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. **Which is not a function of statistics?**
   (a) Data collection (b) Data organization (c) Analysis (d) Database creation

3. **Which one is an example of an infinite population?**
   (a) Students of Dhaka University (b) Cadets of SCC
   (c) Minor planets in the solar system (d) Red blood cells in a person's body

4. **A researcher collected data on age and income of the people in a city. The variables are –**
   i. bi-variate
   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

5. **Which of the following is correct?**
   (a) $\sum_{i=1}^{20} cx_i = nc\sum_{i=1}^{20} x_i$ (b) $\sum_{i=1}^{20} cx_i = nc\sum_{i=1}^{20} x_i$ (c) $\sum_{i=1}^{20} cx_i = c\sum_{i=1}^{20} x_i$ (d) $\sum_{i=1}^{20} cx_i = c^2\sum_{i=1}^{20} x_i$

6. **Which cannot be performed using Univariate data?**
   (a) Central tendency (b) Dispersion (c) Skewness (d) Regression

7. **Cities ranked according to habitability level show – measurement scale**
   (a) Nominal (b) Ratio (c) Interval (d) Ordinal

8. **Which is not an example of shift of scale?**
   (a) $y_i = \frac{x_i}{a}$ (b) $y_i = cx_i$ (c) $y_i = x_i - 2$ (d) $y_i = \frac{cx_i}{d}$

9. **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

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

11. **What is $\sum_{i=1}^{n} bx_i$ equal to?**
    (a) $b\sum_{i=1}^{n} nx_i$ (b) $b\sum_{i=1}^{n} x_i$ (c) $\sum_{i=1}^{n} nx_i$ (d) $bn\sum_{i=1}^{n} x_i$

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

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

14. **In which scale of measurement, zero is regarded as true zero?**

(a) Nominal scale (b) Interval scale (c) Ratio scale (d) Ordinal scale

15. **Which measurement scale does height belong to?**

(a) Nominal (b) Ordinal (c) Interval (d) Ratio

16. **Which is a discrete variable?**

(a) Weight (b) Amount of rainfall (c) Distance (d) Grade in a subject

17. **Which is a discrete variable?**

(a) Length of a rope (b) Weight of books in a library

(c) Distance (d) No. of particles in atoms

18. $If x_1 = 2, x_2 = -3, x_3 = 7$, **and** $x_4 = 12, \sum_{i=1}^{4} x_i^2 =?$

(a) 26 (b) 106 (c) 206 (d) 216

19. **If** $x_1 = 5$, $x_2 = -4$, $x_3 = 9$, **and** $x_4 = 0$, **what is** $\sum_{i=1}^{4} x_i^2$**?**

(a) 82 (b) 97 (c) 107 (d) 122

20. **If** $x_1 = 3$, $x_2 = 2$, $x_3 = -6$, **and** $x_4 = 4$, **what is** $\sum_{i=1}^{4} x_i^2$**?**

(a) 45 (b) 65 (c) 85 (d) 89

21. **If** $x_1 = 4$, $x_2 = 1$, $x_3 = -2$, **and** $x_4 = 3$, **find** $\sum_{i=1}^{4} (x_i^2 + 3)$**?**

(a) 40 (b) 50 (c) 42 (d) 56

22. **If** $x_1 = 4$, $x_2 = -2$, $x_3 = 1$, **and** $x_4 = 5$, **calculate** $\sum_{i=1}^{4} (2x_i^2 - x_i)$**?**

(a) 38 (b) 42 (c) 46 (d) 84

23. **If** $x_1 = 3$, $x_2 = 1$, $x_3 = 0$, **and** $x_4 = 2$, **find** $\sum_{i=1}^{4} x_i^2 - \sum_{i=1}^{4} x_i$**?**

(a) 7 (b) 9 (c) 8 (d) 13

24. **If** $x_1 = 5$, $x_2 = 4$, $x_3 = -3$, **and** $x_4 = 2$, **find** $\sum_{i=1}^{4} (x_i^2 + x_i)$**?**

(a) 58 (b) 62 (c) 66 (d) 72

25. **If** $x_1 = 2$, $x_2 = 3$, $x_3 = -1$, **and** $x_4 = 0$, **calculate** $\sum_{i=1}^{4} (x_i^2 - 2)$**?**

(a) 0 (b) 6 (c) 8 (d) 10

26. $If x_1 = 2, x_2 = 3, x_3 = 4, x_4 = 6$, **and** $x_5 = 5, \sum_{i=1}^{4} x_i^2 =$?

