

Block No 5

IJ9 AAH

L-9

Time : 2 hours

Marks : 60

- INSTRUCTIONS :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Only simple calculators are allowed.
 - 4) Log tables will be supplied on request.

SECTION - I

Q. 1A) Define with Examples.

- i) Independent Events
- ii) Mutually Exclusive events

(4)

B) Define Geometric mean

Find geometric mean of the following data.

x: 65, 120, 150, 160, 210, 355.

(5).

C) Following is the distribution of profits in 1000 Rs. of some shops.

(6)

Profits (in '000 Rs.)	No. of Shop
10-12	8
12-14	11
14-16	a
16-18	25
18-20	13
20-22	7
22-24	5

Find value of unknown frequency 'a' if mode of the distribution is given to be 16.5.

Also plot frequency curve for the above distribution.

Q.2A) Find arithmetic mean, quartiles Q_1 & Q_3 for the following data.

(6)

Wages (in '000 Rs.)	No. of workers
14-18	7
18-22	12
22-26	18
26-30	25
30-34	15
34-38	3

B) Give merits and demerits of median, Also give two real-life applications of mode.

(5)

- c) For the following grouped data, plot
 i) Histogram ii) Greater than ogive curve.
 Also find mode from the graph only. (4)

Class-interval	frequency
200-400	12
400-600	20
600-800	28
800-1000	35
1000-1200	25
1200-1400	15
1400-1600	5

SECTION - II

Solve any 3 out of following 4 questions.

- Q.3A) Find variance and standard deviation of the following distribution. (5)

Marks	No. of students
20-22	4
22-24	7
24-26	12
26-28	8
28-30	2

Also find coefficient of variation.

- B) Find (i) Laspeyre's Index Number (5)
 (ii) Paasche's Index Number
 (iii) Fisher's Index Number of the following prices and given quantities.

1998			2006	
Commodity	Price	Quantity	Price	Quantity
Rice	12	10	21	7
Wheat	15	30	16	20
Oil	28	15	40	10
Sugar	17	7	20	5
Pulses	25	2	28	4

- Q.4 A) Following is the bivariate data giving marks of some students in maths (x) and marks in Accounts (y). (6)

Then (x, y) values are.

(28, 29), (30, 32), (25, 32), (28, 30), (22, 21), (31, 35),
 (31, 36), (21, 25), (26, 28), (32, 28), (35, 39), (24, 35),
 (36, 30), (28, 32), (31, 21), (34, 25), (24, 38), (36, 26)
 (39, 34), (32, 24), (26, 22), (24, 33), (33, 23), (28, 37)

Prepare bivariate frequency distribution taking classes as 20-25, 25-30, for both the variables.

Also write marginal frequency of x and y .

Write conditional frequency of x when $x > 30$.

b) Four cards are drawn from a pack of 52 cards randomly. Find the probability that

i) all 4 cards are picture cards

ii) 2 red cards and 2 black cards are selected. (4)

Q.5A) Following data gives the number of officers on duty and the time people spend waiting in a que. in a bank. (6)

No. of officers (x)	Waiting time in minutes (y)
4	12
6	4
3	10
5	6
3	11
2	14
7	5

Find correlation coefficient between x and y and comment on the result. Also write regression equation of y or x .

b) Define : i) Mathematical definition of probability (4)

ii) Certain event. (Give example)

A committee of 4 persons is to be formed from 3 managers and 5 supervisors. Find the probability that the committee contains at least 2 supervisors.

Q.6A) Find the regression lines of y on x and x on y using following data. (5)

$$n = 10, \bar{x} = 30, \bar{y} = 50, \sigma_x = 4, \sigma_y = 5, r_{xy} = 0.7$$

Estimate y when $x = 45$.

b) Find 3 yearly moving average for the following data.

(3)

Year sales (in '00 Rs.)

1991 95

1992 108

1993 100

1994 107

1995 119

1996 115

1997 120

1998 118

1999 122

c) Average marks of a group of 60 students are 57. The average marks of 30 of them is 20 years. What is the average of the remaining 30 students?

(2)

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