Roll No. ..... Total Pages : 05

BCA/M-22 1882

COMPUTER ORIENTED STATISTICAL METHODS

BCA-245

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) The waiting time for a commutive are given below as :

11.6, 11.3, 10.7, 18.0, 3.3, 9.2, 8.3, 3.8, 8.0

Find the median time. 3

(b) Define arithmetic mean, deviation and variance of a distribution. 3

(c) A card is drawn from a well shuffled pack of playing cards (52). Find the probability that the card is a honour card (King, queen and ace cards are honour cards) ? 3

(d) Throw that shift of origin has no effect on the co-efficient of correlation (r_{xy}) ? 3

(e) Compute arithmetic mean of binomial distribution. 2

Learn Loner

(f) Differentiate forecasting and prediction in business forecasting. 2

Unit I

2. The distribution of age of males at the time of marriage was as follows :

Age :	No. of males :
18-20	5
20-22	18
22-24	28
24-26	37
26-28	24
28-30	22

Find at the time of marriage :

(a) Average Age

(b) Model Age

(c) Median Age. 5,5,6

3. (a) Given distribution as :

X :	5	10	15	20	25	30
f :	2	4	5	6	1	2

Calculate first fair moments μ_1, μ_2, μ_3, and μ_4, about arithmetic mean $\left(\overline{X}\right)$. 8

(b) The arithmetic mean of two numbers is 13 and their geometric mean is 12. Find :

(i) Numbers

(ii) Their Harmonic Mean. 8

Learn Loner

Unit II

4. (a) Let A and B be two events and probabiltiy of A, $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$ and $P(A \cap B)=\frac{1}{4}$. Obtain $P(A/B)$, $P(A \cup B)$ and $P(\overline{A} \cap \overline{B})$. 8

(b) Fit a binomial distribution for the following distribution : 8

Value (X_i) :	0	1	2	3	4
Frequency (f_i) :	28	62	46	10	4

5. (a) Calculate Karl Pearson coefficient of correlation for the pair of heights (X_i) and heights (Y_i) are as : 8

X_i :	60	62	64	66	68	70	72
Y_i :	61	63	63	63	64	65	67

(b) The ranks of two attributes in a sample are as given below : 8

R_1 :	1	2	3	4	5
R_2 :	5	4	3	2	1

Find ranks correlation coefficient.

Unit III

6. (a) From two regression equations : 8

$$4y = 9x + 15$$
$$25x = 6y + 7$$

Find r_{xy} correlation coefficient, $\overline{X}$ (mean of X_i) and $\overline{Y}$.

Learn Loner

(b) The following calculations have been made for closing prices of 12 stocks (X_c) on Mumbai Stock Exchange on a certain day along with the volume of sales in thousands of shares (Y_i) from these calculations :

$\Sigma x_i = 580$, $\Sigma y_i = 370$, $\Sigma x_i y_i = 11494$,

$\Sigma x_i^2 = 41658$, $\Sigma y_i^2 = 17206$.

Find regression equations. **8**

7. (a) Fit a straight line $y = ax + b$ to the following date as : **8**

X_i :	1	2	3	4	5
Y_i :	1200	900	600	200	110

(b) Three stores S_1, S_2 and S_3 each has 20 pieces of an item. The stores S_1, S_2 and S_3 have 10%, 20% and 30%. defective items respectively. A customer first choses a store randomly and solids an item from the store. Find the probability of the selected item is defective. **8**

Unit IV

8. (a) Define student *t*-test. What kind of hypothesis can be tested by the *t*-test ? **8**

(b) The life expectancy of people in India in year 1970 is expected to be 50 years. A surevey was conducted in 11 regions of India and obtained :

Learn Loner

Life in years : 54.2, 50.4, 44.2, 49.7, 55.4, 57.0, 58.2, 56.6, 61.9, 57.5, 53.4.

Do the data confirm the expectancy at 5% level of significance. (Value of t at 5% is 2.228 for 10 degree of freedom) ? 8

9. Write notes on the following :

(a) Chi-square $\left(\chi^2\right)$ test in 2×2 contigency table 8

(b) Analysis of variance (ANOVA). 8

Learn Loner