

**Q.1. Choose the correct alternative.**

- 1) Which of the following is not an example of qualitative data.  
(a) Nationality (b) Marks of students (c) Colour (d) Beauty
- 2) Data collected from newspapers is ... data  
(a) Primary (b) Secondary  
(c) May be primary or secondary (d) None of these
- 3) Class mark is the ...  
(a) difference between upper and lower limit  
(b) half difference between upper and lower limit  
(c) double of difference between upper and lower limit  
(d) frequency of the class
- 4) If the smallest and largest values of distribution are 10 and 100 respectively, then how many classes will be formed with class width=10 unit?  
(a) 10 (b) 8 (c) 9 (d) 90
- 5) Which of the following is not a one dimensional diagram?  
(a) Simple bar diagram (b) Pie chart (c) Both a and b (d) None of these
- 6) In histogram ... always plotted on x-axis.  
(a) Class-intervals (b) Frequency (c) l.c.f (d) g.c.f.
- 7) If classes are 11-14, 16-19, ... the correction factor is...  
(a) 0.5 (b) 2 (c) 1 (d) 3
- 8) Mode is located from :  
(a) Histogram (b) Frequency polygon  
(c) Ogive curve (d) Frequency curve
- 9) To draw less than ogive curve, we plot ...  
(a) l.c.f. against mid points (b) l.c.f. against lower limit  
(c) l.c.f. against upper limit (d) frequency against lower limit
- 10) To draw greater than ogive curve, we plot ...  
(a) g.c.f. against mid points (b) g.c.f. against lower limit  
(c) g.c.f. against upper limit (d) frequency against upper limit
- 11) Median is located from :  
(a) Histogram (b) Frequency polygon  
(c) Ogive curve (d) Frequency curve
- 12) The sum of deviations taken from mean is always ...  
(a) 0 (b) 2 (c) 1 (d) minimum
- 13) The sum of square of the deviations of observations is minimum, if they are taken from ...  
(a) mean (b) median (c) mode (d) lower quartile
- 14) If mean of 25 observations is 5, then sum of observations is...  
(a) 30 (b) 125 (c) 5 (d) not determine

- 15) If mean marks of 30 boys and 40 girls of a class is 30 and 35 respectively, then mean marks of class is...
- (a) 30 (b) 40 (c) 35 (d) 32.85
- 16) Arithmetic mean of 22, 23, 24, 25, 26 is...
- (a) 22 (b) 25 (c) 24 (d) 24
- 17) Median of 26, 28, 29, 25, 23, 21, 27 is...
- (a) 26 (b) 25 (c) 28 (d) 27
- 18) Which of the following measure cannot determine graphically?
- (a) median (b) mode (c) mean (d) quartiles
- 19) If mean marks of 3 subjects is 45 and mean marks of another 3 subjects is 55, then mean marks of all subjects is...
- (a) 45 (b) 55 (c) 50 (d) None of these
- 20) Median of 52, 54, 56, 58, 60, 62 is...
- (a) 56 (b) 57 (c) 58 (d) 60
- 21) Deciles divides the data into ... equal parts.
- (a) 20 (b) 10 (c) 100 (d) 4
- 22) Quartiles divides the data into ... equal parts.
- (a) 20 (b) 10 (c) 100 (d) 4
- 23) Fifth decile coincides with ...
- (a) mean (b) median (c) mode (d) lower quartile
- 24) Seventh decile coincides with ...
- (a) upper quartile (b) lower quartile (c) Median (d) 70<sup>th</sup> Percentile
- 25) Mode of 101, 102, 104, 105, 106, 102, 108 is ...
- (a) 101 (b) 104 (c) 102 (d) 106
- 26) Which measure of central tendency is based on all observation is...
- (a) median (b) mode (c) mean (d) quartiles
- 27) If Mean is 38, Median is 40 then Mode is ...
- (a) 38 (b) 40 (c) 44 (d) 39
- 28) If the grouped data has open-end classes, one cannot calculate:
- (a) median (b) mode (c) mean (d) quartiles
- 29) Empirical relation between mean , mode and median is...
- (a) Mean – Mode = 3(Mean – Median) (b) Mean – median = 3(Mean – Mode)  
(c) Mean + Mode = 3(Mean – Median) (d) Mean – Mode = 2(Mean – Median)
- 30) If  $\text{Mean} \leq \text{Median} \leq \text{Mode}$  the distribution is ...
- (a) Positively skewed (b) Negatively skewed  
(c) Symmetric (d) None of these
- 31) If  $\text{Mean} = \text{Median} = \text{Mode}$  the distribution is ...
- (a) Positively skewed (b) Negatively skewed  
(c) Symmetric (d) None of these
- 32) If  $\text{Mean} \geq \text{Median} \geq \text{Mode}$  the distribution is ...
- (a) Positively skewed (b) Negatively skewed  
(c) Symmetric (d) None of these
- 33) Coordinates of median is...
- (a) (0, N/2) (b) (x, N/2) (c) (N/2, Median) (d) (Median, N/2)
- 34) Which of the following is not the measure of dispersion?
- (a) S.D. (b) Q.D. (c) M.D. (d) Mode

