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. **Question**
   (a) Choice (b) Choice (c) Choice (d) Choice

3. **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

4. **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) $\sum_{i=1}^{20} cx_i = c^2\sum_{i=1}^{20} x_i$

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

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

7. **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) $y_i = \frac{cx_i}{d}$

8. **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

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

10. **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) $bn\sum_{i=1}^{n} x_i$

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

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

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

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

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

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

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

16. **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

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

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

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

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

19. **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

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

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

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

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

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

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

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

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

25. **Which is considered statistics?**

(a) Jaman obtain 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

26. **What is the value of** $\sum(x_i + 4)$**?**

(a) 23 (b) 47 (c) 22 (d) 11

27. **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

28. **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

29. **What is the value of** $\sum(x_i - 4)^2$**?**

(a) 23 (b) 135 (c) 484 (d) 119

30. **If the square of summation is subtracted the sum of square, the value is -**

(a) -8 (b) 34 (c) 8 (d) -34

31. **Which one is not an example of ratio scale?**

(a) Room no. (b) Income (c) Number of accidents (d) Weight

32. **Which one is discrete?**

(a) Weight (b) Amount of rainfall

(c) Temperature (d) No. of member in a family

33. **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

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

34. **Find** $\sum(X_i + 10)$

(a) 150 (b) 155 (c) 125 (d) 250

35. $\sum(X_i - 30)^2$

(a) 225 (b) 230 (c) 420 (d) 235

2 Collection, Organization, and Presentation of Data

36. **How many sources of data are there?**

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

37. **What is the raw material of research?**

(a) Data (b) Theory (c) Graph (d) Mean

38. **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

39. **How many trees have radius between 10 and 30?**

(a) 30 (b) 15 (c) 36 (d) 21

40. **How many trees have radius at least 20?**

(a) 44 (b) 45 (c) 24 (d) 21

41. **What percent of trees have radius between 20 and 40?**

(a) 44% (b) 56% (c) 46% (d) 53%

42. **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) $\theta_i = \frac{f_i}{N-1} \times 360$

43. **Who invented Stem and Leaf plot?**

(a) Karl Pearson (b) R.A. Fisher (c) David Cox (d) John Tukey

44. **If all the rats in Sylhet is a population, all the rats in Sylhet Airport is –**

(a) Data (b) Sample (c) Statistics (d) Frequency

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

46. **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

47. **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

48. **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

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

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

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

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

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

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

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

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

53. **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

54. **Fifth Decile is –**

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

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

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

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

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

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

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

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

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

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

60. **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

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

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

62. **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

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

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

64. **Which relationship is correct?**

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

65. **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

66. **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

67. **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

68. **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

69. **Find the arithmetic mean:** $6, 9, 12, \cdots, 84$

(a) 40 (b) 45 (c) 50 (d) 55

70. **The arithmetic mean of first 10 natural numbers is:**

(a) 6 (b) 8.5 (c) 5.5 (d) 5.6

71. **Arithmetic Mean of first 25 natural numbers is –**

(a) 12 (b) 13 (c) 14 (d) 26

72. **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

73. **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

74. **The summation of deviation of each value from their arithmetic mean is –**

(a) 0 (b) 1 (c) 2 (d) 4

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

76. **Arithmetic mean of the series 2, 12, 22, $\cdots$, 92 is–**

(a) 45 (b) 46 (c) 47 (d) 55

77. **What is the arithmetic mean of first n odd natural numbers?**

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

78. **What is the arithmetic mean of first n even natural numbers?**

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

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

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

80. **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

81. **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

82. **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

83. **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

84. **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

85. **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

86. **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

87. **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) $1, 1, 2, 3, 4, 4, 5$

88. **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

89. **Which measure is suitable?**

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

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

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

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

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

3.5 Mode

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

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

93. **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

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

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

95. **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

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

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

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

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

98. **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 two questions as per the following information.

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

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

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

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

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

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

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

4 Measures of Dispersion

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

(a) Range (b) Mean deviation

(c) Standard deviation (d) Coefficient of variation

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

(a) ∞ (b) -1 (c) 0 (d) 1

104. **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)

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

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

106. **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

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

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

108. **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) $\frac{\sum(x_i-w)^n}{2}$

109. **Which relatonship is correct?**

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

110. **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) $\frac{\sum(x_i+a)^r}{n}$

111. **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

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

(a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

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

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

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

115. **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

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

(a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

117. **2nd Central Moment is –**

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

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

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

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

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

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

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

121. **Moments can be–**

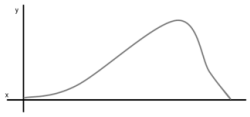
i. positive
ii. not negative
iii. positive or negative

Which one is correct?

