NOTE: (1) All questions are compulsory.
      (2) All questions carry equal marks.
      (3) Figure to the right indicate full marks

Q.1 A) Fill in the blanks by choosing the correct option: (Any Eight)   (8)

1) Which one is a measure of Central Tendency?
   (a) Median (b) Standard Deviation (c) Correlation   (d) None of these

2) Range is determined only by _____ points in a data set.
   (a) One   (b) Two   (c) Three   (d) Four

3) Correlation coefficient can not be _____
   (a) Negative   (b) Less than 1   (c) More than 1   (d) Zero

4) If the two regration lines coincides then_____
   (a) r = 1 (b) r = -1 (c) r = 1 or -1 (d) r = 0

5) The probability of a certain event is _____
   (a) 0   (b) 1/2   (c) 1   (d) None of these

6) In Laspeyre's index number _____ years quantities are used.
   (a) Base (b) Current (c) Both a and b (d) None of these

7) Index number for the base year is always _____
   (a) 0   (b) 10   (c) 100   (d) 1000

8) If an Insurance Premium is not paid within the _____period, the policy lapse.
   (a) Grace   (b) Maturity   (c) Minimum   (d) Maximum

9) The tabulated rate of annual premium is expressed per Rs. _____
   (a) 1   (b) 10   (c) 100   (d) 1000

10) _____ can be located with the help of histogram.
    (a) Mean   (b) Median   (c) Mode   (d) None of these

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

1) Deciles can be located using histogram
2) Median is not based on all observations.
3) Standard deviation is denoted by R.
4) The interquartile range is based on only two values.
5) Coefficient of correlation cannot be negative.
6) Regrassion analyses are used to determine cause and effect realationship.
7) The probability of an event lies between -1 and +1.
8) In Paasche's price index numbers, the current year quantities are used as weights.
9) No insurance policy can be revived after it has lapsed.
10) The paid up value is paid at the time of maturity of the policy.

Q.2 A) Calculate D_9 and F_{20} for the following data.   (8)

Age in year	0-5	5-10	10-15	15-20	20-25
No.of persons	07	18	25	30	20

B) Find Arithmetic mean for the following data: (7)

Class Interval	20-30	30-40	40-50	50-60	60-70
frequency	8	26	30	20	16

OR

P) Calculate Quartile Deviation for the following data: (8)

Life in hour	600-800	800-100	1000-1200	1200-1400	1400-1600
No. of tubes	20	60	80	30	70-80

Q) The difference between the highest and lowest value in a group of observations is 15. The coefficient of range is 0.2. Find the highest and the lowest values in the group.   (7)

Q.3   **A)** Find the coefficient of correlation between index of demand and index of index of Price given below: (8)

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

B) Find the regression of y on x given the following data
$\bar{x} = 30, \bar{y} = 50, \sigma_x = 4, \sigma_y = 5, r_{xy} = 0.7$ and also Estimate y when x = 37.   (7)

OR

P) If A and B are two events in a sample space S such that P(A) = 0.8, P(B) = 0.6 and P(A∪B) = 0.9. Find a) P(A∩B), b) P(A/B), c) P(B/A).   (8)

Q) Two dice are thrown simultaneously. What is the probability that the the sum of number thrown is a) less than 2   b) 9   c) Even.   (7)

Q.4   **A)** Find the index number using weighted average of relatives method for the Following data   (8)

Commodities	Price		Quantity
	2017	2018	2017
A	2	4	2
B	3	5	5
C	10	10	10

B) Mr. Nilesh Saluja wishes to take a life insurance policy of Rs. 1,00,000 with the tabulated rate of annual premium at Rs. 52.30 per thousand. The company allows a 3% reduction on the tabulated amount for yearly payment and Rs. 1 reduction per Rs 1,000 of the sum assured, in the tabulated premium if the sum assured is Rs. 25,000 or more. Calculate his annual premium.   (7)

OR

P) Calculate Laspeye's and Paasche's index numbers for the year 1998 with the base from the following data. (8)

Commodities	1995		1998	
	Price	Quantity	Price	Quantity
A	12	25	15	28
B	10	20	15	25
C	4	15	6	12
D	6	20	9	15

Q) 11 annual premiums have been paid for a 25 year endowment policy of Rs 12,00,000, after which it is converted into a paid-up policy. Find its paid up value. (7)

Q5. A) State the properties of Normal distribution. (8)

B) Explain the function of statistics and its limitations (7)

OR

P) Short notes (Any three) (15)

1) Write down merits of median.
2) Write down demerits of standard deviation.
3) Explain probability of event and complementary of event.
4) Uses of index numbers.
5) Explain the terms i) bonus ii) lapse in insurance