Statistics MCQ Question Bank

First Paper

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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 tendency is 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 one is smallest?**
    (a) $\sum_{i=1}^{n}(X_i - Median)^2$ (b) $\sum_{i=1}^{n}(X_i - \bar{X})^2$ (c) $\sum_{i=1}^{n}(X_i - \sigma)^2$ (d) $\sum_{i=1}^{n}(X_i - Mode)^2$

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

33. **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

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

35. **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

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

37. **Which relationship is correct?**
    (a) $AM \times GM = HM^2$ (b) $AM \times HM = GM^2$ (c) $AM \times HM = GM^3$ (d) $AM \div GM = HM^2$

3.2 Arithmetic Mean

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

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

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

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

42. **The arithmetic mean of first n natural numbers-**

   (a) $\frac{n}{2}$ (b) $\frac{n+1}{2}$ (c) $\frac{n^2}{2}$ (d) $\frac{n^2-1}{2}$

43. **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   Geometric Mean

44. **Which data set is suitable for Geometric Mean?**

   (a) $1, -1, 2, 4, 6, 7$ (b) $1, 2, 4, 8, 16, 32$ (c) $0, 1, 2, 3, 4, 6$ (d) $1, 1, 2, 3, 4, 4, 5$

3.4   Mode

45. **Which of the following may be used to determine mode?**

   (a) Histogram   (b) Frequency Curve   (c) Ogive   (d) Frequency Polygon

3.5   Median

46. **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	≤ 20	20-25	25-50	50-60	69-70	≥ 70
Frequency	5	10	10	7	5	3
Cumulative Frequency	5	15	25	32	37	40

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

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

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

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

3.6   Partition Values

Answer the next two questions as per the following information.

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

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

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

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

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

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

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

4   Measures of Dispersion

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

    (a) Range   (b) Mean deviation

    (c) Standard deviation   (d) Coefficient of variation

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

    (a) ∞ (b) -1   (c) 0   (d) 1

54. **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)

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

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

56. **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

57. **Which can be used to measure dispersion?**

    (a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

58. **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) $\frac{\mu_3}{\sigma} \times 100$

59. **First moment around zero is** −

    (a) 0   (b) 1   (c) -1   (d) Arithmetic Mean

60. **Which might have a negative value?**

    (a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

61. **2nd Central Moment is** −

    (a) $\mu_2 - \mu_1'$ (b) $\mu_2 + \mu_1'$ (c) $\mu_2 - \mu_1'^2$ (d) $\mu_2' - \mu_1'^2$

62. **First central moment is equal to** −

    (a) 1   (b) 0   (c) -1   (d) $\bar{x} - a$

63. **First moment around a is equal to** −

    (a) 1   (b) 0   (c) -1   (d) $\bar{x} - a$

64. **The first raw moment about 3 is -5. What is the value of arithmetic mean?**

    (a) 2   (b) -2   (c) 0   (d) 8

65. **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

66. **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

67. **In case of positive skewness, which one is correct?**

(a) $Mean > Median > Mode$ (b) $Mean < Median < Mode$

(c) $Mean = Median = Mode$ (d) $Mean > Median < Mode$

68. **For a symmetrical distribution, $\beta_1 =$**

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

69. **$\sqrt{\beta_1} = -0.23$ implies–**

(a) Left Skew   (b) Symmetry   (c) Right Skew   (d) Mesokurtic

5.3 Kurtosis

70. **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

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

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

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

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

5.4 Misc

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

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

74. **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

75. **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

76. **Time Series has how many components?**

    (a) 2   (b) 3   (c) 4   (d) 5

77. **Which component involves period more than one (01) year?**

    (a) Seasonal Variation   (b) Cyclic Variation   (c) Irregular Variation   (d) Random Variation

78. **Which one is not a component of Time Series**

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

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

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

80. **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

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

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

82. **What is the last value of 3-yearly moving average?**

    (a) 93.55   (b) 95.53   (c) 95.33   (d) 59.33

83. **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

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

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

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

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

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

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

87. **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. (a) $\sum_{i=1}^{n}(X_i - Median)^2$
32. (b) Geometric Mean
33. (a) All values are equal
34. (b) Median
35. (b) Harmonic mean
36. (d) Mode
37. (b) $AM \times HM = GM^2$
38. (a) $\bar{x} = \dfrac{\sum f_i x_i}{\sum f_i}$
39. (c) 47
40. (b) n
41. (b) $n + 1$
42. (b) $\frac{n+1}{2}$
43. (c) 32.00

44. (b) $1, 2, 4, 8, 16, 32$
45. (a) Histogram
46. (c) Ogive
47. (b) 32
48. (b) 25-50
49. (b) 70
50. (d) 74
51. (d) 70th percentile
52. (c) Standard deviation
53. (c) 0
54. (a) (2,4)
55. (a) 2.87
56. (d) Coefficient of variation
57. (c) μ_2
58. (c) $\frac{\mu_2}{\bar{x}} \times 100$
59. (d) Arithmetic Mean
60. (b) μ_3
61. (d) $\mu_2' - \mu_1'^2$
62. (b) 0
63. (d) $\bar{x} - a$
64. (b) -2
65. (b) i and iii

66. (d) 29.45
67. (a) $Mean > Median > Mode$
68. (c) 0
69. (a) Left Skew
70. (d) 48
71. (c) Mesokurtic
72. (c) 3
73. (a) Mode
74. (d) i, ii &iii
75. (a) Arithmetic Mean
76. (c) 4
77. (b) Cyclic Variation
78. (d) Regular Variation
79. (b) General Trend
80. (d) Moving Median
81. (c) 95.33
82. (c) 95.33
83. (c) Irregular Variation
84. (a) Official statistics
85. (c) Semi-official statistics
86. (b) BBS
87. (c) 10