(a) 80 (b) 87 (c) 90 (d) 105

27. **If** $f_i = 3, 5, 7$ **and** $x_i = 2, 4, 7$**; ; what is the value of** $\sum_{i=1}^{3} f_i x_i^2$**?**

(a) 450 (b) 350 (c) 345 (d) 435

28. **If** $x_1 = 3$**,** $x_2 = -1$**,** $x_3 = 2$**, and** $x_4 = 0$**, find** $\sum_{i=1}^{4}(x_i^3 + 2x_i)$**?**

(a) 12 (b) 18 (c) 24 (d) 28

29. **If** $x_1 = 4$**,** $x_2 = 1$**,** $x_3 = -2$**, and** $x_4 = 3$**, calculate** $\sum_{i=1}^{4}(x_i^2 + 4x_i - 1)$**?**

(a) 16 (b) 24 (c) 34 (d) 50

30. **If** $x_1 = 1$**,** $x_2 = 2$**,** $x_3 = -3$**, and** $x_4 = 4$**, find** $\sum_{i=1}^{4}(3x_i^3 - x_i^2)$**?**

(a) 108 (b) 114 (c) -8 (d) 201

31. **If** $x_1 = 5$**,** $x_2 = 0$**,** $x_3 = -1$**, and** $x_4 = 2$**, determine** $\sum_{i=1}^{4}(x_i^3 + x_i^2 + 3)$**?**

(a) 173 (b) 174 (c) 164 (d) 172

Answer the next three questions based on the following information.

The values of x_i and f_i are given below:

x_i	1	2	3	4
f_i	2	3	4	1

32. **Find** $\sum_{i=1}^{4} f_i x_i$**.**

(a) 20 (b) 21 (c) 22 (d) 24

33. **Compute** $\sum_{i=1}^{4} f_i x_i^2$**.**

(a) 30 (b) 35 (c) 66 (d) 64

34. **Determine** $\sum_{i=1}^{4} f_i^2 x_i$**.**

(a) 74 (b) 49 (c) 78 (d) 65

35. **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

36. **Which one falls in the category of interval scale?**

(a) Temperature (b) Speed (c) Distance (d) Film rating

37. **Which one falls in the category of nominal scale?**

(a) Height (b) Temperature (c) Gender (d) Age

38. **Which of the following is an example of an ordinal scale?**

(a) Temperature (b) IQ Score (c) Educational Level (d) Weight

39. **Which of the following is not example of a ratio scale?**

(a) Temperature (b) Time (c) Blood Pressure (d) Speed

40. **In which scale of measurement, zero is regarded as true zero?**

(a) Nominal scale (b) Interval scale (c) Ratio scale (d) Ordinal scale

41. **Which is a discrete variable?**

(a) Weight (b) Amount of rainfall (c) Distance (d) Grade in a subject

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

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

44. **Which is considered statistics?**

(a) Jaman obtained 75 in statistics (b) Shafiq lives at Road no. 5

(c) Mean monthly income in a city is 60,000 taka (d) Width of a book is 10 cm

45. **What is the value of $\sum(x_i + 4)$ if x ={2,3}?**

(a) 23 (b) 47 (c) 22 (d) 13

46. **If $x_1 = 2, x_2 = 3, x_3 = 5, x_4 = 7$ and $y_1 = 3, y_2 = 4, y_3 = 5, y_4 = 8; \sum_{i=2}^{4} x_i y_i =$?**

(a) 14 (b) 201 (c) 93 (d) 117

47. **From the following table, $\sum_{i=1}^{4} x_i y_i =$?**

X	1	5	3	2
Y	20	12	3	14

(a) 14 (b) 201 (c) 99 (d) 109

48. **What is the value of $\sum(x_i - 4)^2$?**
(a) 23 (b) 135 (c) 484 (d) 119

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

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

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

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

Answer the next two questions based on the following information

$$X = 20, 25, 30, 40$$

53. **Find** $\sum(X_i + 10)$
(a) 150 (b) 155 (c) 125 (d) 250

54. $\sum(X_i - 30)^2$
(a) 225 (b) 230 (c) 420 (d) 235

2 Collection, Organization, and Presentation of Data

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

56. **What is the raw material of research?**
(a) Data (b) Theory (c) Graph (d) Mean

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

Answer the next THREE questions based on the following information

Radius of 80 trees are recorded and this frequency distribution is constructed.

