# Statistics MCQ Question Bank

First Paper

**Abdullah Al Mahmud**

www.statmania.info

# 1 Basic Concept of Statistics

1. **Who is known as the Father of modern statistics?**
   (a) P.C. Mahalanobis (b) Kazi Motaher Hossain (c) Karl Pearson (d) R.A. Fisher

2. **If** $\sum_{i=1}^{20} x_i^2 = 20$ **and** $\sum_{i=1}^{20} x_i = 30$**, what is the value of** $\sum_{i=1}^{20} x_i^2 + \sum_{i=1}^{20} x_i + 100$**?**
   (a) 130 (b) 200 (c) 150 (d) 2130

3. **A subset of a population is called–**
   (a) Constant (b) Variable (c) Sample (d) Scale

4. **How many measurement scales are there?**
   (a) 2 (b) 3 (c) 4 (d) 5

5. **Which of the following is a continuous variable?**
   (a) Number of goals (b) Natural number
   (c) Summation of Fibonacci series (d) Success rate

6. **In which scale of measurement, zero is regarded as true zero?**
   (a) Nominal scale (b) Interval scale (c) Ratio scale (d) Ordinal scale

7. **Which is a discrete variable?**
   (a) Weight (b) Amount of rainfall (c) Distance (d) Grade in a subject

8. $If x_1 = 2, x_2 = -3, x_3 = 7$**, and** $x_4 = 12, \sum_{i=1}^{4} x_i^2 = ?$
   (a) 26 (b) 106 (c) 206 (d) 216

9. **Which one falls in the category of interval scale?**
   (a) Temperature (b) Speed (c) Distance (d) Film rating

10. **In which scale of measurement, zero is regarded as true zero?**
    (a) Nominal scale (b) Interval scale (c) Ratio scale (d) Ordinal scale

11. **Which is a discrete variable?**
    (a) Weight (b) Amount of rainfall (c) Distance (d) Grade in a subject

12. **Which one is product of square?**
    (a) $\prod x_i^2$ (b) $(\prod x_i)^2$ (c) $\sum x_i^2 \times \sum x$ (d) $\sum x_i^2$

13. **For which variable, determining number of terms is not possible?**
    (a) Discrete variable (b) Continuous variable (c) Quantitative variable (d) Qualitative variable

    **Answer the next three question based on the following information.**

    **A farmer collects growth (in cm) of 10 plants in a month and finds that** $\sum x_i = 7$ **and** $\sum x_i^2 = 15$

14. **What is the value of** $\sum(x_i + 4)$**?**
    (a) 23 (b) $\sum x_i + 4n$ (c) 22 (d) 11

15. **What is the value of $\sum(x_i - 4)^2$?**
(a) 23 (b) 135 (c) 484 (d) 121

16. **If the square of summation is subtracted the sum of square, the value is -**
(a) -8 (b) 34 (c) 8 (d) -34

17. **Which one is not an example of ratio scale?**
(a) Room no. (b) Income (c) Number of accidents (d) Weight

# 2 Collection, Organization, and Presentation of Data

18. **How many sources of data are there?**
(a) 5 (b) 4 (c) 3 (d) 2

19. **Data obtained through direct observation is called–**
(a) Primary data (b) Secondary data (c) Original Data (d) Informal data

20. **Who invented Stem and Leaf plot?**
(a) Karl Pearson (b) R.A. Fisher (c) David Cox (d) John Tukey

21. **Which rule is suggested by H.G. Sturges for determining number of class (k)?**
(a) $K = 1 + 3.322logN$ (b) $K = 1 + 3.222logN$ (c) $K = 1 - 3.222logN$ (d) $K = 1 + 2.332logN$

22. **To show runs per over in a cricket match, which diagram can be used?**
(a) Histogram (b) Bar Diagram (c) Ogive (d) Frequency polygon

# 3 Measures of Central Tendency

## 3.1 General Questions

23. **How many measure of central tendency are there?**
(a) 2 (b) 3 (c) 4 (d) 5

24. **Which measure of central tendencyis suitable for qualitative variable?**
(a) Arithmetic Mean (b) Harmonic Mean (c) Quadratic Mean (d) Mode