- 35) If marks of 5 students are 10, 19, 18, 20, 15 then coefficient of range is...  
 (a) 10 (b) 0.3 (c) 30 (d) 3
- 36) Relation between interquartile range and quartile deviation is...  
 (a)  $IQR = 2Q.D.$  (b)  $IQR = Q.D.$  (c)  $2IQR = Q.D.$  (d)  $IQR = Q.D./2$
- 37) Lower quartile and upper quartile of data are 20 and 50 respectively, then interquartile range is ...  
 (a) 20 (b)  $3/7$  (c) 30 (d) 15
- 38) Mean deviation is minimum when calculated about:  
 (a) mean (b) median (c) assumed average (d) mode
- 39) Lower quartile and upper quartile of data are 100 and 120 respectively, then Quartile deviation is ...  
 (a) 100 (b) 20 (c) 10 (d) 220
- 40) Lower quartile and upper quartile of data are 45 and 55 respectively, then semi interquartile range is ...  
 (a) 100 (b) 20 (c) 10 (d) 5
- 41) If mean of 12 observations is 25, each observation is increased by 2 then mean becomes...  
 (a) 300 (b) 25 (c) 27 (d) 14
- 42) If standard deviation of 30 observations is 100, each observation is increased by 5 then S.D. becomes...  
 (a) 100 (b) 35 (c) 105 (d) 500
- 43) If mean of 100 observations is 100, each observation is increased by 5 then mean becomes...  
 (a) 100 (b) 35 (c) 105 (d) 500
- 44) Mean is dependent on change of ...  
 (a) Origin only (b) Scale only (c) both (a) and (b) (d) none of these
- 45) Standard deviation is dependent on change of ...  
 (a) Origin only (b) Scale only (c) both (a) and (b) (d) none of these
- 46) Minimum value of mean square deviation (MSD) is called:  
 (a) Standard deviation (b) covariance  
 (c) Quartile deviation (d) variance
- 47) If standard deviation of 10 observations is 100, each observation is multiplied by 5 then S.D. becomes...  
 (a) 100 (b) 35 (c) 105 (d) 500
- 48) Variance is dependent on change of ...  
 (a) Origin only (b) Scale only (c) both (a) and (b) (d) none of these
- 49) If CV of  $x$  is 20% then CV of  $2x+3$  is ...  
 (a) less than 20% (b) 20% (c) more than 20% (d) 23%
- 50) Variance of 10 observations is 200 if each observation is increased by 5 variance of new observations is...  
 (a) Increased by 5 (b) is unaltered (c) increased by 25 (d) decreased by 5.
- 51) If CV of  $x$  is 110% then ...  
 (a)  $\text{mean} < \text{S.D.}$  (b)  $\text{mean} > \text{S.D.}$  (c)  $\text{mean} = \text{S.D.}$  (d)  $\text{S.D.} = 100$
- 52) All the 5 observations are equal to 25. Then their variance would be:  
 (a) 0 (b) 625 (c) 50 (d) 1
- 53) 95.45 % of items lies between...

