Statistics MCQ Question Bank

First Paper

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Contents

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. **Which of the following is an example of an infinite population?**
   (a) Employees of a multinational company (b) Trees in a national park
   (c) Stars in the Milky Way (d) Passengers on a flight

5. **Which one represents an infinite population?**
   (a) Books in a library (b) Fish in the Pacific Ocean
   (c) Members of a sports club (d) Mobile phones in a city

6. **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

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

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

9. **Which of the following cannot be analyzed using univariate data?**
   (a) Mean (b) Variance (c) Correlation (d) Range

10. **Which statistical method requires bivariate or multivariate data?**
    (a) Standard deviation (b) Histogram (c) Regression analysis (d) Median

11. **Which of the following is an example of an infinite population?**
    (a) Patients in a hospital (b) Water molecules in the ocean
    (c) Cars on a highway (d) Students in a university

12. **Which one represents an infinite population?**
    (a) Trees in a forest (b) Grains of sand on a beach
    (c) Books in a bookstore (d) Houses in a neighborhood

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

14. **Classifying students based on their grades (A, B, C, etc.) represents which measurement scale?**

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

15. **Temperature measured in Celsius or Fahrenheit follows which type of measurement scale?**

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

16. **A survey categorizing people by their favorite color is an example of which measurement scale?**

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

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

18. **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

19. **If** $\sum_{i=1}^{15} y_i^2 = 50$ **and** $\sum_{i=1}^{15} y_i = 25$**, what is the value of** $\sum_{i=1}^{15} y_i^2 - \sum_{i=1}^{15} y_i + 75$**?**

(a) 100 (b) 50 (c) 125 (d) 45

20. **Given** $\sum_{i=1}^{10} a_i^2 = 40$ **and** $\sum_{i=1}^{10} a_i = 20$**, find the value of** $2\sum_{i=1}^{10} a_i^2 - 3\sum_{i=1}^{10} a_i + 60$**.**

(a) 70 (b) 100 (c) 80 (d) 50

21. **If** $\sum_{i=1}^{25} z_i^2 = 75$ **and** $\sum_{i=1}^{25} z_i = 50$**, compute** $\sum_{i=1}^{25} z_i^2 + 2\sum_{i=1}^{25} z_i - 125$**.**

(a) 50 (b) 75 (c) 100 (d) 25

22. **A subset of a population is called–**

(a) Constant (b) Variable (c) Sample (d) Scale

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

24. **How many measurement scales are there?**

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

25. **Which of the following is a continuous variable?**

(a) Number of goals (b) Natural number

(c) Summation of Fibonacci series (d) Success rate

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

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

27. **Which measurement scale does height belong to?**
    (a) Nominal (b) Ordinal (c) Interval (d) Ratio

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

29. **Which is a discrete variable?**
    (a) Height of a building (b) Number of cars in a parking lot
    (c) Amount of milk in a container (d) Time taken to complete a task

30. **Which is a discrete variable?**
    (a) Speed of a car (b) Number of students in a class
    (c) Volume of water in a tank (d) Temperature of a room

31. **Which is a discrete variable?**
    (a) Blood pressure (b) Number of books on a shelf
    (c) Length of a river (d) Amount of sugar in a cup

32. **Which is a discrete variable?**
    (a) Shoes sizes available in a store (b) Distance between two cities
    (c) Volume of a gas (d) Weight of a parcel

33. **Which is a discrete variable?**
    (a) Grades on a multiple-choice test (A, B, C, D) (b) Temperature during the day
    (c) Height of a person (d) Time spent on an activity

34. **Which is a discrete variable?**
    (a) Outcomes of rolling a die (b) Speed of a train
    (c) Rainfall in a region (d) Age of a tree

35. **Which is a discrete variable?**
    (a) Counts of people in a room (b) Temperature recorded every hour
    (c) Weight of an animal (d) Height of a plant

36. **Which is a discrete variable?**
    (a) Number of languages spoken by a person (b) Time taken to complete a race
    (c) Length of a road (d) Volume of water in a tank

37. **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

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

39. **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

40. **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

41. **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

42. **If $y_1 = 5$, $y_2 = 2$, $y_3 = -1$, and $y_4 = 4$, compute $\sum_{i=1}^{4}(y_i^2 + 2)$.**