Radius (cm)	0-10	10-20	20-30	30-40
No. of Trees	20	15	21	24

58. **How many trees have radius between 10 and 30?**
(a) 30 (b) 15 (c) 36 (d) 21

59. **How many trees have radius at least 20?**
(a) 44 (b) 45 (c) 24 (d) 21

60. **What percent of trees have radius between 20 and 40?**
(a) 44% (b) 56% (c) 46% (d) 53%

61. **Which formula is used to find angles for Pie Chart?**
(a) $\theta_i = \frac{f_i}{N} \times 100$ (b) $\theta_i = \frac{f_i}{100} \times 360$ (c) $\theta_i = \frac{f_i}{N} \times 360$ (d) $\theta_i = \frac{f_i}{N-1} \times 360$

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

63. **If all the rats in Sylhet is a population, all the rats in Sylhet Airport is –**
(a) Data (b) Sample (c) Statistics (d) Frequency

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

65. **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

66. **Which statement is correct**
(a) Quartiles are well defined (b) Outliers affect Median
(c) Median is always present in data (d) Quadratic mean is widely used

67. **When is the statement $AM = GM = HM$ true?**
(a) When the values are natural numbers (b) When all the values are equal
(c) When all the values have equal frequency (d) When mode is greater than median

68. **If a value is zero, which measure is not usable?**
(a) Arithmetic Mean (b) Harmonic Mean (c) Geometrtic Mean (d) Mode

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

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

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

72. **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	5	1

73. **Fifth Decile is –**

(a) 0 (b) 8.5 (c) 7.5 (d) 8

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

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

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

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

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

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

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

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

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

79. **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

80. **In the presence of outlier(s), which measure of central tendency is suitable?**

(a) Arithmetic mean (b) Median (c) Quadratic mean (d) Power mean

81. **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

82. **Which measure might have more than one value?**

(a) Arithmetic mean (b) Geometric mean (c) Quadratic mean (d) Mode

83. **Which relationship is correct?**

(a) $AM \times GM = HM^2$ (b) $AM \times HM = GM^2$ (c) $AM \times HM = GM^3$ (d) $AM \div GM = HM^2$

84. **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

85. **A good measure of central tendency -**

i. is loosly defined
ii. takes into consideration all values
iii. easily understandable

Which one is correct?

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

86. **The arithmetic mean and geometric mean of two non-zero positive numbers are 15 and 10, respectively. What is harmonic mean?**

(a) 6.61 (b) 6.67 (c) 7.66 (d) 6.76

3.2 Arithmetic Mean

87. **If $\sum(x_i - k) = 0$, what is the value of k?**
(a) n (b) $\bar{x}$ (c) x (d) $n\bar{x}$

88. **Arithmetic Mean is –**
i. Rigidly defined
ii. Unaffected by sample fluctuation
iii. Suitable for algebraic analysis
Which one is correct?
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

89. **Find the arithmetic mean:** $6, 9, 12, \cdots, 84$
(a) 40 (b) 45 (c) 50 (d) 55

90. **The arithmetic mean of first 10 natural numbers is:**
(a) 6 (b) 8.5 (c) 5.5 (d) 5.6

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

92. **An equation is: y = 5x + 9. If** $\bar{x} = 20, \bar{y} =?$
(a) 100 (b) 209 (c) 109 (d) 29

93. **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

94. **The Arithmetic Mean of two numbers is 30. If one number is 40, what is the other number?**
(a) 20 (b) 30 (c) 40 (d) 60

95. **The Arithmetic Mean of two numbers is 35. If one number is 50, what is the other number?**
(a) 25 (b) 20 (c) 40 (d) 70

96. **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

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

98. **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) $\bar{X} = \frac{\sum f_i}{N}$

