Q.P. Code: 30057

[Time: $2\frac{1}{2}$ Hours] **[Marks: 75]**

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Graph to be provided wherever necessary.

Q.1 A Choose the correct answer: **(Any eight)** **8**

1. Class width of the interval 10-20 is
a) 10 b) 15 c) 20

2. Mode is _____
a) less frequent value b) middle most value c) most frequent value

3. _____ is a measure of dispersion.
a) mean b) mode c) standard deviation

4. Variance is _____ of standard deviation.
a) square b) square root c) cube

5. If two variables vary together in the same direction, then there is _____ correlation between them.
a) positive b) negative c) no

6. There are always _____line(s) of regression for a paired set of data.
a) one b) two c) three

7. EOL stands for Expected _____ Loss
a) opportunity b) objective c) occupancy

8. If A and $\bar{A}$ are complementary events, then P($\bar{A}$) = _____
a) 1 +P (A) b) -P(A) c) 1-P(A)

9. Index number for the base year is always
a) 0 b) 100 c) 1000

10. The extra period given to a policy holder to pay a premium after its due date is over is called_____.
a) maturity period b) grace period c) none of these

B. State True or False **(Any seven)** **7**

1. The amount given to a person insured at the time of completing of policy is matured value.

2. Total area under the normal curve is 1.

3. If $A \cap B = \emptyset$, then $P(A \cap B) = 1$,

4. If $b_{xy} > 1$, $then$ $b_{xy} < 1$

5. Range is the sum of the largest and the smallest values in a data set.

6. Mode of the data set 5,3,3,3,5 is 5.

7. Frequency of a value in any distribution is non negative.

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8. Mean of Standard Normal Distribution is 1.

9. Cost of living index number is also known as wholesale index number.

10. The tabulated rate of annual premium is expressed per Rs. 100.

Q.2. a) Calculate standard deviation, variance, and coefficient of variation for the following data : **7**
50, 55, 57, 49, 54, 61, 64, 69, 58, 53

b) Find quartile deviation for the following data : **8**

Class Interval	4-8	8-12	12-16	16-20	20-24
frequency	2	5	11	13	9

OR

Q.2 c) Find the coefficient of correlation between research expenditure and profits for a company. **7**

Research expenditure (Rs. 1000)	30	40	40	55	60
Profit (Rs. 1000)	50	60	65	80	85

d) For the following data, find the two regression equations **8**
$\sum(x-\bar{x})(y-\bar{y}) = 240$, n = 5, $\sum(x-\bar{x})^2$ 180
$\sum(y-\bar{y})^2 = 350$, $\sum x = 200$, $\sum y = 220$

Q.3. a) Out of a lot of 100 screws 70 are good and 30 are defective. Find the probability that out of 2 screws selected at random (i) both are good (ii) first good and second defective. **7**

b) Find mean and variance of x from the following probability distribution. **8**

x	0	1	2	3	4
Probability	0.328	0.41	0.205	0.051	0.006

OR

c) For the following data, find Arithmetic Mean, median mode and range : **7**
500, 550, 540, 560, 540, 500, 570, 590, 600, 540, 540, 570, 575, 580, 540, 545, 550, 540, 535, 520

d) Calculate D_5 and P_{85} **8**

Class Interval	100-110	110-120	120-130	130-140	140-150	150-160
Frequency	4	7	20	9	6	4

Q.4. a) Draw Histogram and find mode graphically from the following data : **7**

Marks	20-30	30-40	40-50	50-60	60-70
No. of Students	2	5	12	7	5

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b) Find class width, class mark, less than cumulative, greater than cumulative, relative frequency and percentage frequency from the following data: **8**

Class Interval	50-60	60-70	70-80	80-90	90-100
Frequency	7	12	15	8	4

OR

Q.4 c) Find Laspeyre's , Paasche's and Fisher's index number from the following data: **10**

Commodity	**Price Per Unit**		**Quantity**	
	Base Year	**Current Year**	**Base Year**	**Current Year**
A	4	5	15	20
B	8	12	20	30
C	6	8	25	20
D	6	8	3	4

d) 11 annual premium 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. **5**

Q.5 Answer the following:

a) Explain 'Surrender value' and 'Paid up value' in insurance. **8**

b) Write down the limitations of index number. **7**

Q.5 c) Write short notes on : **(Any Three)** **15**

1. Properties of Normal distribution.
2. Merits and demerits of standard deviation.
3. Ogives
4. Properties of regression co-efficient
5. Properties of Arithmetic mean

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