(a) 50 (b) 40 (c) 44 (d) 60

43. **Given $z_1 = 3$, $z_2 = 0$, $z_3 = -3$, and $z_4 = 2$, determine $\sum_{i=1}^{4}(z_i^2 + 5)$.**

(a) 30 (b) 40 (c) 35 (d) 45

44. **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

45. **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

46. **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

47. **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

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

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

49. **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

50. **If $f_i = 2, 4, 6$ and $x_i = 3, 5, 7$, what is the value of $\sum_{i=1}^{3} f_i x_i^3$?**

(a) 950 (b) 1125 (c) 2612 (d) 1330

51. **Given $f_i = 1, 3, 5$ and $x_i = 2, 4, 6$, find the value of $\sum_{i=1}^{3} f_i x_i^4$.**

(a) 1356 (b) 1536 (c) 1650 (d) 7264

52. **If $f_i = 3, 5, 7$ and $x_i = 2, 4, 6$, compute $\sum_{i=1}^{3} f_i x_i^2$.**

(a) 260 (b) 280 (c) 344 (d) 320

53. **Find the value of $\sum_{i=1}^{12} f_i (x_i - 7)^2$ where $\sum_{i=1}^{12} f_i x_i^2 = 400, \sum_{i=1}^{12} f_i x_i = 40, \sum_{i=1}^{12} f_i = 10$**

(a) 320 (b) 330 (c) 250 (d) 430

54. **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

55. **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

56. **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

57. **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

58. **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

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

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

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

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

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

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

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

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

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

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

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

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

67. **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

68. **What is the value of $\sum(x_i + 4)$ if x ={2,3}?**
(a) 23 (b) 47 (c) 22 (d) 13

69. **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

70. **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

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

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

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

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

75. **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

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

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

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

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

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

Answer the next two questions based on the following information

$$X = 3, 5, 7, 10$$

78. **Find** $\sum(X_i + 3)$

(a) 28 (b) 32 (c) 37 (d) 40

79. $\sum(X_i - 5)^2$

(a) 16 (b) 33 (c) 12 (d) 8

Answer the next two questions based on the following information

$$X = 6, 8, 10, 12$$

80. **Find** $\sum(X_i - 4)$

(a) 20 (b) 30 (c) 32 (d) 22

81. $\sum(X_i + 2)^2$

(a) 196 (b) 504 (c) 210 (d) 220

Answer the next two questions based on the following information

$$X = 4, 9, 13, 15$$

82. **Find** $\sum(2X_i)$

(a) 68 (b) 70 (c) 82 (d) 74

83. $\sum(X_i - 10)^2$

(a) 71 (b) 80 (c) 85 (d) 92

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

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

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

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

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

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

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

Answer the next three questions based on the following information.

The values of x_i and f_i are given below:

x_i	2	4	6	8
f_i	2	2	5	4

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

(a) 50 (b) 74 (c) 56 (d) 60

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

(a) 256 (b) 274 (c) 476 (d) 300

89. **Determine** $\sum_{i=1}^{4} f_i (x_i - 5)^2$**.**

(a) 61 (b) 48 (c) 52 (d) 58

2 Collection, Organization, and Presentation of Data

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

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

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

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

92. **Data obtained through direct observation is called–**

(a) Primary data (b) Secondary data (c) Original Data (d) Informal data

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

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

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

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

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

96. **Which rule is suggested by H.G. Sturges for determining number of class (k)?**

(a) $K = 1 + 3.322 logN$ (b) $K = 1 + 3.222 logN$ (c) $K = 1 - 3.222 logN$ (d) $K = 1 + 2.332 logN$

97. **To show runs per over in a cricket match, which diagram can be used?**

(a) Histogram (b) Bar Diagram (c) Ogive (d) Frequency polygon

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

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

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

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

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

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

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

Answer the next THREE questions based on the following information.

The heights of 100 plants were measured, and this frequency distribution was constructed.

Height (cm)	0-20	20-40	40-60	60-80
No. of Plants	25	30	20	25

101. **How many plants have height between 20 and 60?**

(a) 50 (b) 30 (c) 20 (d) 25

102. **How many plants have height at least 40?**

(a) 50 (b) 45 (c) 40 (d) 25

103. **What percent of plants have height between 20 and 80?**

(a) 80% (b) 75% (c) 60% (d) 50%

Answer the next THREE questions based on the following information.