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

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

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

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

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

103. **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 Harmonic Mean

104. **Which formula is correct for harmonic mean?**

(a) $\frac{n}{\sum_{i=1}^{n} \frac{f_i}{x_i}}$ (b) $\frac{f_i}{\sum_{i=1}^{n} \frac{f_i}{x_i}}$ (c) $\frac{\sum f_i}{\sum_{i=1}^{n} \frac{f_i}{x_i}}$ (d) $\frac{\sum f_i}{\sum_{i=1}^{n} \frac{1}{x_i}}$

105. **What is true of harmonic mean?**

i. uses all values in tha data
ii. undefined if the any value is zero
iii. affected by extreme values

Which one is correct?

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

106. **What is the harmonic mean of these values: 10, 12, 13, 15, 20, 25**

(a) 12.49 (b) 14.93 (c) 14.39 (d) 13.49

107. **A rate is defined as $R = \frac{c}{d}$; c and d are arbitrary numbers. If c is constant, which mean is used?**

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

108. **A rate is defined as $R = \frac{c}{d}$; c and d are arbitrary numbers. If d is constant, which mean is used?**

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

109. **A rate is defined as $R = \frac{c}{d}$; c and d are arbitrary numbers. If neither c or d is constant, which mean is used?**

i. Weighted Arithmetic Mean
ii. Weighted Harmonic 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

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

110. **Which is the respresentation of Harmonic Mean?**

(a) Mean of Reciprocal (b) Reciprocal of Mean
(c) Reciprocal of Mean of Reciprocal (d) None of the above

3.4 Geometric Mean

111. **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) $1, 1, 2, 3, 4, 4, 5$

112. **Find geometric mean: 2, 4, 8, 16**

(a) 6.65 (b) 6.56 (c) 5.66 (d) 5.56

Answer the next three questions based on the following information

The data collected in a research is this: 1, 2, 4, 8, 16, 32

113. **Which measure is suitable?**

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

114. **What is the arithmetic mean of the data?**

(a) 8.5 (b) 10 (c) 8 (d) 10.5

115. **What is the geometric mean?**

(a) 8.5 (b) 5.66 (c) 6.55 (d) 16

3.5 Mode

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

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

117. **What is the mode the set: 7, 8, 8, 9, 9, 13, 17, 9, 8, 8**

(a) 17 (b) 9

(c) 8 (d) Cqannot be determined

3.6 Median

118. **Which can be measured from the Ogive?**

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

119. **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

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

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

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

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

122. **What is the median of the following values: 4, 5, 2, 1, 8, 3**

(a) 1.5 (b) 2 (c) 3.5 (d) 4

3.7 Partition Values

Answer the next three questions as per the following information.

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

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

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

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

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

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

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

Answer the next three questions as per the following information.

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

126. **What is the median?**

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

127. **What is the first quartile?**

(a) 42.4 (b) 44.7 (c) 51.5 (d) 64.2

128. **Above which value lie 60% observations?**

(a) 70.4 (b) 72.0 (c) 74.6 (d) 66.4

4 Measures of Dispersion

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

(a) Range (b) Mean deviation

(c) Standard deviation (d) Coefficient of variation

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

(a) ∞ (b) -1 (c) 0 (d) 1

131. **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)

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

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

133. **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

134. **Which is not a type of Moments**

(a) Central Moments (b) Raw Moments (c) Corrected Moments (d) Rectified Moments

135. **The second moment around w is –**

(a) $\frac{\sum(x_i-\bar{x})^n}{w}$ (b) $\frac{\sum(x_i-\bar{x})^2}{w}$ (c) $\frac{\sum(x_i-w)^2}{n}$ (d) $\frac{\sum(x_i-w)^n}{2}$

136. **Which relatonship is correct?**

(a) $\mu_1' = \bar{x} + a$ (b) $\mu_1' = \bar{x} - a$ (c) $\mu_2' = \bar{x} + a$ (d) $\mu_1 = \bar{x} - a$

137. **What is formula of rth raw moment for grouped data about a?**

(a) $\frac{\sum f_i(x_i-a)^r}{n}$ (b) $\frac{\sum f_i(x_i-\bar{x})^r}{n}$ (c) $\frac{\sum(x_i-a)^r}{n}$ (d) $\frac{\sum(x_i+a)^r}{n}$

