Third Semester B. Sc. (I. T.) Examination

STATISTICAL METHODS

Paper – VI

Time : Three Hours] [Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.
(2) Assume suitable data wherever necessary.

EITHER

1. (a) Explain the various types of classification. 5

(b) What is secondary data ? How it differs from primary data ? 5

OR

(c) What is lottery ? Method of sampling ? Explain it's merits and demerits. 5

(d) Define statistics and discuss the cause of distrust of statistics. 5

EITHER

2. (a) Derive the median formula for continuous frequency distribution. 5

(b) Explain Histogram.
Draw a Histogram for the data given below :

Marks :	0 – 4	4 – 8	8 – 12	12 – 16	16 – 20
No. of Students :	4	6	10	8	4

5

OR

(c) Find the median of distribution :

x	1	2	3	4	5	6	7	8	9
f	8	10	11	16	20	25	15	9	6

5

(d) How is weigthed mean differ to arithmetic mean ? Find the simple and weighted mean of the first n natural numbers, the weights being the corresponding numbers. 5

EITHER

3. (a) Define term dispersion. Explain any two measures of dispersion with their merits and demerits. 5

(b) Calculate the mean and standard deviation for the following distribution of 542 members :—

Age (yrs.)	No. of Members
20 – 30	3
30 – 40	61
40 – 50	132
50 – 60	153
60 – 70	140
70 – 80	51
80 – 90	2

5

OR

(c) Define coefficient of skewness with suitable graphical presentation. 5

(d) For a distribution the mean is 10, variance is 16, 7, is + 1 and β_2 is 4. Obtain the first four moments about the origin. 5

EITHER

4. (a) The marks obtained by 10 students in mathematics (X) and statistics (Y) are given below. Find coefficient of correlation between X and Y.

X :	75	30	60	80	53	35	15	40	38	48
Y :	85	45	54	91	58	63	35	43	45	44

5

(b) Given $f(x, y) = x\, e^{-x(y+1)}$; $x \geq 0$, $y \geq 0$ find the regression curve of Y on X. 5

OR

(c) Find the angle between two lines of regression.

$$Y - \bar{y} = r\frac{\sigma y}{\sigma x}(X - \bar{x}) \text{ and } X - \bar{x} = r\frac{\sigma x}{\sigma y}(Y - \bar{y})$$

5

(d) A sample of 12 fathers and their eldest sons gave the following data about their heights in inches :—

Father	65	63	67	64	68	62	70	66	68	67	69	71
Son	68	66	68	65	69	66	68	65	71	67	68	70

Calculate coefficient of rank correlation. 5

5. (a) Give the limitations of statistics. $2\frac{1}{2}$

(b) Find the mode for the following distribution :—

Class – interval :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency :	5	8	7	12	28	20	10	10

$2\frac{1}{2}$

(c) Prove that for any discrete distribution standard derivation is not less than mean derivation from mean. $2\frac{1}{2}$

(d) Prove that if one of the regression coefficient is greater than unit y, then other must be less than unit y. $2\frac{1}{2}$