

## Business Statistics

1. If  $Y = aX \pm b$ , where  $a$  and  $b$  are any two constants and  $a \neq 0$ , then the quartile deviation of  $Y$  values is equal to:

- A.  $a \text{ Q.D}(X) + b$
- B.  $|a| \text{ Q.D}(X)$
- C.  $\text{Q.D}(X) - b$
- D.  $|b| \text{ Q.D}(X)$

View answer

Correct answer: (B)

$|a| \text{ Q.D}(X)$

2. For a symmetrical distribution:

- A.  $\beta_1 > 0$
- B.  $\beta_1 < 0$
- C.  $\beta_1 = 0$
- D.  $\beta_1 = 3$

View answer

Correct answer: (C)

$\beta_1 = 0$

3. The scatter in a series of values about the average is called:

- A. Central tendency
- B. Dispersion
- C. Skewness
- D. Symmetry

View answer

Correct answer: (B)

Dispersion

4. The measures of dispersion can never be:

- A. Positive
- B. Zero
- C. Negative
- D. Equal to 2

View answer

Correct answer: (C)

Negative

**5.** Which of the following is an absolute measure of dispersion?

- A. Coefficient of variation
- B. Coefficient of dispersion
- C. Standard deviation
- D. Coefficient of skewness

View answer

Correct answer: (C)

Standard deviation

**6.** If the observations of a variable X are, -4, -20, -30, -44 and -36, then the value of the range will be:

- A. -48
- B. 40
- C. -40
- D. 48

View answer

Correct answer: (B)

40

**7.** If the maximum value in a series is 25 and its range is 15, the maximum value of the series is:

- A. 10
- B. 15
- C. 25
- D. 35

View answer

Correct answer: (A)

10

**8.** Mean deviation computed from a set of data is always:

- A. Negative
- B. Equal to standard deviation
- C. More than standard deviation
- D. Less than standard deviation

View answer

Correct answer: (D)

Less than standard deviation

**9.** Which measure of dispersion has a different unit other than the unit of measurement of values:

- A. Range
- B. Standard deviation
- C. Variance
- D. Mean deviation

View answer

Correct answer: (C)

Variance

**10.** The positive square root of the mean of the squares of the deviations of observations from their mean is called:

- A. Variance
- B. Range
- C. Standard deviation
- D. Coefficient of variation

View answer

Correct answer: (C)

Standard deviation

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**11.**  $S.D(X) = 6$  and  $S.D(Y) = 8$ . If  $X$  and  $Y$  are independent random variables, then  $S.D(X - Y)$  is:

- A. 2
- B. 10
- C. 14
- D. 100

View answer

Correct answer: (B)

10

**12.** The ratio of the standard deviation to the arithmetic mean expressed as a percentage is called:

- A. Coefficient of standard deviation
- B. Coefficient of skewness
- C. Coefficient of kurtosis
- D. Coefficient of variation

View answer

Correct answer: (D)

Coefficient of variation

**13.** To compare the variation of two or more than two series, we use

- A. Combined standard deviation
- B. Corrected standard deviation
- C. Coefficient of variation
- D. Coefficient of skewness

View answer

Correct answer: (C)

Coefficient of variation

**14.** If standard deviation of the values 2, 4, 6, 8 is 2.236, then standard deviation of the values 4, 8, 12, 16 is:

- A. 0
- B. 4.472
- C. 4.236
- D. 2.236

View answer

Correct answer: (B)

4.472

**15.** The moments about mean are called:

- A. Raw moments
- B. Central moments
- C. Moments about origin
- D. All of the above

View answer

Correct answer: (B)

Central moments

**16.** Moment ratios  $\beta_1$  and  $\beta_2$  are:

- A. Independent of origin and scale of measurement
- B. Expressed in original unit of the data
- C. Unit less quantities
- D. Both (a) and (c)

View answer

Correct answer: (C)

Unit less quantities

**17.** If the third moment about mean is zero, then the distribution is:

- A. Positively skewed
- B. Negatively skewed
- C. Symmetrical
- D. Mesokurtic

View answer

Correct answer: (C)