- (a) mean  $\pm \sigma$                       (b) mean  $\pm 2\sigma$                       (c) mean  $\pm 3\sigma$                       (d) mean  $\pm 4\sigma$
- 54) If mean = 3, variance = 9 then C.V. of the data is...  
 (a) 100 %                      (b) 30 %                      (c) 1 %                      (d) 90 %
- 55) 99.73 % of items lies between...  
 (a) mean  $\pm \sigma$                       (b) mean  $\pm 2\sigma$                       (c) mean  $\pm 3\sigma$                       (d) mean  $\pm 4\sigma$
- 56) How many items lies between mean  $\pm \sigma$   
 (a) 68.27 %                      (b) 95.45 %                      (c) 99.73 %                      (d) 97.73 %
- 57) If mean > S.D. then C.V. of the data is...  
 (a) 100 %                      (b) less than 100%                      (c) greater than 100 %                      (d) 0 %
- 58) Which of the following measures of dispersion does not depend on the unit of the Measurement:  
 (a) S.D.                      (b) Q.D.                      (c) Range                      (d) C.V.
- 59) If mean = S.D. then C.V. of the data is...  
 (a) 100 %                      (b) 0 %                      (c) 1                      (d) mean
- 60) If we know mean, median then we can empirically determine...  
 (a) S.D.                      (b) Q.D.                      (c) M.D.                      (d) Mode
- 61) Which one of the following statements about the correlation coefficient is correct?  
 (a) The correlation coefficient is unaffected by scale changes.  
 (b) Both the change of scale and the change of origin have no effect on the correlation coefficient.  
 (c) The correlation coefficient is unaffected by the change of origin.  
 (d) The correlation coefficient is affected by changes of origin and scale.
- 62) The slope of the regression line of Y on X is also referred to as the:  
 (a) Regression coefficient of X on Y                      (b) The correlation coefficient of X on Y  
 (c) Regression coefficient of Y on X                      (d) Correlation coefficient of Y on X.
- 63) The correlation coefficient describes  
 (a) Only magnitude                      (b) Both magnitude and direction  
 (c) Only direction                      (d) None of the preceding
- 64) Which of the given plots is suitable for testing the linear relationship between a dependent and independent variable?  
 (a) Bar chart                      (b) Scatter plot  
 (c) Histograms                      (d) All of the above.
- 65) The correlation for the values of two variables moving in the opposite direction is  
 (a) Positive                      (b) Negative  
 (c) No correlation                      (d) Linear
- 66) Choose the correct option for the regression line passing through the origin.  
 (a) The correlation is zero                      (b) The regression coefficient is zero  
 (c) Intercept is zero                      (d) Association is zero.
- 66) Shoe size of most of the people in India is No. 8. Which measure does it represent?  
 (a) mean                      (b) median                      (c) mode                      (d) second quartile
- 67) The method of collecting data from entire population is called....  
 (a) Population                      (b) Sample  
 (c) Census Method                      (d) Sampling Method
- 68) Totality of elements/objects/items under study is known as.....  
 (a) Sample                      (b) Population                      (c) Sampling                      (d) Sample Size
- 69) Sampling has.....



- 85) Prosperity, Recession, Depression and recovery in a business is an example of.....  
 (a) Irregular variations (b) Seasonal variations  
 (c) Cyclical variations (d) Secular Trend
- 86) Additive model for time series  $Y = \dots$   
 a)  $T + S + C + I$  (b)  $T - S - C - I$  (c) TSCI (d) none of these
- 87) A Time Series has.....components.  
 (a) one (b) two (c) three (d) four

