16|3|17

Q.P. Code :00068

COMMERCE
FY BBI
Quantitative methods - I

[Time:2$^{1/2}$ Hours]   [Total marks : 75]

N.B: 1.   All Questions are compulsory.
        2.   Figures to the right indicate full marks.

Q.1 A. Choose the correct answer.   (any 8)   (08)
    1. Number of members in a family is an example of _____ distribution.
        (a) discrete (b) continuous (c) none of these

    2. _____ is not a measure of central tendency.
        (a) Mean   (b) standard derivation   (c) mode

    3. Mean deviation from _____ is less than that from any other value.
        (a) Median   (b) mode   (c) mean

    4. If two variables vary together in the same direction, then there is _____ correlation between them.
        (a) Positive   (b) negative   (C) no

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

    6. 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

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

    8. If A and B are independent events then, conditional probability (A/B) = _____
        (a) P(A) – P(B)   (b) P(A)   (c) P(B)

    9. In Paasche's index number, _____ years quantities are used
        (a) Base   (b) current   (C) both a & b

    10. Cost of living index number is also known as _____ index number.
        (a) Value (b) consumer price (C) wholesale

Q.1 B. State true or false (any 7)   (07)
    1. The weights used in quantity index numbers are prices.
    2. EOL stands for expected opportunity loss.
    3. Standard deviation is equal to the square root of variance.
    4. Range is difficult to calculate.
    5. Co- efficient of correlation cannot be negative.
    6. Supply and price of any commodity are positively correlated.
    7. The paid up value is paid at the time of maturity of the policy.

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8. Diagrams and graphs are pictorial representation of tabular data which is easily understand by a common man.

9. Mode = 3 mean − 2 median

10. Median can be found graphically with the help of histogram.

Q.2 a. Prepare less then, greater than cumulative frequency and less than, greater then relative frequency for the following data

Marks	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No of student	3	9	12	3	3

b. Draw histogram and find mode graphically for the following data.

Class interval	10 -15	15 – 20	20 - 25	25 – 30	30 -35	35 – 40	40 – 50
Frequency	10	12	13	22	20	7	4

OR

Q.2 C. Calculate arithmetic mean for the following frequency table.

Class interval	20-30	30-40	40-50	50-60	60-70
Frequency	8	26	30	20	16

d. Compute D_3 and P_{70} for the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of student	05	07	08	12	28	22	10	08

Q.3 a. Calculate quartile deviation and co-efficient of quartile deviation for the sales of 50 shops

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

b. Calculate the standard deviation of the height of 8 children.
Height on cm : 90,94,95,97,100,103,105,108

OR

Q.3 C. Calculate co-efficient of correlation between height of father and height of son.

Height of father(cm)	64	65	67	68	69	70	73
Height of son(cm)	66	67	69	69	70	70	72

D. Calculate co-efficient of rank correlation between the marks in test x and test y.

Marks in test x	44	49	52	53	47	76	65	60	63	58
Marks in test y	48	58	45	60	43	80	59	50	77	46

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Q.4 a. Following is the pay –off matrix corresponding to four states of nature S_1, S_2, S_3, S_4 and four courses of action A_1, A_2, A_3, A_4.

State of nature	Course of action				Probability of state
	A_1	A_2	A_3	A_4	
S_1	50	400	-50	0	0.15
S_2	300	0	200	300	0.45
S_3	-150	100	0	300	0.25
S_4	50	0	100	0	0.15

Calculate EOL. (08)

(07)

b. If X is a random variable having the probability function.

$$P(X = x) = \frac{x}{8} \ , \ x = 0,1$$
$$= \frac{k}{4} \ , \ x = 2$$
$$= \frac{kx}{16} \ , \ x = 3$$

Find k and $E(x)$

OR

Q.4 c. Find the Marshall – Edgeworth index number for the following data with 1995 as the base year (08)

Commodity	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.4 d For a person 40 years of age, the tabulated annual premium for an endowment policy for 20 years is Rs.50.70 (07) per thousand. A person wants to buy a policy with sum assured Rs.3,00,000 and pay premium every month. The company adds extra 5% on the tabulated premium for the monthly payment but offers a reduction of Rs. 2 per thousand for a policy with sum assured more than Rs. 1,00,000. Find the net monthly premium that the person has to pay.

(08)

Q.5 a. Explain different types of ogives. (07)
b. Write down the properties of arithmetic mean

OR

(15)

Q.5 C. Write notes (any three)
1. Characteristics of good measures of dispersion
2. Concept of correlation
3. Properties of normal curve
4. Limitations of Index numbers.
5. Explain the terms (i) bonus   (ii) lapse in insurance