Roll No…… Total Pages: 3

**1920**

**BCA/M-18**

COMPUTER ORIENTED STATISTICAL METHODS

Paper: BCA-245

Time: Three Hours Maximum Marks: 80

Note: Attempt five questions in all. Q. No. 1 is compulsory. All questions carry equal marks. Select at least one question from each Unit.

**Compulsory Question**

UNIT-I

1. (a) Define Range.

   (b) Define Discrete Random Variables.
   (c) Give types of measures of Central Tendency.
   (d) Give two merits of Harmonic mean.
   (e) Find the coefficient of correlation, when,
   Cov(x, y) = --16.5. Var(x) = 2.89, Var(y) = 100
   (f) Define two differences between Correlation and Regression.
   (g) Find the regression coefficients of y on x and x on y, if standard deviation of x and y are 4 and 3 respectively and coefficient of correlation between x and y is 0.8.
   (h) Define two characteristics of ANOVA.

UNIT-II

2. (a) Given below is a grouped frequency distribution of marks. Convert this frequency table into :

   (i) Less than form
   (ii) More than form

| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
|---|---|---|---|---|---|---|
| Students | 5 | 8 | 7 | 6 | 4 | 9 |

   (b) Weight of trainees in a wrestling coaching camp are given in the table below Calculate the average weight.

| Weight in kg. | Below 40 | 40-45 | 45-50 | 50-55 | 55-60 |
|---|---|---|---|---|---|
| No. of Trainess | 5 | 6 | 10 | 12 | |

2. (a) Find the mean deviation from A.M.of the following :

| x | 2 | 3 | 5 | 9 | 10 |
|---|---|---|---|---|---|
| y | 3 | 6 | 10 | 7 | 4 |

(b) Compute the standard deviation for the following :

| xi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| yi | 6 | 12 | 18 | 26 | 16 | 10 | 8 |

UNIT-III

4. (a) Two unbiased dice are thrown together at random. What is the expected value of sum of the numbers shown by the two dice?

(b) A die is thrown 6 times. Getting an odd number is a success. What is the probability of :

(i) 5 successes

(ii) At least 5 successes

(iii) At most 5 successes.

5. (a) Find Cov.(x, y) between x and y, if :

| x! | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|
| y! | 8 | 7 | 6 | 5 | 4 |

(b) Ten students success the following marks in statistics and mathematics :

| Marks in Stat | 31 | 45 | 39 | 48 | 24 | 33 | 42 | 36 | 29 |
|---|---|---|---|---|---|---|---|---|---|
| Marks in Maths | 41 | 47 | 27 | 38 | 29 | 37 | 40 | 30 | 35 |

Compute their ranks in two subjects also, find the coefficients of rank correlation.

UNIT-IV

6. (a) Find the line of regression of y on x for the following data :

| x | 10 | 9 | 8 | 7 | 6 | 4 | 3 |
|---|---|---|---|---|---|---|---|
| y | 8 | 12 | 7 | 10 | 8 | 9 | 6 |

(b) (i) Mean x and y.

(ii) Regression coefficients bxy and byx

(iv) Coefficients of correlation between x and y when the two lines of regressions are $3x + 13y = 19$, and $x + 3y = 5$.

7. (a) Find the least square approximation of second degree for the discrete data :

| x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| f(x) | 2 | 6 | 7 | 8 | 10 | 11 | 11 | 10 | 9 |

(b) The profit of a certain company in the $6^{th}$ year of its life are given by :

| x | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| y | 1250 | 1400 | 1650 | 1950 | 2300 |

Fit a parabolic curve using the method of least squares.

UNIT-V

8. (a) Find the value of Chi-square for the following :

| Class | A | B | C | D | E |
|---|---|---|---|---|---|
| Observed Frequency | 8 | 29 | 44 | 15 | 4 |
| Expected Frequency | 7 | 24 | 38 | 24 | 7 |

(b) Three samples, each of size 5, were drawn from three correlate normal populations with equal variances. Test the hypothesis that the population means are equal at 5%

| | Samples | | | | |
|---|---|---|---|---|---|
| I | 10 | 12 | 9 | 16 | 13 |
| II | 9 | 7 | 12 | 11 | 11 |
| III | 14 | 11 | 15 | 14 | 16 |

9. (a) Define tailed test of hypothesis and also define its types.

(b) A random sample of 500 pineapples were taken from a large consignment and 65 were found rotten. Show that S.E. of the proportion of rotten ones in a sample of this size is 8.5% and 17.5%.