## Q.2. Solve the following.

- Define Statistics. State Scope and Limitations of Statistics.
- Explain with suitable example:
  - Primary data and Secondary data
  - Qualitative and Quantitative data.
  - Discrete and continuous variable
- Distinguish between: i) Qualitative & Quantitative data ii) Primary & Secondary data iii) Variable & Constant.
- Define with example:
  - Frequency
  - Frequency distribution
  - Cumulative frequency
  - l.c.f. & g.c.f.
- Define with example:
  - Class interval
  - Class limit
  - Class mark
  - Class width
- Prepare a frequency distribution by exclusive method taking 10 as class interval and prepare cumulative frequency distribution table.  
 21,41,25,46,51,22,27,28,29,30,43,44,52,61,75,82,91,29,42,43,44,33,65,62,72,73,74,  
 35,43,44,45,32,33,37,42,49,54,64,73,74,75,84,92,42,46,47,48,50,49,50
- Following are the marks obtained by 40 students in exam. Prepare a frequency distribution by inclusive method taking 4 as class interval. Find l.c.f, g.c.f.  
 10,17,15,22,11,16,19,24,29,18,28,26,32,14,17,20,23,27,30,12  
 15,18,24,36,18,15,21,28,33,38,34,13,10,16,20,22,29,19,23,31
- Define classification. State objectives of classification.
- Explain briefly the method of classification data.
- Write a short note on: i) Histogram ii) Simple bar diagram  
 iii) Pie Chart iv) Ogive curves.
- Represent the following data by suitable diagram.  
 Class : B.C.A.-I B.C.A.-II B.C.A.-III  
 Students : 112 66 45

12. Describe Bar diagram. Draw a suitable diagram to present the following data.

City	Mumbai	Pune	Nagpur	Nashik	Satara	Kolhapur
Population (in '000)	350	300	230	180	140	180

13. Describe Pie chart. Draw a pie chart to represent the following data.

Item	Food	clothing	Rent	Medicine	Others
Expenditure	1200	400	850	600	900

14. Describe Histogram. Draw histogram to represent the following data. And locate the mode.

Age(in years)	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of persons	128	145	170	190	165	140	105

15. Describe Ogive curve. Draw an Ogive Curve(less than & greater than) to represent the following data. And find the median.

Classes	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	17	35	40	70	55	30	23	17

16. Describe Frequency Polygon & curve. Draw a Frequency Polygon & curve to represent the following data.

Classes	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	25	30	35	45	30	20	10

17. For the data given bellow find graphically the Two quartiles, Median,  $D_4$ ,  $P_{78}$ .

X :	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70
F :	10	13	18	21	24	28	20	11	9

18. What do you mean by measure of central tendency? What are the requirements of a good measure of central tendency?

19. Define arithmetic mean. State merits and demerits. State properties of mean.

20. Define Weighted A.M., find Weighted A.M. of marks of students.

Marks	40	47	52	42	62	50
Weights	4	2	3	5	2	3

21. Define

combined mean .Compute combined mean.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Div A	6	9	11	14	20	15	10	10	5
Div B	9	16	21	34	40	25	18	10	4

22. Define median. How it is determined graphically? State merits and demerits.

23. Write a Note on Partition Values. Write a formula for  $Q_1$  &  $Q_3$ .

24. Define Mode. How it is determined graphically? State merits and demerits.

25. State the empirical relation between mean, mode, median. Use to estimate mean of the distribution whose median and mode are 43 and 40 respectively.

26. Calculate Mean, median and Mode for following:

Age :	0-10	10-20	20-30	30-40	40-50
Persons:	5	8	15	12	10

27. Calculate missing frequency of the following if Mean=37. Find Median

X	35	36	37	38	39
F	4	10	?	8	5

28. Calculate missing frequency of the following if Mean=25. Find Mode.

Age:	13	14	15	16	17
Freq:	2	4	?	9	6

29. Calculate missing frequency of the following if Median of distribution is 33. Find mean.

Age	10-20	20-30	30-40	40-50	50-60
Person	18	23	?	15	14

30. Define arithmetic mean and mode. State the merits & demerits. The mark obtained by 250 students in statistics are given bellow: Find mean, mode, median.

Marks :	0-10	10-20	20-30	30-40	40-50
No. of students :	5	65	85	78	17

31. The following data are the daily wages of workers in a factory.

300, 240, 250, 330, 360, 400, 500, 375, 275, 350.

Find mean, median and estimate the value of mode using empirical relation.

32. State the empirical Relation between mean, median and mode. Find Mode if Mean is 22 and Median is 25.

33. The average daily income of factory workers was Rs.270. The mean daily income of 70 male workers was 300. Find the mean daily income of 30 Female workers.

