Government College of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

M.E. (Civil_Soil)P.T. Old Examination

End Semester Examination 2016, Semester-I

CE 527: COMPUTATIONAL AND STATISTICAL METHODS.

30 NOV 2016

Time- Three Hours ***Maximum Marks-60***

"Verify the course code and check whether you have got the correct question paper."

N.B:-1) All questions are compulsory;

2) Figures to the right indicate full marks;

3) Assume any additional data, if necessary and state it clearly;

4) Use of non-programmable calculator is allowed.

Q.1 Answer any *two* of the following, **(12)**

(a) Use the method of Bisection, to find a real root of the equation $x^4 + 2x^3 - x - 1 = 0$ in the interval (0,1) correct up to three decimal place.

(b) Find the real root of $x^3 - 5x + 3 = 0$ by Newton-Raphson method correct up to three decimal place.

(c) Use Taylor's series method to solve the equation $\frac{dy}{dx} = x + y^2; y(0) = 0$ Estimate y for x=0.2 and x=0.5.

Q.2 Answer any *two* of the following, **(12)**

(a) What do u mean by Classification of data? What are its objectives?

(b) Calculate the Mean and Median from the following data,

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	6	5	8	15	7	6	3

(c) Calculate the standard deviation from the following data;

Value	60-65	65-70	70-75	75-80	80-85
Frequency	7	5	6	4	3

Q.3 Answer any *two* of the following, **(12)**

(a) What is Poisson's distribution? Under what condition is it applicable?

(b) Ten unbiased coins are tossed simultaneously, Find the Probability of obtaining:

i) Exactly six heads. ii) At least 8 heads. iii) No head.

(c) A dice is tossed twice. Getting 'an odd number' is termed as success.

Find the Probability distribution of the number of success.

Q.4 Answer any *two* of the following, **(12)**

(a) What is regression analysis? Explain its types.

(b) From the following data find the two regression coefficients;

Marks in Economics	25	28	35	32	31	36	29	38	34	32
Marks in Statistics	43	46	49	41	36	32	31	30	33	39

c) Calculate the Karl Pearson's coefficient of correlation from the following data;

No. of student	1	2	3	4	5
Marks in Accounts	48	35	17	23	47
Marks in statistics	45	20	40	25	45

Q.5 Answer any *two* of the following, **(12)**

(a) What is fuzzy set? Explain with example.

(b) Explain in brief Neural Networks and Fuzzy logic. How Neuro-fuzzy systems are classified.

c) Show the Architecture of Genetic Algorithm.