,

 x + y + 54z = 110.

**Section- C**

**Answer any two questions: (15×2)**

 3 12 9

Q12. Let A 2 10 12 then find two triangular

 1 12 2

Matrices: L (lower triangular) and U appear triangular ) such that A = LU, using the diaenal elements of < as 3, 1, 5. Hence obtain A-1

Q13. Solve by relaxation method the Laplace equation + = 0. Inside the square bounded by lines z = 0, z = 4z y = 0, y = 4, given that u = x2y2 on the boundary.

Q14. Explain in detail the solution of elliptic equations by Relaxation method. Also write its working methods.