34. The mean mark in the statistics of 100 student in a class is 60, of them the mean mark of 70 boys is 75. Find the mean marks of girls in the class.

Calculate Mode, median for following: X=10, 15, 12, 8, 7, 17, 6, 14, 5, 15

35. State the relationship between mean median and mode. For a moderately skewed distribution, the difference between mean and mode is 6 and their sum is 50, find the value of median.

36. The mean of a group of 6 observations is 9. Two new observations 10 and 13 are added to the groups. Find the mean of 100 observations.

37. In a batch of 21 students 10 students failed. The marks of 11 students who passed were 65,66,70,50,40,62,85,90,90,70. Find the median and upper quartile of all students.

38. Mean of 100 items is found to be 30. If at the time of calculations two items are wrongly taken as 32 and 12 instead of 23 and 11. Find the correct mean.

39. Find the Mean, Mode, Median quartiles and 4<sup>th</sup> decile, 66<sup>th</sup> percentile of the given data.



Wages (in Rs.)	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. of Workers	50	69	81	179	151	119	71	40

40. Following are the number of defects in 15 samples. Find mean, mode, median.

3, 5, 7, 8, 4, 6, 4, 7, 3, 4, 8, 4, 5, 3, 9.

41. Find  $Q_1$ , Median,  $D_2$ ,  $P_{73}$ , Mode and mean.

X :	135	136	137	138	139	140	141
f :	4	10	15	18	25	13	9

42. What are dispersion? What are the main requirements of measures of dispersion? Discuss briefly the merits and demerits of standard deviations.

43. State and discuss various measures of dispersion.

44. What is the measures of dispersion? Distinguish between absolute and relative measures of dispersion.

45. Define: a) Range      b) Q.D.      c) Coefficient of Q.D.

Calculate Q.D. and its coefficient from the following data.

Sales (in Rs.)	Below 100	100-200	200-300	300-400	400-500	Above 500
No. of Shops	10	15	23	48	18	6

46. Find range, Q.D., coefficient of range, coefficient of Q.D. of the following data:

X :	50	51	52	53	54	55
F :	22	34	50	40	28	15

47. Calculate Q.D., Coefficient of Q.D., M.D. and its coefficient from following data

Sales : 0-100 100-200 200-300 300-400 400-500 500-600

No. of Shops : 10 15 23 48 18 6

48. Define M.D. and S.D. and state its merits and demerits.

49. Compute M.D. about median, S.D. and C.V. for the following data:

Size: 4 6 8 10 12 14 16

Freq: 2 1 3 6 4 3 1

50. Find standard deviation and coefficient of variation of the following marks of students: 8, 9, 15, 23, 5, 11, 19, 8, 10, 12.

51. Find mean, Q.D., variance and C.V. of: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

52. Calculate: i) Range ii) M.D. iii) S.D. iv) C.V. for the following data.

50, 55, 57, 49, 54, 61, 64, 69, 58, 56

53. Define S.D. and its coefficients, Calculate S.D. and C.V.

Value (X) :	7	8	9	10	11	12	13
Frequency (F) :	4	6	9	12	9	6	4

54. State the name of two absolute measures of dispersion. Calculate an appropriate measure of dispersion for the following data.

Age (in years)	Below 20	20-30	30-40	40-50	50 & Above
No. of workers	2	10	28	20	12

55. Given Variance=5,  $N=10$ ,  $\sum X=160$ . find the value of S.D. and C.V.

56. If the arithmetic mean of 10 observations is 50.2 and sum of square of observations ( $\sum X^2 = 400$ ). Find its S.D. and C.V.

57. Using the coefficient of variation, find which of the following batsman is more consistent in scoring. Would you also accept him as a better run-getter?

Score of A : 42, 115, 6, 73, 7, 19, 119, 36, 84, 29

Score of B : 47, 12, 76, 42, 4, 51, 37, 48, 13, 0

58. Define range and coefficient of range, mean deviation about median and coefficient of M.D. about median. The score of two batsman are given below.

Virat	5	4	5	6
Rohit	0	10	5	10

Who is more consistent? Who is a better run getter?