Symmetrical

**18.** If mean=25, median=30 and standard deviation=15, the distribution will be:

- A. Symmetrical
- B. Positively skewed
- C. Negatively skewed
- D. Normal

View answer

Correct answer: (C)

Negatively skewed

**19.** In a symmetrical distribution,  $Q_3 - Q_1 = 20$ , median = 15.  $Q_3$  is equal to:

- A. 5
- B. 15
- C. 20
- D. 25

View answer

Correct answer: (D)

25

**20.** The degree of peaked ness or flatness of a unimodel distribution is called:

- A. Skewness
- B. Symmetry
- C. Dispersion
- D. Kurtosis

View answer

Correct answer: (D)

Kurtosis

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**21.** In a mesokurtic or normal distribution,  $4 = 243$ . The standard deviation is:

- A. 81
- B. 27
- C. 9
- D. 3

View answer

Correct answer: (D)

3

**22.** The measurements of spread or scatter of the individual values around the central point is called:

- A. Measures of dispersion
- B. Measures of central tendency
- C. Measures of skewness
- D. Measures of kurtosis

View answer

Correct answer: (A)

Measures of dispersion

**23.** If all the scores on examination cluster around the mean, the dispersion is said to be:

- A. Small
- B. Large
- C. Normal
- D. Symmetrical

View answer

Correct answer: (A)

Small

**24.** The range of the scores 29, 3, 143, 27, 99 is:

- A. 140
- B. 143
- C. 146
- D. 70

View answer

Correct answer: (A)

140

**25.** The sum of absolute deviations is minimum if these deviations are taken from the:

- A. Mean
- B. Mode
- C. Median
- D. Upper quartile

View answer

Correct answer: (C)

Median

**26.** Which of the following measures of dispersion is expressed in the same units as the units of observation?

- A. Variance
- B. Standard deviation
- C. Coefficient of variation
- D. Coefficient of standard deviation

View answer

Correct answer: (B)

Standard deviation

**27.** The standard deviation is independent of:

- A. Change of origin
- B. Change of scale of measurement
- C. Change of origin and scale of measurement
- D. Difficult to tell

View answer

Correct answer: (A)

Change of origin

**28.** Which of the following statements is correct?

- A. The standard deviation of a constant is equal to unity
- B. The sum of absolute deviations is minimum if these deviations are taken from the mean.
- C. The second moment about origin equals variance
- D. The variance is positive quantity and is expressed in square of the units of the observations

View answer

Correct answer: (D)

The variance is positive quantity and is expressed in square of the units of the observations

**29.** In a set of observations the variance is 50. All the observations are increased by 100%. The variance of the increased observations will become:

- A. 50
- B. 200
- C. 100
- D. No change

View answer

Correct answer: (B)

200

**30.** All odd order moments about mean in a symmetrical distribution are:

- A. Positive
- B. Negative
- C. Zero
- D. Three

View answer

Correct answer: (C)

Zero

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**31.** The first three moments of a distribution about the mean  $X$  are 1, 4 and 0. The distribution is:



- A. Symmetrical
- B. Skewed to the left
- C. Skewed to the right
- D. Normal

View answer

Correct answer: (A)

Symmetrical

**32.** For a positively skewed distribution, mean is always:

- A. Less than the median
- B. Less than the mode
- C. Greater than the mode
- D. Difficult to tell

View answer

Correct answer: (C)

Greater than the mode

**33.** Bowley's coefficient of skewness lies between:

- A. 0 and 1
- B. 1 and +1
- C. -1 and 0
- D. -2 and +2

View answer

Correct answer: (B)

1 and +1

**34.** The second and fourth moments about mean are 4 and 48 respectively, then the distribution is:

- A. Leptokurtic
- B. Platykurtic
- C. Mesokurtic or normal
- D. Positively skewed

View answer

Correct answer: (C)

Mesokurtic or normal

**35.** The measures used to calculate the variation present among the observations in the unit of the variable is called:

- A. Relative measures of dispersion
- B. Coefficient of skewness
- C. Absolute measures of dispersion
- D. Coefficient of variation