The weights of 120 fruits were recorded and this frequency distribution was constructed.

Weight (grams)	0-50	50-100	100-150	150-200
No. of Fruits	30	35	25	30

104. **How many fruits weigh at least 100 grams?**

(a) 55 (b) 50 (c) 60 (d) 65

105. **How many fruits weigh less than 100 grams?**

(a) 68 (b) 70 (c) 65 (d) 50

106. **What percent of fruits weigh between 50 and 150 grams?**

(a) 50% (b) 55% (c) 60% (d) 75%

Answer the next two questions based on the following information

Class Interval	<10	10-20	20-30	30-40
Frequency	6	3	7	4

107. **What is relative frequency of the class with the highest frequency?**

(a) 0.25 (b) 0.45 (c) 0.40 (d) 0.35

108. **Which curve is suitable for**

(a) Histogram (b) Bar Diagram (c) Pie Chart (d) Ogive

109. **Example of primary data —**

i. A student collected data for research
ii. A professor had a studnet collect data for them
iii. A researcher collected data from a newspaper.

Which one is correct?

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

110. **Which of the following is an example of secondary data?**

i. Data obtained from a published journal
ii. Data collected by a government agency and used by a researcher
iii. Data gathered directly through interviews

Which one is correct?

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

111. **Which of the following represents primary data?**

i. A scientist collects soil samples for analysis
ii. Data compiled in a textbook
iii. A business owner surveys customers directly

Which one is correct?

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

112. **Which of these are examples of secondary data?**

i. A report sourced from census data
ii. A student conducting a direct experiment
iii. Statistics extracted from a government database

Which one is correct?

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

113. **Which one true of primary data?**

i. Original
ii. Suitable
iii. Reliable

Which one is correct?

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

114. **Which statement is true about secondary data?**

i. Already published
ii. Economical
iii. Always up-to-date

Which one is correct?

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

115. **Which one is true about secondary data?**

i. Easy to collect
ii. Collected by someone else
iii. Free from bias

Which one is correct?

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

116. **Which is an advantage of primary data?**

i. Specific to the study
ii. More reliable
iii. Less time-consuming

Which one is correct?

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

3 Measures of Central Tendency

3.1 General Questions

117. **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

118. **Which measure is suitable for open-ended distribution?**

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

119. **Which is not a measure of central tendency?**

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

120. **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

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

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

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

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

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

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

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

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

Answer the next two questions based on the following information

Accident	4	6	7	8	9
Frequency	2	0	4	5	1

125. **Fifth Decile is –**

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

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

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

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

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

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

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

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

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

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

131. **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

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

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

133. **Which measure is suitable for dealing with population growth?**

(a) Arithmetic Mean (b) Geometric Mean (c) Median (d) Harmonic mean

134. **Which measure is best for calculating average rates of change over time?**

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

135. **Which measure is best for determining average income in a highly skewed income distribution?**

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

136. **Which can be measured from Ogive?**

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

137. **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

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

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

139. **Which relationship is correct?**

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

140. **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

141. **For two non-zero positive numbers, the harmonic mean is 8 and the geometric mean is 12. What is the arithmetic mean?**

(a) 16 (b) 18 (c) 20 (d) 22

142. **For two non-zero positive numbers, the harmonic mean is 10 and the arithmetic mean is 25. What is the geometric mean?**

(a) 15 (b) 20 (c) 25 (d) 30

3.2 Arithmetic Mean

143. **If $\sum(x_i - k) = 0$, what is the value of k?**

(a) n (b) $\bar{x}$ (c) x (d) $n\bar{x}$

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

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

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

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

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

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

147. **An equation is: y = 5x + 9. If $\bar{x} = 20, \bar{y} =$?**

(a) 100 (b) 209 (c) 109 (d) 29

148. **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

149. **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

150. **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

151. **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

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

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

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

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

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

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

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

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

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

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

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

158. **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

159. **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) $\frac{\sum f_i}{\sum_{i=1}^{n} \frac{1}{x_i}}$

160. **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

161. **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

162. **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

(a) Arithmetic Mean (b) Geometric Mean

(c) Harmonic Mean (d) Weighted Geometric Mean

163. **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

164. **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) $1, 1, 2, 3, 4, 4, 5$

165. **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

166. **Which measure is suitable?**

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

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

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

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

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

3.5 Mode

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

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

170. **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

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

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

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

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

3.7 Partition Values

3.8 Situation Set

Answer the next three questions based on the following information

The following table shows weekly production of milk (in liters) by different varieties of cows.