138. **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

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

(a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

140. **The formula of coefficient of variance (CV) is –**

(a) $\frac{\sqrt{\mu_2}}{n} \times 100$ (b) $\frac{\mu_2}{\mu_1} \times 100$ (c) $\frac{\sqrt{\mu_2}}{\bar{x}} \times 100$ (d) $\frac{\mu_3}{\sigma} \times 100$

141. **First moment around zero is –**

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

142. **Which moment is equal to zero?**

(a) First raw moment around 1 (b) Second central moment

(c) First central moment (d) Second raw moment around 0

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

(a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

144. **2nd Central Moment is –**

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

145. **First central moment is equal to –**

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

146. **First moment around a is equal to –**

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

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

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

148. **The first raw moment about 4 is -4. What is the value of arithmetic mean?**

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

149. **The first raw moment about 0 is 2. What is the value of arithmetic mean?**

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

150. **The arithmetic mean of a variable is 4. What is the first raw moment around 2?**

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

151. **The arithmetic mean of a variable is 10. What is the first raw moment around 0?**

(a) 10 (b) -2 (c) 0 (d) 8

152. **The arithmetic mean of a variable is 2.6. What is the first raw moment around 6?**

(a) 2.2 (b) -3.4 (c) 0.1 (d) 1.8

153. **Moments can be–**

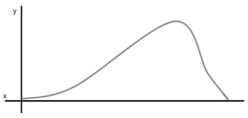
i. positive
ii. not negative
iii. positive or negative

Which one is correct?

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

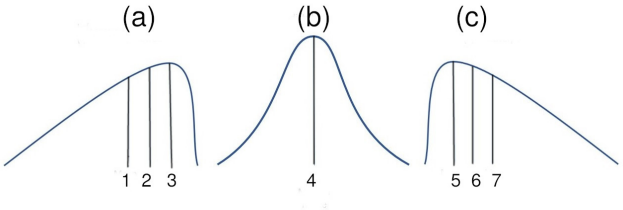
5.2 Skewness

154. **The following graph is an example of –**



(a) Positive Skew (b) Negative Skew (c) No Skew (d) Not detectable

Answer the next ? questions based on the following information



155. **The curve (a) is an example of**

(a) Positive Skew (b) Negative Skew (c) No Skew (d) Not detectable

156. **The curve (b) is an example of**

(a) Positive Skew (b) Negative Skew (c) No Skew (d) Not detectable

157. **In Image (b), what is denoted by 4th value?**

(a) Mean (b) Median (c) Mode (d) All of the above

158. **In Image (c), what is in 6th value?**

(a) Mean (b) Median (c) Mode (d) None of the above

159. **What is the value corresponding to the position 3?**

(a) Mean (b) Median (c) Mode (d) None of the above

160. **What is the value corresponding to the position 7?**

(a) Mean (b) Median (c) Mode (d) None of the above

161. **If $\gamma_1 > 0$, the data is -**

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

162. **Which relationship is correct?**

(a) $M_o = 2Me - \bar{x}$ (b) $M_o = 3Me - \bar{x}$ (c) $M_o = 3Me - 2\bar{x}$ (d) $M_o = 2Me - 3\bar{x}$

163. **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

164. **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

165. **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

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

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

167. **For a symmetrical distribution, $\beta_1 = --$**

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

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

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

169. $\gamma_1 = 0.43$ **implies–**

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

170. $\gamma_1 = 0.0001$ **implies–**

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

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

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

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

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

173. **Frequencies of low and high values are smaller in – distribution**

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

174. **Frequencies of higher values are smaller and of low values are higher in – distribution**

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

175. **Frequencies of higher values are higher and of low values are lower in – distribution**

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

176. **In a postively-skewed distribution–**

i. Frequencies of higher values are lower
ii. Frequencies of low values are higher
iii. Frequencies of higher values are higher

Which one is correct?

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

177. **In a negatively-skewed distribution–**

i. Frequencies of higher values are lower
ii. Frequencies of low values are lower
iii. Frequencies of higher values are higher

Which one is correct?

