[Time: 2 ½ Hours] **[Marks:75]**

Please check whether you have got the right question paper.

N.B: 1. All questions carry equal marks.
2. Figures to the right indicate marks.
3. Graphs to be supplied on request.

I. (A) Choose the correct answer. (Any 8) 08

1. If the frequency of a class is divided by the total frequency, we get _____ frequency.
   a) Percentage b) relative c)cumulative

2. Geometric mean of 4 and 9 is _____
   a) 4 b) 5 c) 6

3. If standard deviation of the given distribution is 2, then its variance is _____.
   a) 2 b) 3 c) 4

4. If two variables move in the same direction, there is _____ correlation between them.
   a) positive b) negative c) zero

5. We use regret table for _____ criterion.
   a) maximax b) maximin c) minimax

6. When the index number is calculated for more than one commodities, it is called _____ index number.
   a) simple b) value c) composite

7. For calculating the surrender value the duration of the policy is taken as the _____ between the date of surrender and the date of commencement.
   a) sum b) difference c) product

8. There are _____ regression coefficients.
   a) 1 b) 2 c) 3

9. If the probability of an event is 0.3, the probability of its complementary event is _____.
   a) 0.7 b) 0.6 c) 0.5

10. Range is determined only by _____ points in a set.
    a) 2 b) 3 c) 4

1. (B) State whether the following statements are true or false (Any 7) 07

1. Quartiles cannot be located graphically.
2. The arithmetic mean of 4 and 6 is 5.
3. Range is difficult to calculate.
4. Supply and price of any commodity are positively correlated.
5. If A and B are independent events, then probability of A∩B is always zero.
6. In a series of index numbers, base year can be changed.
7. No insurance policy can be revived after it has lapsed.
8. Median can be calculated for descriptive data.
9. The circles in a decision tree represent various states of nature.
10. Deciles can be located using histogram.

Q.2 (A) Following data give the bursting pressure of polythene bags produced by a manufacturer: 08

Bursting pressure (in kgs.)	5-10	10-15	15-20	20-25	25-30	30-35
No. of bags	2	9	29	54	11	5

Draw a less than curve and find median graphically.

(B) Find the mode from the data giving the monthly electricity bill of families. 07

Bill in Rs.	500-600	600-700	700-800	800-900	900-1000	1000-1100
No. of families	60	120	150	130	80	40

OR

Q.2 (C) The distribution of heights of 100 children is given below. Find D_4 and P_{87}. 08

Height in cms	130-135	135-140	140-145	145-150	150-155	155-160	160-165
No. of children	8	10	20	25	15	12	10

(D) Draw a histogram and find mode graphically from the following data. 07

Class interval	100-150	150-200	200-250	250-300	300-350	350-400
Frequency	15	22	30	32	20	10

Q.3 (A) Calculate the coefficient of correlation between index of demand and index of price given below. 08

Index of demand	101	108	105	107	109
Index of price	117	98	102	115	108

(B) P can hit a target 3 times in 5 shots; Q can hit 2 times in 5 shots, and R can hit 3 times in 4 shots. If P, Q, R fire simultaneously, find the probability that two shots hit the target. 07

OR

Q.3 (C) ABC company is bringing out a new type of toy. The company is attempting to decide whether to bring out a full, partial or smallest product line. The company has 3 levels of demand good, fair and poor with estimated probabilities 0.2, 0.4 and 0.4 respectively. The pay-off matrix is as follows: (profit m Rs.) 08

States of demand	**Courses of action**		
	Full	**Partial**	**Smallest**
Good	8000	7000	5000
Fair	5000	4500	4000
Poor	-2500	-1000	0

Suggest best decision using (i) EMV criterion (ii) EOL criterion

(D) Given the following data, find the two regression equations: $\bar{x} = 6$, $\bar{y} = 11$, $\sigma_x = 2$, $\sigma_y = 5$, $r = 0.5$. Estimate y when x = 8. 07

Q.4 (A) Find the quartile deviation for the following data: 08

Length of life in hours	500-700	700-900	900-1100	1100-1300	1300-1500
No. of bulbs	5	15	22	10	8

(B) An endowment policy of Rs.2, 00,000 for 24 years is taken by Mr. Ajay Wadhwani for a monthly mode of payment. The tabulated rate of annual premium is Rs. 50 per thousand on which 5% extra addition for monthly mode of payment is done. The company offers Rs. 2 per thousand rebate for policies if the sum assured is Rs.50,000 and above. Find the monthly premium. 07

OR

(C) Find Laspeyre's, Paasche's, and Fisher's index number from the following data: 08

Commodity	Price in Rs.		Quantity	
	Base year	Current year	Base year	Current year
A	5	7	40	45
B	6	8	60	55
C	4	6	50	60
D	10	12	70	60
E	9	10	70	70

(D) Find standard deviation for the following data giving the production of a commodity by 250 workers of day shift in a factory. 07

Production in units	100-110	110-120	120-130	130-140	140-150
No. of workers	10	50	100	80	10

Q.5 (A) State the properties of normal distribution. 08

(B) Explain the terms 'Paid – up value' and 'surrender value' in insurance. 07

OR

Q.5 (C) Write short notes on : (any 3) 15

1) Demerits of median
2) Merits of mean deviation
3) Properties of correlation coefficient
4) Consumer price index number for agricultural laborers
5) Properties of arithmetic mean.