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

5.2 Skewness

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



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

123. **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

124. **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

125. **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

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

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

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

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

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

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

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

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

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

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

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

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

132. **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

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

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

134. **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

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

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

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

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

137. **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

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

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

139. **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

140. **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

141. **Which is the multipliative 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

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

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

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

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

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

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

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

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

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

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

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

(a) Upward (b) Downward

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

148. **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

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

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

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

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

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

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

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

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

153. **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

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

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

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

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

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

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

157. **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

158. **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

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

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

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

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

161. **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

162. **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

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

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

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

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

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

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

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

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

167. **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. (a) Choice
3. (a) i and ii
4. (b) $\sum_{i=1}^{20} cx_i = nc\sum_{i=1}^{20} x_i$
5. (d) Regression
6. (d) Ordinal
7. (a) $y_i = \frac{x_i}{a}$
8. (c) 150
9. (c) Sample
10. (b) $b\sum_{i=1}^{n} x_i$
11. (c) 4
12. (d) Success rate
13. (c) Ratio scale
14. (d) Ratio
15. (d) Grade in a subject
16. (d) No. of particles in atoms
17. (c) 206
18. (c) 90
19. (a) i and ii
20. (a) Temperature
21. (c) Ratio scale
22. (d) Grade in a subject
23. (a) $\prod x_i^2$
24. (b) Continuous variable
25. (c) Mean monthly income in a city is 60,000 taka
26. (b) 47
27. (c) 93
28. (c) 99
29. (d) 119
30. (d) -34
31. (a) Room no.
32. (d) No. of member in a family
33. (c) Nominal
34. (b) 155
35. (a) 225
36. (d) 2
37. (a) Data
38. (a) Primary data
39. (c) 36
40. (b) 45
41. (a) 44%
42. (c) $\theta_i = \frac{f_i}{N} \times 360$
43. (d) John Tukey
44. (b) Sample
45. (a) $K = 1 + 3.322logN$
46. (b) Bar Diagram
47. (a) Quartiles are well defined
48. (a) When the values are ratio numbers
49. (c) Geometric Mean
50. (d) 5
51. (d) Mode
52. (b) Geometric Mean
53. (c) i & ii
54. (c) 7.5
55. (b) 8
56. (d) Mode
57. (d) 110th Percentile
58. (a) $\sum_{i=1}^{n}(X_i - Median)^2$
59. (b) Geometric Mean
60. (a) All values are equal
61. (b) Median
62. (b) Harmonic mean
63. (d) Mode
64. (b) $AM \times HM = GM^2$
65. (c) ii and iii
66. (c) ii and iii
67. (b) 6.67
68. (b) i and iii
69. (a) 40
70. (c) 5.5
71. (b) 13
72. (d) 10
73. (a) 88.36
74. (a) 0
75. (a) $\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$
76. (c) 47
77. (b) n
78. (b) $n + 1$
79. (b) $\frac{n+1}{2}$
80. (c) 32.00
81. (a) i and ii
82. (c) 14.39
83. (c) Harmonic Mean
84. (a) Arithmetic Mean
85. (a) i and ii
85. (c) Harmonic Mean
86. (c) Reciprocal of Mean of Reciprocal
87. (b) $1, 2, 4, 8, 16, 32$
88. (c) 5.66
89. (b) Geometric Mean
90. (d) 10.5
91. (b) 5.66
92. (a) Histogram
93. (c) 8
94. (c) Median
95. (c) Ogive

96. (b) 32

97. (b) 25-50

98. (c) 3.5

99. (b) 70

100. (d) 74

101. (d) 70th percentile

102. (c) Standard deviation

103. (c) 0

104. (a) (2,4)

105. (a) 2.87

106. (d) Coefficient of variation

107. (d) Rectified Moments

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

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

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

111. (c) Moments

111. (d) i, ii and iii

112. (c) μ_2

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

114. (d) Arithmetic Mean

115. (c) First central moment

116. (b) μ_3

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

118. (b) 0

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

120. (b) -2

121. (b) i and iii

122. (a) Positive Skew

124. (b) leptokurtic

125. (d) 29.45

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

127. (c) 0

128. (a) Left Skew

129. (c) 3

130. (c) 8.25

131. (a) Positively skewed

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

133. (b) 3

134. (d) 48

135. (c) Mesokurtic

136. (c) 3

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

138. (a) Mode

139. (d) i, ii &iii

140. (a) Arithmetic Mean

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

142. (d) Seasonal variation

143. (b) 190

144. (a) a curved line

145. (d) Any of the above

146. (b) 90.37

147. (a) Upward

148. (c) Irregular Variation

149. (c) 4

150. (b) Cyclic Variation

151. (d) Regular Variation

152. (b) General Trend

153. (d) Moving Median

154. (c) 95.33

155. (c) 95.33

156. (c) Irregular Variation

157. (b) Seasonal Variation

158. (b) 2013

159. (c) Irregular Variation

160. (a) 2

161. (d) Any of the above

162. (d) i, ii and iii

163. (b) 3

164. (a) Official statistics

165. (c) Semi-official statistics

166. (b) BBS

167. (c) 10