View answer

Correct answer: (C)

Absolute measures of dispersion

**36.** The measure of dispersion which uses only two observations is called:

- A. Mean
- B. Median
- C. Range
- D. Coefficient of variation

View answer

Correct answer: (C)

Range

**37.** Half of the difference between upper and lower quartiles is called:

- A. Interquartile range
- B. Quartile deviation
- C. Mean deviation
- D. Standard deviation

View answer

Correct answer: (B)

Quartile deviation

**38.** The mean deviation of the scores 12, 15, 18 is:

- A. 6
- B. 0
- C. 3
- D. 2

View answer

Correct answer: (D)

2

**39.** The variance is zero only if all observations are the:

- A. Different

- B. Square
- C. Square root
- D. Same

View answer

Correct answer: (D)

Same

**40.** The standard deviation of -5, -5, -5, -5, 5 is:

- A. -5
- B. +5
- C. 0
- D. -25

View answer

Correct answer: (C)

0

**41.** The measures used to calculate the variation present among the observations relative to their average is called:

- A. Coefficient of kurtosis
- B. Absolute measures of dispersion
- C. Quartile deviation
- D. Relative measures of dispersion

View answer

Correct answer: (D)

Relative measures of dispersion

**42.** If there are many extreme scores on all examination, the dispersion is:

- A. Large
- B. Small
- C. Normal
- D. Symmetric

View answer

Correct answer: (A)

Large

**43.** In quality control of manufactured items, the most common measure of dispersion is:

- A. Range
- B. Average deviation
- C. Standard deviation
- D. Quartile deviation

View answer

Correct answer: (A)

Range

**44.** If  $Y = aX \pm b$ , where  $a$  and  $b$  are any two numbers and  $a \neq 0$ , then the range of  $Y$  values will be:

- A. Range(X)
- B.  $a \text{ range}(X) + b$
- C.  $a \text{ range}(X) - b$
- D.  $|a| \text{ range}(X)$

View answer

Correct answer: (D)

$|a| \text{ range}(X)$

**45.** Which measure of dispersion can be computed in case of open-end classes?

- A. Standard deviation
- B. Range
- C. Quartile deviation
- D. Coefficient of variation

View answer

Correct answer: (C)

Quartile deviation

**46.** If  $Y = aX \pm b$ , where  $a$  and  $b$  are any two numbers but  $a \neq 0$ , then  $M.D(Y)$  is equal to:

- A.  $M.D(X)$
- B.  $M.D(X) \pm b$
- C.  $|a| M.D(X)$
- D.  $M.D(Y) + M.D(X)$

View answer

Correct answer: (C)

$|a| M.D(X)$

**47.** If the dispersion is small, the standard deviation is:

- A. Large
- B. Zero
- C. Small
- D. Negative

View answer

Correct answer: (C)

Small

**48.** The standard deviation one distribution dividedly the mean of the distribution and expressing in percentage is called:

- A. Coefficient of Standard deviation
- B. Coefficient of skewness
- C. Coefficient of quartile deviation
- D. Coefficient of variation

View answer

Correct answer: (D)

Coefficient of variation

**49.** If  $Y = aX + b$ , where  $a$  and  $b$  are any two numbers but  $a \neq 0$ , then  $S.D(Y)$  is equal to:

- A.  $S.D(X)$
- B.  $a S.D(X)$
- C.  $|a| S.D(X)$
- D.  $a S.D(X) + b$

View answer

Correct answer: (C)

$|a| S.D(X)$

**50.** Standard deviation is always calculated from:

- A. Mean
- B. Median
- C. Mode
- D. Lower quartile

View answer

Correct answer: (A)

Mean

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**51.** The variance of 19, 21, 23, 25 and 27 is 8. The variance of 14, 16, 18, 20 and 22 is:

- A. Greater than 8
- B. 8
- C. Less than 8
- D.  $8 - 5 = 3$

View answer

Correct answer: (B)

8

**52.**  $\text{Var}(X) = 4$  and  $\text{Var}(Y) = 9$ . If X and Y are independent random variable then  $\text{Var}(2X + Y)$  is:

- A. 13
- B. 17
- C. 25
- D. -1

View answer

Correct answer: (C)

25

**53.** The moments about origin are called:

- A. Moments about zero
- B. Raw moments
- C. Both (a) and (b)
- D. (d)Neither (a) nor (b)

View answer

Correct answer: (C)

Both (a) and (b)

**54.** The first moment about  $X = 0$  of a distribution is 12.08. The mean is:

- A. 10.80
- B. 10.08
- C. 12.08
- D. 12.88

View answer

Correct answer: (C)

12.08

**55.** In a symmetrical distribution, the coefficient of skewness will be:

- A. 0
- B. Q1
- C. Q3
- D. 1

View answer

Correct answer: (A)

0

**56.** If mean=20, median=16 and standard deviation=2, then coefficient of skewness is:

- A. 1
- B. 2
- C. 4
- D. -2

View answer

Correct answer: (B)

2

**57.** If the sum of deviations from median is not zero, then a distribution will be:

- A. Symmetrical
- B. Skewed
- C. Normal
- D. All of the above

View answer

Correct answer: (B)

Skewed

**58.** The lower and upper quartiles of a distribution are 80 and 120 respectively, while median is 100. The shape of the distribution is:

- A. Positively skewed
- B. Negatively skewed
- C. Symmetrical
- D. Normal

View answer

Correct answer: (C)

Symmetrical

**59.** The value of  $\beta_2$  can be:

- A. Less than 3
- B. Greater than 3
- C. Equal to 3
- D. All of the above

View answer

Correct answer: (D)

All of the above

**60.** The degree to which numerical data tend to spread about an average value called:

- A. Constant
- B. Flatness
- C. Variation
- D. Skewness

View answer

Correct answer: (C)

Variation

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**61.** Given below the four sets of observations. Which set has the minimum variation?

- A. 46, 48, 50, 52, 54
- B. 30, 40, 50, 60, 70
- C. 40, 50, 60, 70, 80
- D. 48, 49, 50, 51, 52

View answer

Correct answer: (D)

48, 49, 50, 51, 52

**62.** The range of the values -5, -8, -10, 0, 6, 10 is:

- A. 0
- B. 10
- C. -10
- D. 20



View answer

Correct answer: (D)

20

**63.** The mean deviation is minimum when deviations are taken from:

- A. Mean
- B. Mode
- C. Median
- D. Zero

View answer

Correct answer: (C)

Median

**64.** The sum of squares of the deviations is minimum, when deviations are taken from:

- A. Mean
- B. Mode
- C. Median
- D. Zero

View answer

Correct answer: (A)

Mean

**65.** The value of standard deviation changes by a change of:

- A. Origin
- B. Scale
- C. Algebraic signs
- D. None

View answer

Correct answer: (B)

Scale

**66.** For two independent variables X and Y if  $S.D(X) = 1$  and  $S.D(Y) = 3$ , then  $\text{Var}(3X - Y)$  is equal to:

- A. 0
- B. 6
- C. 18
- D. 12

View answer

Correct answer: (C)

18

**67.** Which of the following statements is false?

- A. The standard deviation is independent of change of origin
- B. If the moment coefficient of kurtosis  $\beta_2 = 3$ , the distribution is mesokurtic or normal.
- C. If the frequency curve has the same shape on both sides of the centre line which divides the curve into two equal parts, is called a symmetrical distribution.
- D. Variance of the sum or difference of any two variables is equal to the sum of their respective variances

View answer

Correct answer: (D)

Variance of the sum or difference of any two variables is equal to the sum of their respective variances

**68.** The mean of an examination is 69, the median is 68, the mode is 67, and the standard deviation is 3. The measures of variation for this examination is:

- A. 67
- B. 68
- C. 69
- D. 3

View answer

Correct answer: (D)

3

**69.** If  $\bar{X} = \text{Rs.}20$ ,  $S = \text{Rs.}10$ , then coefficient of variation is:

- A. 45%
- B. 50%
- C. 60%
- D. 65%

View answer

Correct answer: (B)