59. Define M.D. about mean and M.D. about median. Find M.D. about mean and M.D. about median from the following data.

31, 35, 29, 63, 55, 72, 37

60. Define combined mean and combined S.D.

For the data given below,

	Factory A	Factory B
No. of employees	50	100
Average wages	Rs. 120	Rs. 85
Variance	Rs. 9	Rs. 16

Find: a) Combined mean

b) Combined S.D.

c) Combined C.V.

d) which factory shows more variation

61. The arithmetic mean of runs scored by three batsman A, B, C in the same series of 10 innings are 50, 48 and 2 respectively. Who is the most consistent of the three?

62. If the mean and standard deviation of series of 100 values are 50 and 5 respectively, find the sum of the values and the sum of squares of values of this series.

63. For the set of 15 observations means and variance are 15 and 9 respectively, find  $\sum X$ ,  $\sum X^2$ .

64. Two groups of size 40 and 50 respectively have the same 50 but different standard deviations 18 and 19. Find the standard deviation of the combined group.

65. If the arithmetic mean of 10 observations is 5.2 and the sum of the squares of the observations is 400. Find its standard deviation and the coefficient of variation.

66. Mean and Standard deviation of a sample of size 10, were found to be 9.5 and 2.5 respectively. Later on an additional observation 15 was included in the original sample. Find the mean and standard deviation of 11 observations.

67. Mean and Standard deviation of a sample of size 100, were found to be 65 and 10 respectively. Another group of 50 items each with value equal to 72 was added to the group. Find the Standard deviation of the combined group of 150 items.

68. The mean and standard deviation of 101 items were found to be 60 and 12 respectively. Later on it was found that one observation 42 was wrongly taken and

hence, it was decided to ignore it. Find the mean and standard deviation of remaining 100 items.

69. For a distribution C.V. and mean are 80% and 20 respectively. Find variance and standard deviation of the distribution.
70. Define combined mean and combined S.D. for two groups. The mean and S.D. of 100 items was found to be 65 and 10 respectively. Another group of 50 items with each value equal to 59. Find mean and variance of combined group of 150 observations.
71. If the quartile deviation of certain data is 1.3 and coefficient of quartile deviation is 0.4, find the first and third quartile.
72. Define standard deviation and C.V. The runs scored by two batsman in six innings of three test matched are given bellow:

Innings	:	1	2	3	4	5	6
Runs by Kohli	:	5	28	153	5	41	54
Runs by Rohit	:	65	35	20	80	5	6

Examine the consistency in scoring the runs by two batsman using C.V.

73. Find Karl Pearson's coefficient of correlation from the following data:

Price(x) : 11, 12, 13, 14, 15

Supply(y) : 30, 29, 29, 25, 22.

74. Write a note on Spearman's rank correlation coefficient.
75. Define Karl Pearson's coefficient of correlation and explain positive and negative correlation.
76. State any two properties of correlation coefficient. Compute Karl Pearson's coefficient of correlation from the following data.

X :	2	3	5	9	11
Y :	5	7	8	12	14

77. State merits and demerits of Rank correlation coefficient.
78. If the sum of squares of the difference between the rank of certain pairs of observations is 24 and the rank correlation coefficient is 0.80, find the number of observations.
79. State relation between correlation coefficient and regression coefficients and verify them by using following data:

X :	2	3	4	7	6
Y :	10	7	3	1	2

80. State the equation of regression lines. From 10 observations on price (X) and supply (Y) of a commodity, the following data were obtained.

$$\sum X = 130, \sum Y = 220, \sum X^2 = 2288, \sum XY = 3467$$

Compute the equation of line of regression of supply on price and estimate the supply when price is 16 units.

