

QUESTION 2010

Group - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following:

i) Which of the following method will satisfy both TRT and FRT in index number?

a) Laspeyre's method

b) Paasche's method

c) Fisher's ideal method

d) None of these

ii) Two lines of regression are given by $x + 2y = 5$ and $2x + 3y = 8$. The values of the means of x and y are

a) 1,2

b) 2,1

c) 2,3

d) 3,2

iii) Mean deviation is a measure of

a) central tendency

b) dispersion

c) both (a) and (b)

d) none of these

iv) If all values of a variable are equal, then its standard deviation is

a) 1

b) 0

c) equal value

d) none of these

v) When one regression coefficient is negative, the other would be

a) negative

b) positive

c) zero

d) none of these

- vi) If the first and third quartiles are 22.16 and 56.36 respectively, then quartile deviation is
 ✓ a) 17.1 b) 34.2 c) 51.3 d) none of these
- vii) The chart in which different categories of data are represented as percentage of 360° is called
 ✓ a) Pie diagram b) Histogram c) Ogive curve d) None of these
- viii) The highest point of the frequency curve is
 a) Mean b) Median ✓ c) Mode d) None of these
- ix) Due to lockout and strike the data of the time series are influenced by
 a) Trend b) Seasonal variation
 c) Cyclical variation ✓ d) Irregular variation
- x) In the $Y = a + bX$ regression equation 'b' is
 a) intercept ✓ b) slope c) variable d) random variable
- xi) The A.M. of two observations is 25 and their G.M. is 15. Their H.M. is
 ✓ a) 9 b) 7 c) 8 d) 10
- xii) Find x when A.M. of 7, $x - 2$ and $x + 3$ is 9
 a) 11 b) 10 c) 9 d) 8
- No correct alternative is given.

Group - B

(Short Answer Type Questions)

2. Calculate the S.D. from the following table:

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	5	8	15	16	6

See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 3.

3. Construct a pie chart from the following data:

Source of revenue	Customs	Excise	Income tax	Corporation tax	Other sources
Amount (Rs. in crores)	160	450	380	110	200

See Topic: COLLECTION AND PRESENTATION OF DATA, Short Answer Type Question No. 5.

4. 20 pairs of observations, the following results were obtained:

$\Sigma X=120$, $\Sigma Y=80$, $\Sigma X^2=1440$, $\Sigma Y^2=650$, $\Sigma XY=886$. It was found later on that the pair $(X=10, Y=5)$ was copied wrongly, instead of the correct value $(X=11, Y=4)$. Find the corrected value of the correlation coefficient.

See Topic: CORRELATIVE ANALYSIS, Short Answer Type Question No. 3.

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5. After some period C.L.I was increased from 110 to 200. By the same period the wage of a worker was also increased from Rs. 325 to Rs. 500. Was there may any gain for the worker? If so find by how much.

See Topic: INDEX NUMBER, Short Answer Type Question No. 1.

6. The means of two samples of size 50 and 100 are 54.4 and 50.3 and standard deviations are 8 and 7s, respectively. Obtain the mean and standard deviation of the sample of size 150 obtained by combining the two samples.

See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 7.

Group - C

(Long Answer Type Questions)

7. a) Age at death of 50 persons of a town are as follows:

80	75	78	79	66	61	68	72	73	78
80	62	67	69	70	71	75	77	69	77
73	71	68	70	72	76	78	80	76	75
72	71	68	65	63	62	78	79	80	66
62	61	78	73	77	79	78	80	63	65

Form a frequency distribution of 10 class-intervals and also show percentage frequency.

See Topic: FREQUENCY DISTRIBUTION, Long Answer Type Question No. 5.

b) Given: Variance of $x = 9$, regression equations are

$$8x - 10y + 66 = 0 \text{ and } 40x - 18y = 214$$

Find (i) Means of x and y

(ii) Correlation coefficient of variates and

(iii) S.D of y .

See Topic: CORRELATIVE ANALYSIS, Long Answer Type Question No. 7.

c) For a moderately skewed distribution, mean = 172, median = 167 and S.D = 60; find the coefficient of skewness and mode.

See Topic: MOMENTS, SKEWNESS AND KURTOSIS, Short Answer Type Question No. 1.

8. a) Draw histogram and frequency polygon from the following frequency distribution:

Wages (Rs.)	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of Workers	5	10	12	36	8	5	4

See Topic: FREQUENCY DISTRIBUTION, Long Answer Type Question No. 6.

b) From the following, prove that the Fisher's ideal index number satisfies both the time reversal test and factor reversal test:

Commodity	Base year		Current year	
	Price	Qty.	Price	Qty.
A	6	50	10	56
B	2	100	21	120
C	3	60	6	60
D	10	30	12	24

See Topic: INDEX NUMBER, Long Answer Type Question No. 3.

c) Find the rank correlation coefficient for the following data of marks obtained by 10 students in Mathematics and Statistics:

Students (Roll No.)	1	2	3	4	5	6	7	8	9	10
Marks: Mathematics	80	38	95	30	74	84	91	60	66	40
Marks: Statistics	85	50	92	58	70	65	88	56	52	46

See Topic: CORRELATIVE ANALYSIS, Long Answer Type Question No. 8.

a) Calculate Quartile Deviation and its coefficient from the following table:

Salary (Rs.)	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24	24 - 28	28 - 32	32 - 36	36 - 40
No. of Workers	6	10	18	30	15	12	10	6	2

See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 9.

b) Mr. Basu wants to invest Rs. 10,000 in one of the two companies A or B. Average return in a year from company A is Rs. 16,000 with standard deviation of Rs. 125, while in company B the average return in a year is Rs. 20,000 with standard deviation of Rs. 200. Which company will you recommend to Mr. Basu for investment? Justify your answer.

See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 10.

c) From the following cumulative frequency distribution form the general frequency distribution and then compute (i) mean, (i) median, (iii) mode.

Marks	No. of students
Less than 10	3
Less than 20	8
Less than 30	17
Less than 40	20
Less than 50	22

See Topic: MEASURES OF CENTRAL TENDENCY, Long Answer Type Question No. 9.

10. a) What do you mean by cost of living index number?

See Topic: INDEX NUMBER, Long Answer Type Question No. 4.

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b) Mention the uses of cost of living index number.

See Topic: INDEX NUMBER, Long Answer Type Question No. 5.

c) Find C.L.I from the following information:

Commodities	Food	Rent	Cloth	Fuel	Misc.
% expenditure	35	20	15	10	20
Price (2008)	250	60	80	50	200
Price (2009)	270	80	100	50	200

A worker used to get wages Rs. 200 per month in 2008. How much D.A. should increase to maintain the same standard of living as 2008?

See Topic: INDEX NUMBER, Long Answer Type Question No. 6.

11. a) The mean and S.D. of a sample of 100 observations were calculated as 40 and 5.1 respectively, by a student who by mistake took one observation as 50 instead of 40. Calculate the correct mean and S.D.

See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 11.

b) An incomplete frequency distribution is given below:

Height (inches)	5.1 – 6.0	6.1 – 7.0	7.1 – 8.0	8.1 – 9.0	9.1 – 10.0	10.1 – 11.0	11.1 – 12.0
No. of plants	3	8	27	?	17	11	9

It is known that the median height of a plant is 8.53 inches. Calculate the missing frequency.

See Topic: MEASURES OF CENTRAL TENDENCY, Long Answer Type Question No. 10.

c) Calculate the first three central moments of the following table:

X	2	3	4	5
Y	3	2	2	3

See Topic: MOMENTS, SKEWNESS AND KURTOSIS, Long Answer Type Question No. 1.