50%

**70.** The second moment about arithmetic mean is 16, the standard deviation will be:

- A. 16

- B. 4
- C. 2
- D. 0

View answer

Correct answer: (B)

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**71.** First two moments about the value 2 of a variable are 1 and 16. The variance will be:

- A. 13
- B. 15
- C. 16
- D. Difficult to tell

View answer

Correct answer: (B)

15

**72.** Departure from symmetry is called:

- A. Second moment
- B. Kurtosis
- C. Skewness
- D. Variation

View answer

Correct answer: (C)

Skewness

**73.** If mean=50, mode=40 and standard deviation=5, the distribution is:

- A. Positively skewed
- B. Negatively skewed
- C. Symmetrical
- D. Difficult to tell

View answer

Correct answer: (A)

Positively skewed

**74.** In case of positively skewed distribution, the extreme values lie in the:

- A. Middle
- B. Left tail
- C. Right tail
- D. Anywhere

View answer

Correct answer: (C)

Right tail

**75.** Which of the following is correct in a negatively skewed distribution?

- A. The arithmetic mean is greater than the mode
- B. The arithmetic mean is greater than the median
- C.  $(Q_3 - \text{Median}) = (\text{Median} - Q_1)$
- D.  $(Q_3 - \text{Median}) < (\text{Median} - Q_1)$

View answer

Correct answer: (D)

$(Q_3 - \text{Median}) < (\text{Median} - Q_1)$

**76.** The measure of dispersion which uses only two observations is called:

- 1. Range
- 2. Quartile deviation
- 3. Mean deviation
- 4. Standard deviation

View answer

Correct answer: (A)

Range

**77.** If  $Q_3=20$  and  $Q_1=10$ , the coefficient of quartile deviation is:

- A. 3
- B.  $1/3$
- C.  $2/3$
- D. 1

View answer

Correct answer: (B)

$1/3$

**78.** The average of squared deviations from mean is called:

- A. Mean deviation
- B. Variance
- C. Standard deviation
- D. Coefficient of variation

View answer

Correct answer: (B)

Variance

**79.** Which of the following is a unit free quantity:

- A. Range
- B. Standard deviation
- C. Coefficient of variation
- D. Arithmetic mean

View answer

Correct answer: (C)

Coefficient of variation

**80.** Three factories A, B, C have 100, 200 and 300 workers respectively. The mean of the wages is the same in the three factories. Which of the following statements is true?

- A. There is greater variation in factory C.
- B. Standard deviation in. factory A is the smallest.
- C. Standard deviation in all the three factories are equal
- D. None of the above

View answer

Correct answer: (D)

None of the above

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**81.** Which of the following measures of dispersion is independent of the units employed?

- A. Coefficient of variation
- B. Quartile deviation
- C. Standard deviation
- D. Range

View answer

Correct answer: (A)

Coefficient of variation

**82.** The first and second moments about arbitrary constant are -2 and 13 respectively, The standard deviation will be:

- A. -2
- B. 3
- C. 9
- D. 13

View answer

Correct answer: (B)

3

**83.** If the third central is negative, the distribution will be:

- A. Symmetrical
- B. Positively skewed
- C. Negatively skewed
- D. Normal

View answer

Correct answer: (C)

Negatively skewed

**84.** The lack of uniformity or symmetry is called:

- A. Skewness
- B. Dispersion
- C. Kurtosis
- D. Standard deviation

View answer

Correct answer: (A)

Skewness

**85.** If mean=10, median=8 and standard deviation=6, then coefficient of skewness is:

- A. 1
- B. -1
- C. 2/6
- D. 2

View answer

Correct answer: (A)

1

**86.** In a symmetrical distribution  $Q_1 = 20$  and median = 30. The value of  $Q_3$  is:

- A. 50
- B. 35
- C. 40
- D. 25

View answer

Correct answer: (C)

40

**87.** If there are ten values each equal to 10, then standard deviation of these values is:

- A. 100
- B. 20
- C. 10
- D. 0

View answer

Correct answer: (D)

0

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