81. What is regression? State the regression equations of Y on X and X on Y.

Given :  $N = 25$ ,  $\sum X = 250$ ,  $\sum Y = 375$ ,  $\sum X^2 = 3125$ ,  $\sum Y^2 = 7650$ ,  $\sum XY = 2500$

Find: a) regression of Y on X      b) estimate Y when  $X = 15$

82. State the regression equations of y on x and regression coefficient of y on x.

If  $b_{yx} = -0.9$ ,  $b_{xy} = -0.4$ ,  $\bar{x} = 50$ ,  $\bar{y} = 40$

Find : i) correlation coefficient.

ii) regression equations

iii) Estimate y, if  $x = 10$

iv) Estimate x, if  $y = 20$

83. State merits and demerits of Rank correlation.

84. Calculate correlation coefficient between price and demand

Price: 2, 3, 4, 7, 6

Demand: 10, 7, 3, 1, 2

85. Define:

i) Regression coefficient of Y on X

ii) Regression coefficient of X on Y

State the relation between correlation coefficient & regression coefficients. Obtain the equation of line of regression of Y on X and X on Y for the following data.

X: 8, 9, 5, 10, 12, 8, 11

Y: 4, 5, 2, 5, 7, 6, 6

86. Find the regression coefficient of X on Y

i) Correlation coefficient between X and Y is 0.4 &

ii) Regression coefficient of Y on X is 1.2

87. What are the equations of regression lines. Give any two examples of it.

Obtain equations of regression lines from the following;

$\bar{X} = 65$ ,  $\bar{Y} = 67$ ,  $\sigma_x = 2.5$ ,  $\sigma_y = 3.5$  &

$r =$  correlation coefficient between X and Y = 0.8

Estimate the value of Y when  $X = 70$ .

88. What is the relation between coefficient of correlation and regression coefficients?

Use it to find regression coefficient of X on Y if

i) Correlation coefficient between X and Y is 0.4

ii) Regression coefficient of Y on X is 1.2

89. Write a short note on: i) SRS ii) Stratified sampling

90. Define correlation. What are the uses of correlation?

91. Distinguish between positive and negative correlation.

92. Explain linear and non linear correlation with suitable examples.

93. Write a short note on scatter diagram

94. State and explain mathematical properties and assumptions of 'r'

95. Distinguish between SRSWOR and SRSWR.

96. Define, census & sampling method. State advantages of Sampling method over Census method.
97. Define: i) sample ii) Population iii) Simple random sample iv) Simple random sampling v) Stratified sampling
98. Describe stratified sampling with proportional and optimum allocation.
99. State merits and demerits of simple random sampling.
100. State merits and demerits of stratified sampling.
101. Which methods are used to draw a random sample. Explain any one of them.
102. Define Time series, describe four components of it in brief.
103. Distinguish between seasonal variations & cyclical variations.
104. A population of size 800 is divided into 3 groups. Their sizes and standard deviations are given as follows:

Stratum	I	II	III
Size	200	300	300
S.D.	6	8	2

stratified random sample of size 120 is to be drawn from the population. Determine the sizes of the Samples from the three groups to be selected by : i) Proportional allocation ii) optimum allocation. Define Time series, describe four components of it brief.

105. Describe 3 yearly moving Average method in brief. Also find 3 yearly moving Averages from the given data and plot the original and trend values on the same graph.

Years	1	2	3	4	5	6	7	8	9	10
Production(in tons)	21	22	23	25	24	22	25	26	27	26

106. State Merits & Demerits of moving Average Method.
107. Write a short note on:  
i) Simple Average Method ii) Moving Average Method.
108. Calculate 5 yearly moving averages of the students reading in a college from the following table. Plot the graph of no. of student during each year.

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
students	323	317	357	392	402	405	410	427	405	438	415	447	480	482

109. Describe Least Square Method. Fit a trend line by the method of least square to the following data & obtain the trend values.

Years	1970	1971	1972	1973	1974	1975	1976
Production	21	22	23	25	24	22	25

110. The given data related to the no.of scooters in lakhs manufacturing company during year 1985 to 1992

Years	1985	1986	1987	1988	1989	1990	1991	1992
Sales(in lakhs)	6	6.1	5.2	5	4.6	4.8	4.1	6.2

Fit a straight line trend and estimate the sale for year 1993.(Take year 1988 as working origin)

111. Fit a straight line trend to a following data.

(X)Years	0	1	2	3	4	5	6
Production	1	2	3	4.5	6	7.5	7