Interval	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	12	18	25	20	10

173. **What is the median?**

(a) 43 (b) 44 (c) 45 (d) 50

174. **What is the lower limit of class interval for first quartile?**

(a) 10 (b) 20 (c) 30 (d) 40

175. **What is the 3rd quartile?**

(a) 55.75 (b) 43.75 (c) 53.15 (d) 53.75

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

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

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

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

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

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

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

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

Answer the next three questions as per the following information.

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

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

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

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

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

181. **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.

182. **What is the median?**

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

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

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

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

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

3.9 Multiple Completion

185. **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

186. **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

187. **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

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

i. is not affected by extreme values
ii. represents the entire dataset accurately
iii. is difficult to compute

Which one is correct?

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

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

i. is stable for different samples
ii. provides a single representative value
iii. ignores extreme values completely

Which one is correct?

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

190. **Median is –**

i. Affected by extreme values
ii. Rigidly defined
iii. Suitable for open-ended distributions

Which one is correct?

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

191. **Mode is –**

i. The most frequently occurring value
ii. Unaffected by extreme values
iii. Always unique in a dataset

Which one is correct?

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

192. **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

193. **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

194. **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

4 Measures of Dispersion

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

(a) Range (b) Mean deviation
(c) Standard deviation (d) Coefficient of variation

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

(a) ∞ (b) -1 (c) 0 (d) 1

197. **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)

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

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

199. **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

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

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

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

202. **Which relatonship is correct?**

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

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

204. **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

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

(a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

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

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

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

208. **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

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

(a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

210. **2nd Central Moment is –**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

218. **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

219. **Moments can be–**

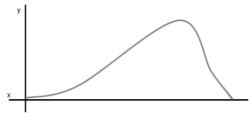
i. positive
ii. not negative
iii. positive or negative

Which one is correct?

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

5.2 Skewness

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

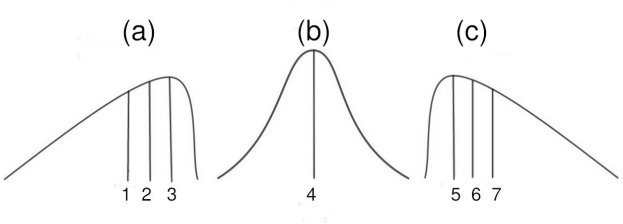


(a) Positive Skew (b) Negative Skew (c) No Skew (d) Not detectable

221. **For a symmetrical distribution, what is the value of β_1?**

(a) 0 (b) 1 (c) -1 (d) ∞

Answer the next ? questions based on the following information



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

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

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

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

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

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

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

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

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

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

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

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

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

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

229. **Which relationship is correct?**

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

230. **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

231. **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

232. **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

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

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

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

234. **For a symmetrical distribution, β_1 =—**

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

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

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

236. $\gamma_1 = 0.43$ **implies–**

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

237. $\gamma_1 = 0.0001$ **implies–**

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

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

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

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

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

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

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

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

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

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

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

243. **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

244. **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

245. **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?

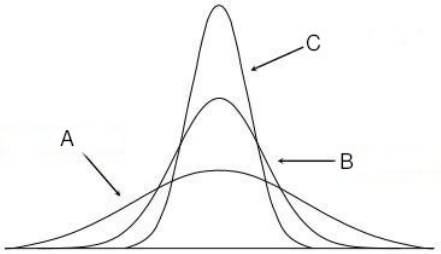
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

246. **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

247. **Which curve is platykurtic?**



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

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

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

249. **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

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

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

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

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

252. **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

253. **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) $Q_3 + 1.5 \times IQR$

254. **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) $IQR = \frac{Q_3 - Q_1}{2}$

