QUESTION 2013

Group – A
(Multiple Choice Type Questions)

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

i) The relation between A.M., G.M. and H.M. of *n* observations is

✓a) $A.M. \geq G.M. \geq H.M.$ b) $A.M. \leq G.M. \leq H.M.$

c) $G.M. \leq H.M. \leq A.M.$ d) $H.M. \geq A.M. \geq G.M.$

ii) For any frequency distribution $Q_1 = 10, Q_2 = 25$ and $Q_3 = 35$, then the value of quartile deviation is

a) 1.25   b) 2.25   c) 13.5   ✓d) 12.5

iii) The chart in which different categories of data are represented as percentage of 360 degree is collected

✓a) Pie Chart   b) Histogram   c) Ogive   d) Bar Diagram

iv) If the mean of a variable is 50, then the mean of the new variable $\dfrac{(X-30)}{20}$ is

a) 0.5   ✓b) 1.0   c) 1.5   d) 2.0

v) Variance is dependent on

a) origin only   ✓b) scale only

c) both origin and scale   d) none of these

vi) Correlation coefficient lies between

✓a) – 1, 1   b) 0, 1   c) 1, 2   d) none of these

vii) If $r = 0.6, \operatorname{cov}(x, y) = 12$ and $\sigma_y = 5$, then σ_x is

a) 3   ✓b) 4   c) 5   d) 2

viii) The value of the first central moment is

✓a) 0   b) 1   c) 2   d) none of these

ix) Which index number is known as an ideal index number?

a) Laspeyre's index number   b) Paasche's index

✓c) Fisher's index   d) None of these

x) Mode of 15, 12, 5, 13, 12, 15, 8, 8, 9, 9, 10, 15 is

✓a) 15   b) 12   c) 8   d) 9

xi) The chart in which different categories of data are represented as percentage of 360 degree is called

✓a) Pie diagram   b) Histogram   c) Ogive curve   d) none of these

xii) The various component of Time Series are

✓a) secular trend, seasonal variation, cyclical fluctuation and irregular or random movement

b) seasonal variation, random variation

c) secular variation, cyclical movement, seasonal trends, random fluctuations

d) none of these

Group – B
(Short Answer Type Questions)

2. Construct a Pie chart from the following data:

Outlay	Agriculture	Power	Communication	Minerals	Education	others
Amount (Rs.)	12000	5000	4000	9000	8000	2000

See Topic: COLLECTION AND PRESENTATION OF DATA, Short Answer Type Question No. 7.

3. The mean age of a group of 100 children was 9.35 years. The mean age of 25 of them was 8.75 years and that of another 65 was 10.51 years. What was the mean age of the remainder?

See Topic: MEASURES OF CENTRAL TENDENCY, Short Answer Type Question No. 13.

4. Calculate the missing frequencies F1 and F2 from the following table:

Class	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
Frequency	14	F1	32	F2	24

Given that Mean = 50 and Standard deviation $N = 120$.

Wrong question. Insufficient data.

5. In a competition judges marked the performance of ten candidates. Calculate Rank correlation coefficient from the following data:

Judge A	36	56	20	65	42	33	44	50	15	60
Judge B	50	35	70	25	58	75	60	45	80	38

See Topic: CORRELATIVE ANALYSIS, Short Answer Type Question No. 5.

6. What do you understand by 'Secular Trend' in the analysis of a time series? Explain with examples.

See Topic: TIME SERIES ANALYSIS, Short Answer Type Question No. 2.

7. a) Draw an ogive from the following distribution:

Age (in years)	60-62	63-65	66-68	69-71	72-74
No. of persons	15	54	26	81	24

b) The correlation coefficient of bivariate X and Y is 0.60, variance of X and Y are 2.25 and 4.00 respectively, $\overline{X} = 10$, $\overline{Y} = 20$. From these data find regression lines of Y on X.

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

a) See Topic: FREQUENCY DISTRIBUTION, Short Answer Type Question No. 4.

b) See Topic: CORRELATIVE ANALYSIS, Short Answer Type Question No. 5.

c) See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 11.

8. a) Find the coefficient of correlation from the following data:

X :	65	63	67	64	68	62	70	66
Y :	68	66	68	65	69	66	68	65

b) Prepare price and quantity index numbers for 1972 with 1961 as base year from the following data by using (i) Laspeyre's, (ii) Paasche's and (iii) Fisher's method.

Commodity	Unit	1961		1972	
		Quantity	Price	Quantity	Price
A	Kg	5	2.00	7	4.50
B	Quintal	7	2.50	10	3.20
C	Dozen	6	8.00	6	4.50
D	Kg	2	1.00	9	1.80

c) Distinguish between 'seasonal' and 'cyclical' fluctuations in time series data.

a) See Topic: CORRELATIVE ANALYSIS, Long Answer Type Question No. 15.

b) See Topic: INDEX NUMBER, Long Answer Type Question No. 11.

c) See Topic: TIME SERIES ANALYSIS, Short Answer Type Question No. 3.

9. a) The Sales of a company in millions of rupees for the years 1994-2001 are given below:

Year	1994	1995	1896	1997	1998	1999	2000	2001
Sales	550	560	555	585	540	525	545	585

i)   Find the linear trend equation.

ii) Estimate the sales for the year 1993.

b) Calculate the first three central moments of the following data:

x:	2	4	5	6
f:	3	2	2	3

a) See Topic: TIME SERIES ANALYSIS, Long Answer Type Question No. 5.

b) See Topic: MOMENTS, SKEWNESS AND KURTOSIS, Short Answer Type Question No. 2.

10. a) The table below gives the figures of production of a commodity during the years 2008 – 2012 in the state of West Bengal:

Year :	2008	2009	2010	2011	2012
Production ('000 tons) :	28	38	46	40	56

   i)   Fit a straight line by the method of least square.

   ii)   Find the value of slope/gradient.

   iii)   What will be the production in 2013?

b) Distinguish between Primary data & Secondary data.

c) Two variables x and y are related by the relation $3y - 2x = 7$. If the Q.D. of x is 3 find the Q.D. of y.

a) See Topic: TIME SERIES ANALYSIS, Long Answer Type Question No. 6.

b) See Topic: COLLECTION AND PRESENTATION OF DATA, Short Answer Type Question No. 6.

c) See Topic: MEASURES OF VARIATIONS, Short Answer Type Question No. 11.

11. a) Find (i) Inter Quartile Range and (ii) Quartile Deviation for the following distribution:

Class-interval	0-15	15-30	30-45	45-60	60-75	75-90	90-105
Frequency	7	25	30	45	20	18	5

b) The table below gives the diastolic blood pressure of 250 men. The readings were made to the nearest millimetre and the central value of each group is given:

Blood Pressure (mm):	60	65	70	75	80	85	90	95
Number of men:	4	5	31	39	114	30	25	2

Calculate the mean and the median from the above data.

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a) See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 14.

b) See Topic: MEASURES OF VARIATIONS, Long Answer Type Question No. 13.