25. **In presence of negative values, which measure is not usable?**
(a) Arithmetic Mean (b) Geometric Mean (c) Quadratic Mean (d) Harmonic Mean

26. **Inappropriate for algebraic analysis–**

i. Median
ii. Mode
iii. Geometric Mean

Which one is true?
(a) i (b) ii (c) i & ii (d) ii & iii

**Answer the next two questions based on the following information**

27. **Fifth Decile is –**
(a) 0 (b) 8 (c) 7 (d) 6

| Accident | 4 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| Frequency | 2 | 0 | 4 | 4 | 1 |

28. **Which of the following is mode?**
(a) 4 (b) 8 (c) 0 (d) 7

29. **Which measure gives a value from within the values?**
(a) Arithmetic Mean (b) Geometric Mean (c) Median (d) Mode

30. **Which one is not a proper measure of central tendency?**
(a) 2nd Quartile (b) Third Decile (c) 3rd Quintile (d) 110th Percentile

31. **Which measure is not used in determining skewness?**
(a) Arithmetic Mean (b) Geometric Mean (c) Median (d) Mode

32. **When is the relationship $AM = HM = GM$ true?**
(a) All values are equal (b) The values form a geometric progression
(c) The values form an arithmetic progression (d) All values are distinct

33. **In the presence of outlier(s), which measure of central tendency is suitable?**
(a) Arithmetic mean (b) Median (c) Quadratic mean (d) Power mean

34. **If a rate is defined as $R = \frac{c}{d}$, where c is constant, then which measure is perfect?**
(a) Weighted arithmetic mean (b) Harmonic mean
(c) Quadratic mean (d) Weighted geometric mean

35. **Which measure might have more than one value?**
(a) Arithmetic mean (b) Geometric mean (c) Quadratic mean (d) Mode

## 3.2 Arithmetic Mean

36. **For grouped data, which formula is correct for Arithmetic Mean?**
(a) $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$ (b) $\bar{x} = \frac{\sum x_i}{N}$ (c) $\bar{x} = \frac{\sum f_i x_i}{n}$ (d) $\bar{x} = \frac{\sum f_i}{N}$

37. **Arithmetic mean of the series 2, 12, 22, $\cdots$, 92 is–**
(a) 45 (b) 46 (c) 47 (d) 55

38. **What is the arithmetic mean of first n odd natural numbers?**
(a) $\frac{n+1}{n}$ (b) n (c) n+1 (d) $\frac{n+1}{2}$

39. **What is the arithmetic mean of first n even natural numbers?**
(a) $\frac{n+1}{2}$ (b) $n+1$ (c) $n$ (d) $\frac{n-1}{2}$

40. **The arithmetic mean of first n natural numbers-**
(a) $\frac{n}{2}$ (b) $\frac{n+1}{2}$ (c) $\frac{n^2}{2}$ (d) $\frac{n^2-1}{2}$

41. **Arithmetic means of three groups having equal no. of items are 30, 32, and 34. What is the combined mean?**
(a) 30.33 (b) 32.67 (c) 32.00 (d) 33.00

### 3.3 Median

42. **Median can be determined from the–**

(a) Histogram (b) Frequency curve (c) Ogive (d) Pie Chart

**Answer the next two (2) questions based on the following information**

| Class | $\leq 20$ | 20-25 | 25-50 | 50-60 | 69-70 | $\geq 70$ |
|---|---|---|---|---|---|---|
| Frequency | 5 | 10 | 10 | 7 | 5 | 3 |
| Cumulative Frequency | 5 | 15 | 25 | 32 | 37 | 40 |

43. **How many values are between 20 and 70?**

(a) 20 (b) 32 (c) 35 (d) 37

44. **Which one is the median class?**

(a) 20-25 (b) 25-50 (c) 50-60 (d) 60-70

### 3.4 Partition Values

**Answer the next two questions as per the following information.**

42 44 59 64 70 72 74 91 94 are 9 values.

