Statistics MCQ Question Bank

First Paper

Abdullah Al Mahmud

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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. $If x_1 = 2, x_2 = 3, x_3 = 4, x_4 = 6$**, and** $x_5 = 5, \sum_{i=1}^{4} x_i^2 = ?$
   (a) 80 (b) 87 (c) 90 (d) 105

10. **Capital and profit belong to a variable which is–**
    i. Bivariate
    ii. Quantitative
    iii. Qualitative

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

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

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

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

14. **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) $\sum x_i^2$

15. **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 $\sum x_i^2 = 15$

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

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

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

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

20. **Which one is discrete?**
    (a) Weight (b) Amount of rainfall
    (c) Temperature (d) No. of member in a family

21. **Which type of scale of measurement are religion and blood group?**
    (a) Interval (b) Ratio (c) Nominal (d) Ordinal

2 Collection, Organization, and Presentation of Data

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

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

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

25. **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) $K = 1 + 2.332logN$

26. **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

27. **If a value is zero, which measure is not usable?**

(a) Arithmetic Mean (b) Harmonic Mean (c) Geometrtic Mean (d) Mode

28. **How many measure of central tendency are there?**

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

29. **Which measure of central tendency is suitable for qualitative variable?**

(a) Arithmetic Mean (b) Harmonic Mean (c) Quadratic Mean (d) Mode

30. **In presence of negative values, which measure is not usable?**

(a) Arithmetic Mean (b) Geometric Mean (c) Quadratic Mean (d) Harmonic Mean

31. **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

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

32. **Fifth Decile is –**

(a) 0 (b) 8 (c) 7 (d) 6

33. **Which of the following is mode?**

(a) 4 (b) 8 (c) 0 (d) 7

34. **Which measure gives a value from within the values?**

(a) Arithmetic Mean (b) Geometric Mean (c) Median (d) Mode

35. **Which one is not a proper measure of central tendency?**

(a) 2nd Quartile (b) Third Decile (c) 3rd Quintile (d) 110th Percentile

36. **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) $\sum_{i=1}^{n}(X_i - Mode)^2$

37. **Which measure is not used in determining skewness?**

(a) Arithmetic Mean (b) Geometric Mean (c) Median (d) Mode

38. **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

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

40. **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

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

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

43. **With negative observations, which cannot be used**
i. Arithmetic Mean
ii. Geometric Mean
iii. Harmonic Mean
Which one is correct?
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

3.2 Arithmetic Mean

44. **Arithmetic Mean of first 25 natural numbers is –**
(a) 12 (b) 13 (c) 14 (d) 26

45. **Arithmetic Mean of two numbers is 25. If a number is 40, what is the other number?**
(a) 40 (b) 50 (c) 25 (d) 10

46. **Number of students in two classes are 50 and 55 and their combined arithmetic mean (AM) of marks is 82. If AM of the first class is 75, what is the AM of the other class?**
(a) 88.36 (b) 88.40 (c) 84.55 (d) 78.33

47. **The summation of deviation of each value from their arithmetic mean is –**
(a) 0 (b) 1 (c) 2 (d) 4

48. **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) $\bar{x} = \frac{\sum f_i}{N}$

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

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

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

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

53. **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

54. **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

55. **Which of the following may be used to determine mode?**
(a) Histogram (b) Frequency Curve (c) Ogive (d) Frequency Polygon

3.5 Median

56. **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

57. **How many values are between 20 and 70?**
(a) 20 (b) 32 (c) 35 (d) 37

58. **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.

59. **What is the 50th percentile?**
(a) 64 (b) 70 (c) 72 (d) 71

60. **Below which value lie 70 percent values?**
(a) 42 (b) 44 (c) 59 (d) 74

61. **Above which value lie 30% observations?**
(a) 3rd Quartile (b) Median (c) 30th Percentile (d) 70th percentile

4 Measures of Dispersion

62. **Which of the following is the best measure of dispersion?**
(a) Range (b) Mean deviation
(c) Standard deviation (d) Coefficient of variation

63. **What is the minimum possible value of standard deviation?**
(a) ∞ (b) -1 (c) 0 (d) 1

64. **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)

65. **What is the standard deviation of first 10 natural numbers?**
(a) 2.87 (b) 3.02 (c) 0 (d) 2.78

66. **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

67. **Which quantity uniquely characterizes a distribution?**
(a) Median (b) Quantile (c) Moments (d) Trend
Which one is correct?
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

68. **Which can be used to measure dispersion?**
(a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

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

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

71. **Which might have a negative value?**
(a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

72. **2nd Central Moment is –**
(a) $\mu_2 - \mu_1'$ (b) $\mu_2 + \mu_1'$ (c) $\mu_2 - \mu_1'^2$ (d) $\mu_2' - \mu_1'^2$

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

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

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

76. **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

77. **Characteristics of a skewed distributon are –**

i. $Mean \neq Median \neq Mode$
ii. Differences of upper and lower quartiles from median are unequal
iii. Frequency curve is asymmetric

78. **In a distribution, $\mu_2 = 25, \mu_3 = 20$, and $\mu_4 = 2200$; the distribution is –**

(a) Negativelky skewed (b) leptokurtic (c) Platykurtic (d) Symmetric

79. **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

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

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

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

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

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

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

83. **First 3 moments about 2 are 1, 2 and 8, respectively. What is the arithmetic mena?**

