Government College Of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

M.E. (WRE) (Rev-FT) - Examination: Semester –I

End Semester Examination – Nov.2016

CE 541: COMPUTATIONAL AND STASTICAL METHODS

Time: Three Hours 28.NOV.2016 *Max. Marks -60*

"Verify the Course Code and check whether you have got the correct question paper"

N.B.

1. Solve All Questions and All questions carry equal marks

2. Figure to the right indicate full marks

3. Assume suitable data if necessary and state it clearly

Q.1. Solve any Two (12)

(i) Solve the problem $y' = (x+3y^2)$ and boundary conditions y (0) =0, x0 =0, Find value of y when x= 0.6 and h= 0.2

(ii) Using the Bisection method find smallest positive root of the equation $f(x) = x^3 - 4x - 2x + 2 = 0$

(iii) Carry out first three iterations of the Gauss-Seidel method for the following set of equations

$$10x + y + z = 18.14$$
$$x + y + 10z = 38.13$$
$$x + 10y + z = 28.14$$

Q2.Solve any two (12)

(i) Six bags in a group of 30 are Wheat. If 8bags are picked out of 28 at Random (a) What is the probability that all are Wheat bags (b) what is the Probability of at least one being Wheat bag

(ii)A truck contains 8 rice bags and 14 wheat bags. One bag is drawn random and in its place a bag of other grain is put in the truck .Now one bag is drawn at random from the truck .Find the probability that the bag is of Rice

(iii) Explain the relative frequency theory of probability

(P.T.O.)

Q3.Solve any two (12)

(i)Transform the boundary value problem y" -3y -10y=10x into a corresponding Approximate Finite Difference equation and hence solve it assuming step size of h= 0.20

(ii)In command area a yield of Maize(X) in tone and Delta(Y) in cm. The Production of Maize and delta is shown in table. Obtain the regression Equations for Maize Yield-Delta and Delta – Maize yield.

Maize Yield	50	52	58	64	68	74	84	92	98
Delta	70	78	84	85	87	91	93	95	985

(iii)For the following data find two regression equations by arithmetic mean

X	9	3	12	5	10
Y	10	13	6	9	8

Q.4Solve any Two (12)

(i) What is the Bowleys and Kellys Coefficient of Skewness?

(ii) Calculate Mean and Mode by grouping method

X	15	25	35	45	55	65	75	85
f	5	9	12	21	20	15	8	3

(iii)Calculate the value of harmonic mean for following

10-20	20-30	30-40	40-50	50-60
6	9	11	5	4

Q 5. Solve any two (12)

(i) Explain in detail the Neural Network learning Rules

(ii)Explain in detail the Lag and Lead study in correlation

(iii)Explain in detail any three membership function in Fuzzylogy