45. **What is the 50th percentile?**

(a) 64 (b) 70 (c) 72 (d) 71

46. **Below which value lie 70 percent values?**

(a) 42 (b) 44 (c) 59 (d) 74

47. **Above which value lie 30% observations?**

(a) 3rd Quartile (b) Median (c) 30th Percentile (d) 70th percentile

## 4 Measures of Dispersion

48. **Which of the following is the best measure of dispersion?**

(a) Range (b) Mean deviation

(c) Standard deviation (d) Coefficient of variation

49. **What is the minimum possible value of standard deviation?**

(a) $\infty$ (b) -1 (c) 0 (d) 1

50. **For two values, range is found to be 8. What are the values of mean deviation and standard deviation**

(a) (2,4) (b) (4,4) (c) (4,8) (d) (8,8)

51. **What is the standard deviation of first 10 natural numbers?**

(a) 2.87 (b) 3.02 (c) 0 (d) 2.78

52. **Which measure is unit-free?**

(a) Range (b) Mean deviation

(c) Standard deviation (d) Coefficient of variation

# 5 Moments, Skewness, and Kurtosis

## 5.1 Moments

53. **Which can be used to measure dispersion?**
(a) $\mu_2'$ (b) $\mu_1$ (c) $\mu_2$ (d) $\mu_1'$

54. **The formula of coefficient of variance (CV) is –**
(a) $\frac{\mu_2}{n} \times 100$ (b) $\frac{\mu_2}{\mu_1} \times 100$ (c) $\frac{\mu_2}{\bar{x}} \times 100$ (d) $\frac{\mu_3}{\sigma} \times 100$

55. **First moment around zero is –**
(a) 0 (b) 1 (c) -1 (d) Arithmetic Mean

56. **Which might have a negative value?**
(a) $\mu_4$ (b) $\mu_3$ (c) $\mu_2'$ (d) $\mu_2$

57. **2nd Central Moment is –**
(a) $\mu_2 - \mu_1'$ (b) $\mu_2 + \mu_1'$ (c) $\mu_2 - \mu_1'^2$ (d) $\mu_2' - \mu_1'^2$

58. **First central moment is equal to –**
(a) 1 (b) 0 (c) -1 (d) $\bar{x} - a$

59. **First moment around a is equal to –**
(a) 1 (b) 0 (c) -1 (d) $\bar{x} - a$

60. **The first raw moment about 3 is -5. What is the value of arithmetic mean?**
(a) 2 (b) -2 (c) 0 (d) 8

61. **Moments can be–**

i. positive
ii. not negative
iii. positive or negative

**Which one is correct?**
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

## 5.2 Skewness

62. **For a data,** $Q_3 = 41.6, Q_1 = 17.2, Median = 29, \& AM = 30$**; What is Coefficient of skewness?**
(a) 24.4 (b) 1 (c) 0.03 (d) 29.45

63. **In case of positive skewness, which one is correct?**
(a) $Mean > Median > Mode$ (b) $Mean < Median < Mode$
(c) $Mean = Median = Mode$ (d) $Mean > Median < Mode$

64. **For a symmetrical distribution,** $\beta_1 =$
(a) 1 (b) -1 (c) 0 (d) 3

65. $\sqrt{\beta_1} = -0.23$ **implies–**
(a) Left Skew (b) Symmetry (c) Right Skew (d) Mesokurtic

### 5.3 Kurtosis

66. **The standard deviation of a mesokurtik distribution is 2. What is the value of the 4th central moment?**

(a) 4 (b) 8 (c) 16 (d) 48

67. $\beta_2 = \sqrt{9}$ **implies data are–**

(a) Leptokurtic (b) Platykurtic (c) Mesokurtic (d) Symmetric

68. **For a mesokurtik distribution,** $\beta_2 = --$

(a) 0 (b) -3 (c) 3 (d) 1

### 5.4 Misc

69. **Which is not used in constructing Box & Whisker Plot?**

(a) Mode (b) $X_L$ (c) $Q_1 \& Q_3$ (d) $Q_1, Q_2 \& Q_3$

70. **In a symmatric distribution–**

i. Arithmetic Mean = Mode = Median
ii. $Q_2 - Q_1 = Q_3 - Q_2$
iii. $Q_1 - X_L = X_H - Q_3$

Which one is true?