255. **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

256. **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

257. **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

258. **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

259. **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

260. **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

261. **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

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

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

263. **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

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

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

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

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

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

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

267. **Which of the following is an example of seasonal variation in a time series?**

(a) Increase in ice cream sales during summer (b) Rising fuel prices over decades

(c) Stock market crash (d) Unemployment rate changes due to war

268. **Which business is most likely to experience strong seasonal variation in its sales?**

(a) A supermarket (b) A toy store (c) A furniture store (d) A gas station

269. **Which of the following is an example of cyclic variation in a time series?**

(a) Boom and recession phases in an economy

(b) Increase in electricity consumption during summer

(c) High demand for umbrellas during the rainy season

(d) Sudden decline in stock prices due to a pandemic

270. **Which of the following is an example of a trend in a time series?**

(a) Gradual increase in global average tempera-(b) Increase in ice cream sales during summer
ture

(c) Fluctuations in stock prices due to news events(d) Sudden drop in airline bookings due to a storm

271. **Which type of trend is usually observed in a country's population growth over several decades?**

(a) Upward trend (b) Downward trend (c) Seasonal trend (d) Cyclic trend

272. **Which of the following best represents a downward trend in a time series?**

(a) Declining birth rates in a country over several decades

(b) Increase in online shopping during holiday seasons

(c) Fluctuations in stock market prices

(d) Sudden rise in fuel prices due to a crisis

273. **Which factor is most likely to contribute to an upward trend in a company's annual revenue?**

(a) Improved marketing strategies over time (b) Seasonal discounts and promotions

(c) Short-term fluctuations in customer demand (d) Unpredictable supply chain disruptions

274. **Which factor is most likely to cause cyclic variation in a time series?**

(a) Festive shopping trends (b) Long-term business cycles

(c) Daily fluctuations in temperature (d) Random fluctuations in demand

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

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

276. **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

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

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

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

(a) Upward (b) Downward

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

279. **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

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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

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

282. **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

Month	January	February	March	April	May	June	July	August
Rainfall (mm)	150	120	180	200	160	140	170	190

Table 4: Source: Meteorological Department

283. **What is the semi-average for the second period of the data?**

(a) 160 (b) 165 (c) 180 (d) 190

284. **Which type of trend do these rainfall data indicate?**

(a) Increasing (b) Decreasing (c) No trend (d) Fluctuating

285. **What is the primary variation component observed in the data?**

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

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

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

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

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

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

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

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

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

290. **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

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

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

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

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

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

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

294. **Which component of a time series captures long-term upward or downward movement?**

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

295. **Which time series component represents fluctuations occurring at regular intervals within a year?**

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

296. **Which component of time series is affected by economic changes during a recession?**

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

297. **Which component of time series is most likely to be impacted by weather conditions like a monsoon season?**

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

298. **Which component of time series would be influenced by government policy changes such as tax reforms?**

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

Answer the next three questions based on the following table:

299. **What is the first value of the 2-yearly moving average?**

(a) 1350 (b) 1300 (c) 1400 (d) 1250

Year	2016	2017	2018	2019	2020
Car Sales	1200	1500	1700	1600	1800

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

(a) 1600 (b) 1670 (c) 1630 (d) 1750

301. **What is the semi-average for the first period of the data?**

(a) 1350 (b) 1400 (c) 1450 (d) 1300

302. **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

303. **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

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

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

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

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

306. **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

7.1 Situation Set

Answer the next three questions based on the following table:

307. **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, what is the first average?

(a) 5 (b) 7 (c) 6 (d) 8

308. **What is the first value of the 2-yearly moving average?**

(a) 5 (b) 6 (c) 7 (d) 8

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

(a) 11.10 (b) 9.68 (c) 10.65 (d) 10.67

Answer the next three questions based on the following table:

The following table shows the population growth rate (in percentage) of a city over seven years.

Year	2015	2016	2017	2018	2019	2020	2021
Rate (%)	2.5	2.7	3.1	3.6	3.9	4.2	4.5

310. **What is the average population growth rate over the 7 years?**

(a) 3.2% (b) 3.5% (c) 3.6% (d) 3.8%

311. **What is the second value in the 3-yearly moving average?**

(a) 2.8% (b) 3.1% (c) 3.3% (d) 3.5%

312. **Using the semi-average method, what is the second average?**

(a) 3.6% (b) 3.7% (c) 3.8% (d) 4.0%

Answer the next three questions based on the following table:

The following table shows the annual rainfall (in cm) recorded in a region over seven years.

