COMPUTER ORIENTED STATISTICAL METHODS

Time : 3 Hours *Maximum Marks : 80*

1. a) The mean and variance of binomial distribution are 4 and 4/3 respectively Find P (x=0)

b) Describe Chi-square test for independence of attributes.

c) List drawbacks of moment generating function which have restricted its use in statistics.

d) Comment : the mean of binomial distribution is 3 and variance is 4.

e) Prove that two independent variables are uncorrelated.

f) Explain critical difference.

Unit-I

2. a) Prove that the sum of the squares of deviations of the given set of observations is minimum when taken from arithmetic mean.

b) The mean of 5 observations is 4.4 and the variance is 8.24. If three ofo the five observations are 1, 2 and 6, find the values of the other two.

3. The first four moments of a distribution about the value 4 of the variable are -1.5, 17, -39.75 and 180. Find β_1 & β_2.

Unit-II

4. a) Obtain the rank correlation coefficient for the following data.

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

b) Find the mean values of the variables x and y and correlation coefficient between them from following regression equations.

$2y - x - 50 = 0$

$3y - 2x - 10 = 0$

5. a) Assume that on the average one telephone number out of fifteen called between 2 PM and 3 PM on week days is busy. What is the probability that if six randoml selected telephone numbers are called, at least three of them will be busy.

b) Show that in a poission distribution with unit mean, mean deviation about mean is 2/e times the standard deviation.

Unit-III

6. a) For the data given below, find the equation to the best fitting exponential curve of the form $y = ae^{bx}$

x	1	2	3	4	5	6
y	1.6	4.5	13.8	40.2	125	300

b) Enumerate any three applications of T-distribution.

7. Write an algorithm for fitting the curve $y = ax^2 + (b/x)$

Unit-IV

8. a) In a bolt factory machines A, B, and C manufacture respectively 25%, 35% and 40% of the total. Ofi their output 5, 4, 2 per cents are defective bolts. A bolts is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machine C.

b) State and prove Baye's Theorem in decision making.

9. Describe the technique of ANOVA. Write down the ANOVA table for one-way layout dealing with homogeneity of data relative to K grounds.

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