(a) 1 (b) 2 (c) 3 (d) 4

84. **What is the second central moments of first 10 natural numbers?**

(a) 9.90 (b) 9.09 (c) 8.25 (d) 5.67

85. **Frequencies of higher values are smaller in – distribution**

(a) Positively skewed (b) Negatively skewed (c) Symmetric (d) Mesokurtic

5.3 Kurtosis

86. **How many types of kurtosis are there?**

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

87. **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

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

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

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

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

5.4 Misc

90. **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

91. **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

92. **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

93. **Time Series has how many components?**
(a) 2 (b) 3 (c) 4 (d) 5

94. **Which component involves period more than one (01) year?**
(a) Seasonal Variation (b) Cyclic Variation (c) Irregular Variation (d) Random Variation

95. **Which one is not a component of Time Series**
(a) Seasonal Variation (b) Cyclic Variation (c) General Trend (d) Regular Variation

96. **A company is constantly getting greater revenue than previous year; this is–**
(a) Seasonal Variation (b) General Trend (c) Irregular Variation (d) Cyclic Variation

97. **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

98. **In Semi-Average method, what is the 2nd average?**
(a) 74 (b) 24.67 (c) 95.33 (d) 28

99. **What is the last value of 3-yearly moving average?**
(a) 93.55 (b) 95.53 (c) 95.33 (d) 59.33

100. **Which component of time series is affected by economic changes due to war?**
(a) Trend (b) Seasonal Variation (c) Irregular Variation (d) Cyclic Variation

101. **Demand for warm clothes is higher in winter season ans less in summer. Which component of time series deals with this change?**
(a) Trend (b) Seasonal Variation (c) Irregular Variation (d) Cyclic Variation

102. **Death rates of a country for 7 years are given below:**

Year	2009	2010	2011	2012	2013	2014	2015
Rate	5	7	6	8	7	12	13

In semi-average method, which year will be excluded?

(a) 2012 (b) 2013 (c) 2015 (d) 2009

103. **Which component of time series represents a natural disaster?**

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

104. **How many models of time series are there to combine the components?**

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

8 Published Statistics in Bangladesh

105. **Limitations of published statistics in Bangladesh are –**

i. Wrong data collection method
ii. Insufficient data
iii. Lack of proper training

Which one is correct?

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

106. **How many sources of published statistics are there in Bangladesh?**

(a) 2 (b) 3 (c) 4 (d) 6

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

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

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

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

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

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

110. **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. (c) 90
10. (a) i and ii
11. (a) Temperature
12. (c) Ratio scale
13. (d) Grade in a subject
14. (a) $\prod x_i^2$
15. (b) Continuous variable
16. (a) 23
17. (a) 23
18. (d) -34
19. (a) Room no.
20. (d) No. of member in a family
21. (c) Nominal
22. (d) 2
23. (a) Primary data
24. (d) John Tukey
25. (a) $K = 1 + 3.322logN$
26. (b) Bar Diagram
27. (c) Geometrtic Mean
28. (d) 5
29. (d) Mode
30. (b) Geometric Mean
31. (c) i & ii
32. (c) 7
33. (b) 8
34. (d) Mode
35. (d) 110th Percentile
36. (a) $\sum_{i=1}^{n}(X_i - Median)^2$
37. (b) Geometric Mean
38. (a) All values are equal
39. (b) Median
40. (b) Harmonic mean
41. (d) Mode
42. (b) $AM \times HM = GM^2$
43. (c) ii and iii
44. (b) 13
45. (d) 10
46. (a) 88.36
47. (a) 0
48. (a) $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$
49. (c) 47
50. (b) n
51. (b) $n + 1$
52. (b) $\frac{n+1}{2}$
53. (c) 32.00
54. (b) $1, 2, 4, 8, 16, 32$
55. (a) Histogram
56. (c) Ogive
57. (b) 32
58. (b) 25-50
59. (b) 70
60. (d) 74
61. (d) 70th percentile
62. (c) Standard deviation
63. (c) 0
64. (a) (2,4)
65. (a) 2.87
66. (d) Coefficient of variation
67. (c) Moments
67. (d) i, ii and iii
68. (c) μ_2
69. (c) $\frac{\mu_2}{\bar{x}} \times 100$
70. (d) Arithmetic Mean
71. (b) μ_3
72. (d) $\mu_2' - \mu_1'^2$
73. (b) 0
74. (d) $\bar{x} - a$
75. (b) -2
76. (b) i and iii
78. (b) leptokurtic
79. (d) 29.45
80. (a) $Mean > Median > Mode$
81. (c) 0
82. (a) Left Skew
83. (c) 3
84. (c) 8.25
85. (a) Positively skewed
86. (b) 3
87. (d) 48
88. (c) Mesokurtic
89. (c) 3
90. (a) Mode
91. (d) i, ii &iii
92. (a) Arithmetic Mean
93. (c) 4
94. (b) Cyclic Variation
95. (d) Regular Variation
96. (b) General Trend
97. (d) Moving Median
98. (c) 95.33
99. (c) 95.33
100. (c) Irregular Variation
101. (b) Seasonal Variation
102. (b) 2013
103. (c) Irregular Variation
104. (a) 2
105. (d) i, ii and iii
106. (b) 3
107. (a) Official statistics
108. (c) Semi-official statistics
109. (b) BBS
110. (c) 10