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

178. **In a symmetric distribution–**

i. Frequencies of higher values are lower
ii. Frequencies of low values are higher
iii. Frequencies of low values are lower

Which one is correct?

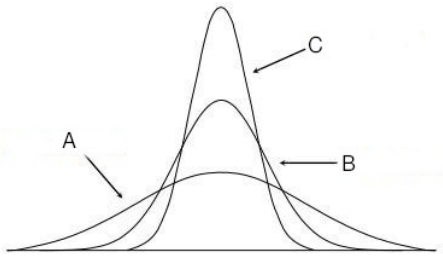
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

179. **Which formula is correct for determining skewness?**

(a) $\gamma_1 = \sqrt{\frac{\mu_3^2}{\mu_2^3}}$ (b) $\gamma_1 = \sqrt{\beta_1^2}$ (c) $\gamma_1 = \sqrt{\frac{\mu_3}{\mu_2^3}}$ (d) $\frac{\mu_2}{\sqrt{\mu_3^2}}$

5.3 Kurtosis

180. **Which curve is platykurtic?**



(a) A (b) B (c) C (d) None

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

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

182. **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

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

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

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

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

185. **What is the relationship between γ_2 and β_2?**

(a) $\gamma_2 = \beta_2 + 3$ (b) $\gamma_2 = 2\beta_2 - 3$ (c) $\gamma_2 = \beta_2 - 1$ (d) $\gamma_2 = \beta_2 - 3$

5.4 Misc

186. **What is formula of the left inner fence for a box and whisker plot?**

(a) $Q_1 - 1.5 \times IQR$ (b) $Q_3 + 1.5 \times IQR$ (c) $Q_1 - 3 \times IQR$ (d) $Q_3 + 1.5 \times IQR$

187. **What is the formula of IQR?**

(a) $IQR = Q_3 + Q_1$ (b) $IQR = Q_3 - Q_1$ (c) $IQR = 2Q_3 - Q_1$ (d) $IQR = \frac{Q_3 - Q_1}{2}$

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

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

189. **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

190. **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

191. **Which is not a time series data?**

(a) Number of calls received per week
(b) No. of road accidents on different days
(c) No. of earthquakes in different regions
(d) No. of particles decayed in each second

192. **Which is not a time series data?**

(a) Daily closing prices of a stock
(b) Annual temperature records of a city
(c) Number of students in a each class
(d) Number of visitors to a website each day

193. **Which is an example of time series data?**

(a) Number of calls received by a call center each month
(b) Height of children at different ages
(c) Tota salary of all employees at a company
(d) Population of different countries in 2020

194. **Which is a type of trend?**

i. Linear trend
ii. Non-linear trend
iii. Cyclic trend

Which one is correct?

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

195. **Which can measure trend most precisely?**

(a) Graphical method (b) Semi-average method
(c) Moving average method (d) Quarter-average method

196. **Which is the multiplicative time series model?**

(a) $Y_t = T_t \times S_t \times C_t \times R_t$ (b) $Y_t = T_t \times D_t \times C_t \times R_t$
(c) $Y_t = T_t \times P_t \times C_t \times R_t$ (d) $Y_t = T_t \times G_t \times C_t \times R_t$

Answer the next two questions based on the following information

Commodity wise export shipments (In million US$) of Frozen and live fish in Bangladesh are given below.

Months	2022-23 (July-Dec)	2023-24 (Jan-Jun)	2022-23 (July-Dec)
Amount	246.38	175.19	215.13

Table 1: Source:BB

197. **Which component of time series is most evident?**

(a) Irregular variation (b) Cyclic variation (c) Trend (d) Seasonal variation

198. **Which value is most probable in the next period?**

(a) 200 (b) 190 (c) 130 (d) 220

199. **A linear trend goes along a –**

(a) a curved line (b) a wave (c) straight line (d) circle

200. **A non-linear trend goes along a –**

(a) a curved line (b) a wave (c) a cubic pattern (d) Any of the above

201. **Which measure of trend is subjective?**

(a) Semi-average method (b) Graphical method
(c) Moving average method (d) None of the above

Answer the next THREE questions based on the following information

Year	2016	2017	2018	2019	2020	2021	2022	2023
USD Exchange Rate	78.35	79.49	82.87	83.26	84.60	84.37	85.80	106.70

