

Class: FYBIM

Subject: Quantitative Techniques

[TIME : 2 1/2 Hours]

Marks : 75 17.2.20

- NOTE: i) All questions are compulsory.
 ii) In Q.1, both A and B are compulsory.
 iii) Figures to the right indicate marks.
 iv) Use of non-programmable calculator is allowed.
 v) Graph paper will be provided on request.

Q. 1. A. Select an appropriate alternative for the following: (Any 8) [8]

1. The data which is already collected and used by someone else is known as _____.
 (Information, secondary data, Primary data)
2. The graphical representation of data joining the points by using straight lines is called as _____.
 (Histogram, frequency polygon, bar diagram)
3. An observation having highest frequency is known as _____.
 (median, decile, mode)
4. If the value of coefficient of variation is more then the consistency of data is _____.
 (more, less, equal)
5. If coefficient of correlation between x and y is zero then there is _____ correlation.
 (positive, negative, none)
6. If $y = e^x$ then the rate of change in y with respect to a change in x is _____.
 (e^x , x, e^{2x} , $x e^x$)
7. If $R = 15x + 500$ and $C = 10x + 2500$ then the break-even point is _____.
 (400, 500, 1000, 0)
8. $F(x) = 100$ is _____ function.
 (linear, not a function, constant)
9. Rs. 40,000 are invested at 8% p.a. compound interest. The interest in fourth year is Rs. _____.
 (4312.08, 4000, 4135.22, 4031.08)
10. If the payments are made at the end of the period, the annuity is called as _____.
 (annuity due, uniform annuity, immediate annuity, none of these)

B. State the following are true or false: (Any 7) (7)

1. A single numeric figure which represents whole data is known as range.
2. Pie diagram is represented by vertical rectangles.
3. Coefficient of variation is relative measure of dispersion.
4. The difference between upper and lower quartiles is known as quartile deviation.
5. Statistical technique can be misused.
6. The method of selection of whole group or some elements from a group without considering an order is known as combination.
7. The coefficient of correlation is represented by r.
8. A quantity that takes different values is called as constant.

9. Cost per unit of a commodity is an average revenue.
 10. An annuity in which the payments are made as long as person alive is called as annuity certain.

Q 2) A.

- i. Calculate third quartile and mode for the following data :

[8]

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	5	8	10	2	5	9

- ii. Draw the histogram and also locate the mode for the following marks distribution : [7]

Marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	5	8	10	15	7	9

[OR]

Q 2) B.

- i. Draw the frequency curve and polygon for the following data :

[8]

Units	0-100	100-200	200-300	300-400	400-500	500-600
No. of consumers	8	20	26	40	35	15

- ii. Find the missing frequency if the mean is 21.9 and third percentile.

[7]

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	2	5	---	13	21	16	8	3

Q 3) A.

- i. Calculate the standard deviation and coefficient of variation for the following data: [8]

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of employees	20	35	39	50	48	40	32

- ii. Calculate spearman's coefficient of correlation for the following distribution:

[7]

X	20	15	11	8	10	12
Y	10	40	20	25	35	22

[OR]

Q 3) B.

- i. Find regression equation of y on x for the following data and hence estimate y when x = 25

[8]

X	5	2	10	19	15	22
Y	9	7	4	27	20	31

- ii. Calculate Karl Pearson's coefficient of correlation for the following data :

[7]

X	10	12	19	8	5	11
Y	15	18	21	10	6	17

Q. 4. A.

i. A person has taken a loan of Rs. 80,000 from a money lender who charges a high interest at 9% per month. The person returns the loan in equal installments in 4 months. Find his EMI. Calculate the interest compound and the principal repayment component of EMI for each month.

[8]

ii. A garment factory is planning to produce a new range of shirts. It involves a fixed cost of Rs. 1.5 lakhs and a variable cost of Rs. 150 per shirt. If each shirt can be sold at Rs. 350, find the break-even point.

[7]

OR

Q.4. B.

i. A person has taken a loan of Rs. 1,00,000 from a money lender who charges a high interest at 10% per month. The person returns the loan in equal instalments in 4 months. Find his EMI.

[7]

ii. Divide 50 into two parts, so that the sum of their squares is minimum.

[8]

Q. 5. Write a short notes: (Any 3)

[15]

1. Elasticity of demand
2. Types of annuity
3. Features of statistics
4. Histogram and ogive curve
5. Merits and demerits of quartile deviation
