

QUESTION 2009**Group – A****(Multiple Choice Type Questions)**

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

i) In the regression equation $y = a + bx$, b is

- a) intercept ☒ b) slope c) variable d) random number

ii) Standard Deviation is dependent on

- a) origin only ☒ b) scale only c) both (a) & (b) d) none of these

iii) The G.M. of 3, 12 and 48 is

- ☒ a) 12 b) 9 c) 6 d) none of these

iv) Correlation coefficient lies between

- ☒ a) -1 to +1 b) 0 to 1 c) 1 to 2 d) none of these

v) The value of first central moment is

- ☒ a) 0 b) 1 c) 2 d) none of these

vi) If $r = 0.6$, $\text{cov}(x, y) = 12$ and S.D. of $y = 5$, then S.D. of x is

- a) 3 ☒ b) 4 c) 5 d) none of these

vii) 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

viii) The H.M. of 6, 12, 24 is

- ☒ a) $\frac{72}{7}$ b) 12 c) 14 d) none of these

ix) For a distribution A.M. = 105, S.D. = 21. The coefficient of variation is

- a) 30% ☒ b) 20% c) 19.5% d) none of these

x) Sum of the absolute deviations is minimum when measured about

- ☒ a) Mean b) Median c) Mode d) None of these

xi) If $2x = 7y$ be the relation between x and y and G.M. of $y = 1$, then G.M. of x is

- a) 3 ☒ b) 3.5 c) 7 d) none of these

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- xii) If x and y are so related that $3x + 5y = 15$ and median of $x = 2$, then the median of y is
✓a) 1.8 b) 2 c) 1.7 d) 0
- xiii) A.M. of 1, 2, 3, n is
a) $\frac{n}{2}$ ✓b) $\frac{(n+1)}{2}$ c) $\frac{2n}{2}$ d) none of these
- xiv) Mean deviation is a measure of
a) central tendency ✓b) dispersion c) both (a) & (b) d) none of these
- xv) If all values of a variable are equal, then its standard deviation is
a) 1 ✓b) 0 c) the equal value d) none of these

Group – B

(Short Answer Type Questions)

2. For a group of 50 girls the mean and standard deviation of scores on test are 59.5 and 8.38, while for a group of 40 boys the same measures are 54.0 and 8.23. Find the mean and standard deviation of the combined group.

See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 4.

3. The weights (in kg) of 6 persons are 64, 60, 60, 64, 60 and 64. Calculate the mean deviation about mean.

See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 5.

4. Calculate the mean and median of the following frequency distribution.

Class interval	31 — 40	41 — 50	51 — 60	61 — 70	71 — 80
Frequency	6	14	20	7	3

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

5. Suppose a man walks along the 4 sides of a square ground with speeds 10, 12, 15, 20 km/hr respectively. Then calculate his average speed.

See Topic: MEASURES OF CENTRAL TENDENCY, Short Answer Type Question No. 8.

6. Calculate S.D. of variable x which takes the values 1, 2, 3, 16, 17.

See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 6.

Group – C

(Long Answer Type Questions)

7. a) The data below given is the marks secured by 70 candidates in a certain examination:

21	31	35	52	64	74	89	53	42	7
22	35	43	67	76	35	46	26	32	40
72	43	38	41	63	71	28	32	45	54
15	18	52	73	86	50	39	55	47	12
44	58	67	85	39	40	50	65	72	69
57	63	5	56	79	37	24	54	82	49
51	54	68	29	34	44	58	62	59	65

Construct a frequency distribution of the marks, taking classes of uniform width of 10 marks and 0 as the lower limit of the lower-most class.

See Topic: **FREQUENCY DISTRIBUTION, Long Answer Type Question No. 3.**

b) Suppose $5x + 12y = 85$ is the relation between two variables x and y and y has S.D. 2. Find the S.D. of x .

See Topic: **MEASURES OF VARIATIONS, Long Answer Type Question No. 6.**

8. a) Draw ogive from the following frequency distribution:

Wages (Rs.)	31 — 40	41 — 50	51 — 60	61 — 70	71 — 80
No. of workers:	6	14	20	7	3

See Topic: **FREQUENCY DISTRIBUTION, Long Answer Type Question No. 4.**

b) The mean & S.D. of height readings of a group of employees of a firm are found to be 172 cm & 18 cm, while the same measures for their weight readings are 65 kg & 9 kg. Compare the variability of the height readings with that of the weight readings.

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

9. a) The following table gives the prices and quantities of a number of commodities in Calcutta. Compute index numbers of prices for 1984 with 1979 as base year using Laspeyres' and Paasche's formulae.

Commodity	Unit	1979		1984	
		Price (Rs.)	Quantity	Price (Rs.)	Quantity
Rice	kg	8	4	10	8
Ghee	kg	25	2	29.50	3
Egg	dozen	5	5	6.50	6
Milk	litre	2	3	4	7

See Topic: **INDEX NUMBER, Long Answer Type Question No. 2.**

b) Find the harmonic mean of the reciprocals of first n natural numbers.

See Topic: **MEASURES OF CENTRAL TENDENCY, Long Answer Type Question No. 7.**

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10. a) For a batch of 10 boys, the mean & S.D. of weight are found to 50 kg & 5 kg respectively. On further verification it is detected that the weights of 2 boys have been wrongly included as 45 kg & 55 kg instead of the actual values 42 kg & 48 kg. Calculate the correct mean and correct S.D.
See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 8.

b) What do you mean by time series? Explain the different components of such a series.
See Topic: TIME SERIES ANALYSIS, Short Answer Type Question No. 1.

11. a) Heights (X in inches) and weights (Y in kg) of 5 persons are given below:

$X :$	64	60	67	59	69
$Y :$	57	60	73	62	68

Determine the correlation coefficient between X and Y .

See Topic: CORRELATIVE ANALYSIS, Long Answer Type Question No. 6.

b) Prove that $n^n > 1.3.5 \dots (2n-1)$.

See Topic: MEASURES OF CENTRAL TENDENCY, Long Answer Type Question No. 8.