(a) i & ii (b) ii & iii (c) i &iii (d) i, ii &iii

71. **Which is not included in five number summary?**

(a) Arithmetic Mean (b) $X_H$ (c) $Q_2$ (d) $Q_3$

## 6 Correlation and Regression

## 7 Time Series

72. **A company is constantly getting greater revenue than previous year; this is–**

(a) Seasonal Variation (b) General Trend (c) Irregular Variation (d) Cyclic Variation

73. **Which is not a method of finding general trend?**

(a) Graphical Method (b) Moving Average (c) Semi-Average (d) Moving Median

**Answer the next two questions based on the following table:**

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| Sales | 5 | 35 | 34 | 40 | 42 | 204 |

74. **In Semi-Average method, what is the 2nd average?**

(a) 74 (b) 24.67 (c) 95.33 (d) 28

75. **For this data, which method would give the best measure of trend?**

(a) 3-yearly Moving Average (b) 4-yearly Moving Average
(c) Semi-Average (d) Graphical Method

76. **which component of time series represents a natural disaster?**

(a) Seasonal Variation (b) General Trend (c) Irregular Variation (d) Cyclic Variation

# 8 Published Statistics in Bangladesh

77. **Bangladesh Bureau of Statistics collect –**

(a) Official statistics (b) Non-official statistics (c) Semi-official statistics (d) None of the above

78. **Which statistics are published by an NGO?**

(a) Official statistics (b) Non-official statistics (c) Semi-official statistics (d) None of the above

79. **The primary source of official statistics in Bangladesh is –**

(a) WHO (b) BBS (c) CPD (d) UNDP

80. **In Bangladesh, a census is usually done every – years**

(a) 20 (b) 15 (c) 10 (d) 12

Answer Key:

1. (d) R.A. Fisher
2. (c) 150
3. (c) Sample
4. (c) 4
5. (d) Success rate
6. (c) Ratio scale
7. (d) Grade in a subject
8. (c) 206
9. (a) Temperature
10. (c) Ratio scale
11. (d) Grade in a subject
12. (a) $\prod x_i^2$
13. (b) Continuous variable
14. (a) 23
15. (a) 23
16. (d) -34
17. (a) Room no.
18. (d) 2
19. (a) Primary data
20. (d) John Tukey
21. (a) $K = 1 + 3.322 log N$
22. (b) Bar Diagram
23. (d) 5
24. (d) Mode
25. (b) Geometric Mean
26. (c) i & ii
27. (c) 7
28. (b) 8
29. (d) Mode
30. (d) 110th Percentile
31. (b) Geometric Mean
32. (a) All values are equal
33. (b) Median
34. (b) Harmonic mean
35. (d) Mode
36. (a) $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$
37. (c) 47
38. (b) n
39. (b) $n + 1$
40. (b) $\frac{n+1}{2}$
41. (c) 32.00
42. (c) Ogive
43. (b) 32
44. (b) 25-50
45. (b) 70
46. (d) 74
47. (d) 70th percentile
48. (c) Standard deviation
49. (c) 0
50. (a) (2,4)
51. (a) 2.87
52. (d) Coefficient of variation
53. (c) $\mu_2$
54. (c) $\frac{\mu_2}{\bar{x}} \times 100$
55. (d) Arithmetic Mean
56. (b) $\mu_3$
57. (d) $\mu_2' - \mu_1'^2$
58. (b) 0
59. (d) $\bar{x} - a$
60. (b) -2
61. (b) i and iii
62. (d) 29.45
63. (a) $Mean > Median > Mode$
64. (c) 0
65. (a) Left Skew
66. (d) 48
67. (c) Mesokurtic
68. (c) 3
69. (a) Mode
70. (d) i, ii &iii
71. (a) Arithmetic Mean
72. (b) General Trend
73. (d) Moving Median
74. (c) 95.33
75. (a) 3-yearly Moving Average
76. (c) Irregular Variation
77. (a) Official statistics
78. (c) Semi-official statistics
79. (b) BBS
80. (c) 10