KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food. Engg) 2013 Admission

IVth Semester Final Examination-June/July -2015

Cat. No: Basc.2209 Marks: 50.00

Title: Numerical Methods for Engineering Applications (1+1) Time: 2 hours

Answer the following 10 x 1 =10

1. In Newton-Raphson method a root of f(x) =0 lies between a and b, if f(a) and f(b) are _____
2. Newton's formula converges if _____
3. In Gauss elimination method, the coefficient matrix is transformed to the form, _____
4. The Forward operator Δy_n = _____
5. Iteration method is a _____
6. Taylor's series for a function at two variable is _____ series
7. The process of computing the value of the function outside the given range is called _____
8. The condition to apply Jacobi's method to solve a system of equations is _____
9. The Simpson's three-eight rules. Y(x) is polynomial of degree _____
10. The accuracy of the result can be improved when the number of intervals are _____

II Write short notes on any FIVE questions (5 x 2=10)

1. Iterative methods.
2. Newton's divided difference formula.
3. Crout's method
4. Classification of Partial differential equations
5. Horner's method
6. Central difference
7. Liebermann's iteration process.

III Write short notes on any FIVE questions (5 x 4=20)

1. Evaluate $\sqrt{12}$ to four decimal places by Newton's Raphson method
2. Evaluate $\Delta(\log x)$
3. Give the Runge Kutta method of order Second and Third
4. Write truncation error in Trapezoidal rule.
5. Using R.K method of fourth order, find y(0.8) correct to 4 decimal places, If $y' = y - x^2$, $y(0.6) = 1.7379$.
6. Solve by Gauss Seidal and Gauss Jacobi methods $8x - y + z = 18$; $2x + 5y - 2z = 3$; $x + y - 3z = -6$
7. Solve x-y+z=1,-3x+2y-3z=-6,2x-5y+4z=5,by Gauss elimination mehod.

Answer any ONE of the following **1 x 10 = 10**

Solve $U_{xx} + U_{yy} = 0$ in over the square mesh of side 4 units satisfying the following boundary conditions,

$U(0,y) = 0, \quad 0 \le y \le 4$

$U(4,y) = 12 + y, \quad 0 \le y \le 4$

$U(x,0) = 3x, \quad 0 \le x \le 4,$

$U(x,4) = x^2, \quad 0 \le x \le 4,$

(i) Evaluate $\int_0^6 \frac{1}{1+x} dx$ Using (i) Trapezoidal rule (ii) Simpson's rule (both) by taking h = 1

(i) Find y(2) from the following data

x :	3	4	5	6
y :	6	24	60	120

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