Table 2: Source–Investing.com

202. **What is the second value of semi-average method?**

(a) 85.40 (b) 90.37 (c) 91.73 (d) 89.78

203. **What kind of a trend do the data have?**

(a) Upward (b) Downward

(c) Both upward & downward (d) No trend

204. **Which component of time series is visible in the later part of the data?**

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

Answer the next THREE questions based on the following information

Year	2016	2017	2018	2019	2020	2021	2022	2023
USD Exchange Rate	78.35	79.49	82.87	83.26	84.60	84.37	85.80	106.70

Table 3: Source–Investing.com

205. **What is the second value of semi-average method?**

(a) 85.40 (b) 90.37 (c) 91.73 (d) 89.78

206. **What kind of a trend do the data have?**

(a) Upward (b) Downward

(c) Both upward & downward (d) No trend

207. **Which component of time series is visible in the later part of the data?**

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

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

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

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

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

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

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

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

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

212. **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

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

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

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

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

215. **Which component of time series is affected by economic changes due to war?**

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

216. **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

217. **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

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

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

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

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

220. **Which one reflects an irregular variation?**

(a) Fluctuation in production due to war (b) Price hike due to famine

(c) Rise of Temperature to drought (d) Any of the above

8 Published Statistics in Bangladesh

221. **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

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

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

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

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

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

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

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

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

226. **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. (d) Database creation
3. (d) Red blood cells in a person's body
4. (a) i and ii
5. (b) $\sum_{i=1}^{20} cx_i = nc\sum_{i=1}^{20} x_i$
6. (d) Regression
7. (d) Ordinal
8. (a) $y_i = \frac{x_i}{a}$
9. (c) 150
10. (c) Sample
11. (b) $b\sum_{i=1}^{n} x_i$
12. (c) 4
13. (d) Success rate
14. (c) Ratio scale
15. (d) Ratio
16. (d) Grade in a subject
17. (d) No. of particles in atoms
18. (c) 206
19. (d) 122
20. (b) 65
21. (c) 42
22. (d) 84
23. (c) 8
24. (b) 62
25. (b) 6
26. (a) 90
27. (d) 435
28. (c) 24
29. (d) 50
30. (a) 108
31. (b) 174
32. (d) 24
33. (c) 66
34. (a) 74
35. (a) i and ii
36. (a) Temperature
37. (c) Gender
38. (c) Educational Level
39. (a) Temperature
40. (c) Ratio scale
41. (d) Grade in a subject
42. (a) $\prod x_i^2$
43. (b) Continuous variable
44. (c) Mean monthly income in a city is 60,000 taka
45. (d) 13
46. (c) 93
47. (c) 99
48. (d) 119
49. (d) -34
50. (a) Room no.
51. (d) No. of member in a family
52. (c) Nominal
53. (b) 155
54. (a) 225
55. (d) 2
56. (a) Data
57. (a) Primary data
58. (c) 36
59. (b) 45
60. (a) 44%
61. (c) $\theta_i = \frac{f_i}{N} \times 360$
62. (d) John Tukey
63. (b) Sample
64. (a) $K = 1 + 3.322logN$
65. (b) Bar Diagram
66. (a) Quartiles are well defined
67. (b) When all the values are equal
68. (c) Geometric Mean
69. (d) 5
70. (d) Mode
71. (b) Geometric Mean
72. (c) i & ii
73. (c) 7.5
74. (b) 8
75. (d) Mode
76. (d) 110th Percentile
77. (a) $\sum_{i=1}^{n}(X_i - Median)^2$
78. (b) Geometric Mean
79. (a) All values are equal
80. (b) Median
81. (b) Harmonic mean
82. (d) Mode
83. (b) $AM \times HM = GM^2$
84. (c) ii and iii
85. (c) ii and iii
86. (b) 6.67
87. (b) $\bar{x}$
88. (b) i and iii
89. (a) 40
90. (c) 5.5
91. (b) 13
92. (c) 109
93. (d) 10
94. (a) 20
95. (b) 20
96. (a) 88.36
97. (a) 0

