FY BBA Business Statistics - Unit 3.
Measures of Dispersion

Multiple Choice Questions

1. The scatter in a series of values about the average is called:
   (a) Central tendency  
   (b) Dispersion  
   (c) Skewness  
   (d) Symmetry

2. 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

3. 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
4. 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

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

(a) Constant
(b) Flatness
(c) Variation
(d) Skewness

6. The measures of dispersion can never be:

(a) Positive
(b) Zero
(c) Negative
(d) Equal to 2

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

(a) Small
(b) Large
(c) Normal
(d) Symmetrical
8. If there are many extreme scores on all examination, the dispersion is:

(a) Large  
(b) Small  
(c) Normal  
(d) Symmetric

9. 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

10. 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

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

(a) Mean  
(b) Median  
(c) Range  
(d) Coefficient of variation
12. The measure of dispersion which uses only two observations is called:

(a) Range
(b) Quartile deviation
(c) Mean deviation
(d) Standard deviation

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

(a) Range
(b) Average deviation
(c) Standard deviation
(d) Quartile deviation

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

(a) 140
(b) 143
(c) 146
(d) 70

15. 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
16. The range of the values -5, -8, -10, 0, 6, 10 is:

(a) 0
(b) 10
(c) -10
(d) 20

17. If \( Y = ax \pm b \), where \( a \) and \( b \) are any two numbers and \( a \) is not equal to 0, then the range of \( Y \) values will be:

(a) Range(X)
(b) a range(x) + b
(c) a range(x) - b
(d) \( |a| \) range(x)

18. 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

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

(a) Interquartile range
(b) Quartile deviation
(c) Mean deviation
(d) Standard deviation
20. If Q3=20 and Q1=10, the coefficient of quartile deviation is:

(a) 3  
(b) 1/3  
(c) 2/3  
(d) 1

21. 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

22. If Y = ax ± b, where a and b are any two constants and a is not equal to 0, then the quartile deviation of Y values is equal to:

(a) a Q.D(X) + b  
(b) |a| Q.D(X)  
(c) Q.D(X) - b  
(d) |b|. Q.D(X)

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

(a) Mean  
(b) Mode  
(c) Median  
(d) Upper quartile
24. The mean deviation is minimum when deviations are taken from:

(a) Mean  
(b) Mode  
(c) Median  
(d) Zero

25. 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)

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

(a) 6  
(b) 0  
(c) 3  
(d) 2

27. 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
28. The average of squared deviations from mean is called:

(a) Mean deviation  
(b) Variance  
(c) Standard deviation  
(d) Coefficient of variation

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

(a) Mean  
(b) Mode  
(c) Median  
(d) Zero

30. 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

31. 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
32. Which of the following is a unit free quantity:

(a) Range  
(b) Standard deviation  
(c) Coefficient of variation  
(d) Arithmetic mean

33. If the dispersion is small, the standard deviation is:

(a) Large  
(b) Zero  
(c) Small  
(d) Negative

34. The value of standard deviation changes by a change of:

(a) Origin  
(b) Scale  
(c) Algebraic signs  
(d) None

35. The standard deviation one distribution divided by 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
36. 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

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

(a) Different  
(b) Square  
(c) Square root  
(d) Same

38. 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

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

(a) 100  
(b) 20  
(c) 10  
(d) 0
40. If X and Y are independent random variables, then S.D(X ± Y) is equal to:

(a) S.D(X) ± S.D(Y)
(b) Var(X) ± Var(Y)
(c) $\sqrt{\text{Var}(X) ± \text{Var}(Y)}$
(d) $\sqrt{\text{Var}(X) + \text{Var}(Y)}$

41. 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

42. For two independent variables X and Y if S.D(X) = 1 and S.D(Y) = 3, then Var(3X - Y) is equal to:

(a) 0
(b) 6
(c) 18
(d) 12

43. If Y = ax ± b, where a and b are any two constants and a ≠ 0, then Var(Y) is equal to:

(a) a Var(X)
(b) a Var(X) + b
(c) (a^2) Var(X) - b
(d) (a^2 )Var(X)
44. If \( Y = ax + b \), where \( a \) and \( b \) are any two numbers but \( a \) is not equal to 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) + \( b \)

45. 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

46. 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
47. If Var(X) = 25, then S.D. \( \left\{ \frac{2X + 5}{2} \right\} \) is equal to:

(a) 15/2  
(b) 50  
(c) 25  
(d) 5

48. 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

49. The standard deviation of -5, -5, -5, -5, 5 is:

(a) -5  
(b) +5  
(c) 0  
(d) -25

50. Standard deviation is always calculated from:

(a) Mean  
(b) Median  
(c) Mode  
(d) Lower quartile
Answer Key

1. B
2. A
3. C
4. D
5. C
6. C
7. A
8. A
9. D
10. C
11. C
12. A
13. A
14. A
15. B
16. D
17. D
18. A
19. B
20. B
21. C
22. B
23. C
24. C
25. C
26. D
27. D
28. B
29. A
30. B