Note : (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Figures to the right indicate full marks.
(4) Graph papers will be provided on request.
(5) Use of simple calculators is allowed.

Q. 1 A) Rewrite the following statements with correct option. (Any eight) 8

1) In order to solve linear programming problem, it is required to final
a) feasible region b) optimum region c) convex region d) concave region

2) The correlation is negative if _____.
a) x decreases as y increases b) x increases as y increases
c) x increases as y decreases d) Both (a) and (b)

3) If the value of coefficient of variation is more the consistency of the data is _____.
a) More b) less c) same d) None of these

4) _____ is most repeated value from a set of observation.
a) Mode b) Arithmetic mean c) median d) None of these

5) Which of the following measure of dispersion does not depend on the averages ?
a) Quartile Deviation b) Range
c) Mean Deviation d) Standard Deviation

6) An attribute is _____
a) A qualitative characteristic b) A measurable characteristic
c) A quantitative characteristic d) All these

7) A frequency distribution _____
a) Arranges observations in an increasing order
b) Arranges observations in terms of a number of groups.
c) Relaters to a measurable characteristic
d) All these

8) The covariance between the two variable is
a) Purely positive b) Purely negative
c) either positive or negative d) either positive, negative or zero

9) The slope of regression line of x an y is.
a) b_{xy} b) b_{yx} c) $\frac{1}{b_{xy}}$ d) $\frac{1}{b_{yx}}$

10) Feasible region of L.P.P. is _____
a) Unbounded b) bounded
c) bounded or unbounded d) None of these

B) State whether the following statements are True or false. (Any seven) 7

1) When there is perfect correlation the two regression lines coincide.
2) When these is absence of correlation r = 0.

3) Mean depend an all observations.
4) Standard deviation is square root of variance.
5) Linear programming problem is aimed to obtimisation of variables.
6) Quartile devide data in 3 equal parts.
7) The number of observation lying in any class interval is called its frequency.
8) Statistics studies only quantitative data.
9) Ogives used to locate median
10) Correlation are unit tree.

Q. 2 A) Find median and mode for the following data.

Class Interval		Frequency
300 - 400		2
400 - 500		3
500 - 600		11
600 - 700		20
700 - 800		10
800 - 900		3
900 - 1000		1

B) Calculate the quartile deviation for the sales of 50 shops.

Sales in (100 Rs.)	No. of Shops
100 - 110	4
110 - 120	7
120 - 130	20
130 - 140	9
140 - 150	6
150 - 160	4

OR

C) Find D_4 and P_{77} from the following data.

Age of years	No. of teachers	Age in years	No. of teachers
20 - 25	21	45 - 50	20
25 - 30	19	50 - 55	10
30 - 35	50	55 - 60	10
35 - 40	40	60 - 65	5
40 - 45	16	65 - 70	9

D) Find mean and standard deviation for the following data. 7

Class Interval	Frequency
200 - 250	4
250 - 300	6
300 - 350	12
350 - 400	15
400 - 450	8
450 - 500	3

Q. 3 A) Find the two regression equations from the following data. 8

$\bar{x} = 23$, $\bar{y} = 35$, $\sigma x = 2$ $\sigma y = 3$, $\gamma_{xy} = 0.6$

Estimate a) y when $x = 20$

b) x when $y = 38$

B) Find coefficient of correlation for the following data. 7

Classwork	12	14	23	18	10	19
Annual Examination	68	78	85	75	70	74

OR

C) Find the most likely price in Mumbai corresponding to the price of ₹ 70 at Calcutta from the following data. 7

Average price at Calcutta = ₹ 65

Average price at Mumbai = ₹ 67

Standard deviation of Calcutta = ₹ 25

Standard deviation at Mumbai = ₹ 35

Coefficient of correlation between the two prices is 0.8

D) **Find coefficient of correlation given the following data.** 8

$n = 5$, $\Sigma x = 20$, $\Sigma y = 11.58$, $\Sigma x^2 = 90$, $\Sigma y^2 = 27.03$, $\Sigma xy = 47.13$ 7

Q. 4 A) Solve the L.P.P. by graphically. 8

Maximize $Z = 6x + 3y$

Subject to $2x + 3y \leq 18$

$2x + y \leq 10$

$x \geq 0, \quad y \geq 0$

B) Draw Histrogram for the following data. 7

Income in (1000) ₹	10-15	15-20	20-25	25-30	30-35
No. of Families	5	15	35	20	15

OR

C) Solve the L.P.P. graphically.

Minimize $Z = 30x + 20y$

Subject to $2x + y \geq 4$

$6x + 4y \geq 12,$

$x \geq 0,\ y \geq 0$

D) Draw a 'Less than' ogive for the following data.

Number of limits	No. of Consumers
0 - 200	9
200 - 400	18
400 - 600	27
600 - 800	32
800 - 1000	45
1000 - 1200	38
1200 - 1400	20
1400 - 1600	11

Q. 5 A) What are the sources of secondary data ?

B) What are the principal steps in a sample survey ?

OR

C) Write short-note any three :-

i) Limitations statistics

ii) Biased Errors and unbiased errors

iii) Merits of median

iv) Scatter diagram

v) Advantages of LPP

—— The End ——