98. (a) $\bar{X} = \dfrac{\sum f_i x_i}{\sum f_i}$

99. (c) 47

100. (b) n

101. (b) $n + 1$

102. (b) $\frac{n+1}{2}$

103. (c) 32.00

104. (a) $\dfrac{n}{\sum_{i=1}^{n} \dfrac{f_i}{x_i}}$

105. (a) i and ii

106. (c) 14.39

107. (c) Harmonic Mean

108. (a) Arithmetic Mean

109. (a) i and ii

109. (c) Harmonic Mean

110. (c) Reciprocal of Mean of Reciprocal

111. (b) $1, 2, 4, 8, 16, 32$

112. (c) 5.66

113. (b) Geometric Mean

114. (d) 10.5

115. (b) 5.66

116. (a) Histogram

117. (c) 8

118. (c) Median

119. (c) Ogive

120. (b) 32

121. (b) 25-50

122. (c) 3.5

123. (b) 70

124. (d) 74

125. (d) 70th percentile

126. (b) 70

127. (c) 51.5

128. (c) 74.6

129. (c) Standard deviation

130. (c) 0

131. (a) (2,4)

132. (a) 2.87

133. (d) Coefficient of variation

134. (d) Rectified Moments

135. (a) $\frac{\sum (x_i - \bar{x})^n}{w}$

136. (b) $\mu_1' = \bar{x} - a$

137. (a) $\frac{\sum f_i (x_i - a)^r}{n}$

138. (c) Moments

138. (d) i, ii and iii

139. (c) μ_2

140. (c) $\frac{\sqrt{\mu_2}}{\bar{x}} \times 100$

141. (d) Arithmetic Mean

142. (c) First central moment

143. (b) μ_3

144. (d) $\mu_2' - \mu_1'^2$

145. (b) 0

146. (d) $\bar{x} - a$

147. (b) -2

148. (c) 0

149. (a) 2

150. (a) 2

151. (a) 10

152. (b) -3.4

153. (b) i and iii

154. (a) Positive Skew

155. (b) Negative Skew

156. (a) Positive Skew

157. (d) All of the above

158. (b) Median

159. (c) Mode

160. (a) Mean

161. (b) Positively skewed

162. (c) $M_o = 3Me - 2\bar{x}$

164. (b) leptokurtic

165. (d) 29.45

166. (a) $Mean > Median > Mode$

167. (c) 0

168. (a) Left Skew

169. (c) Right Skew

170. (b) Symmetry

171. (c) 3

172. (c) 8.25

173. (c) Symmetric

174. (a) Positively skewed

175. (b) Negatively skewed

176. (a) i and ii

177. (c) ii and iii

178. (b) i and iii

179. (a) $\gamma_1 = \sqrt{\frac{\mu_3^2}{\mu_2^3}}$

180. (a) A

181. (b) 3

182. (d) 48

183. (c) Mesokurtic

184. (c) 3

185. (d) $\gamma_2 = \beta_2 - 3$

186. (a) $Q_1 - 1.5 \times IQR$

187. (b) $IQR = Q_3 - Q_1$

188. (a) Mode

189. (d) i, ii &iii

190. (a) Arithmetic Mean

191. (c) No. of earthquakes in different re

192. (c) Number of students in a each cla

193. (a) Number of calls received by a cal

194. (a) i and ii

195. (c) Moving average method

196. (a) $Y_t = T_t \times S_t \times C_t \times R_t$

197. (d) Seasonal variation

198. (b) 190
199. (a) a curved line
200. (d) Any of the above
201. (b) Graphical method
202. (b) 90.37
203. (a) Upward
204. (c) Irregular Variation
205. (b) 90.37
206. (a) Upward
207. (c) Irregular Variation
208. (c) 4
209. (b) Cyclic Variation
210. (d) Regular Variation
211. (b) General Trend
212. (d) Moving Median
213. (c) 95.33
214. (c) 95.33
215. (c) Irregular Variation
216. (b) Seasonal Variation
217. (b) 2013
218. (c) Irregular Variation
219. (a) 2
220. (d) Any of the above
221. (d) i, ii and iii
222. (b) 3
223. (a) Official statistics
224. (c) Semi-official statistics
225. (b) BBS
226. (c) 10