Year	2010	2011	2012	2013	2014	2015	2016
Rainfall (cm)	85	90	88	92	95	100	105

313. **What is the median annual rainfall for the given years?**

(a) 90 cm (b) 92 cm (c) 93 cm (d) 95 cm

314. **What is the first value of the 2-yearly moving average?**

(a) 86.5 cm (b) 87 cm (c) 88.5 cm (d) 89 cm

315. **Using the semi-average method, what is the first average?**

(a) 88 cm (b) 89 cm (c) 90 cm (d) 91 cm

Answer the next three questions based on the following table:

The following table shows the average monthly temperature (in °C) recorded in a city over seven months.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul
Temperature (°C)	12	14	18	22	26	30	32

316. **What is the mean temperature over the given months?**

(a) 19.5°C (b) 20.5°C (c) 21.5°C (d) 22.5°C

317. **What is the third value in the 3-monthly moving average?**

(a) 16°C (b) 18°C (c) 20°C (d) 22°C

318. **Using the semi-average method, what is the second average temperature?**

(a) 24°C (b) 25°C (c) 26°C (d) 27°C

Answer the next three questions based on the following table:

The following table shows the monthly sales revenue (in thousand dollars) of a store over seven months.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul
Revenue (000$)	50	55	60	70	75	80	85

319. **Which month had the highest sales revenue?**

(a) May (b) Jun (c) Jul (d) Apr

320. **What is the first value of the 2-monthly moving average?**

(a) 52.5 (b) 55 (c) 57.5 (d) 60

321. **Using the semi-average method, what is the first average revenue?**

(a) 57.5 (b) 60 (c) 62.5 (d) 65

8 Published Statistics in Bangladesh

322. **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

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

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

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

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

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

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

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

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

327. **Which statistics are typically published by NGOs like World Wildlife Fund (WWF)?**

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

328. **Which organization typically publishes non-official statistics in the field of health?**

(a) UNICEF (b) World Health Organization (WHO)
(c) World Bank (d) United Nations (UN)

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

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

330. **Population census is –**

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

331. **In Bangladesh, which ministry present the budget?**

(a) Planning (b) Education (c) Finance (d) Agriculture

Answer Key:

1. (d) R.A. Fisher
2. (d) Database creation
3. (d) Red blood cells in a person's body
4. (c) Stars in the Milky Way
5. (b) Fish in the Pacific Ocean
6. (a) i and ii
7. (b) $\sum_{i=1}^{20} cx_i = nc\sum_{i=1}^{20} x_i$
8. (d) Regression
9. (c) Correlation
10. (c) Regression analysis
11. (b) Water molecules in the ocean
12. (b) Grains of sand on a beach
13. (d) Ordinal
14. (b) Ordinal
15. (c) Interval
16. (a) Nominal
17. (a) $y_i = \frac{x_i}{a}$
18. (c) 150
19. (a) 100
20. (c) 80
21. (a) 50
22. (c) Sample
23. (b) $b\sum_{i=1}^{n} x_i$
24. (c) 4
25. (d) Success rate
26. (a) Ratio scale
27. (d) Ratio
28. (d) Grade in a subject
29. (b) Number of cars in a parking lot
30. (b) Number of students in a class
31. (b) Number of books on a shelf
32. (a) Shoes sizes available in a store
33. (a) Grades on a multiple-choice test
34. (a) Outcomes of rolling a die
35. (a) Counts of people in a room
36. (a) Number of languages spoken by a person
37. (d) No. of particles in atoms
38. (c) 206
39. (d) 122
40. (b) 65
41. (c) 42
42. (c) 44
43. (d) 45
44. (d) 84
45. (c) 8
46. (b) 62
47. (b) 6
48. (c) 90
49. (d) 435
50. (c) 2612
51. (d) 7264
52. (c) 344
53. (b) 330
54. (c) 24
55. (d) 150
56. (a) 108
57. (b) 174 (A, B, C, D)
58. (a) i and ii
59. (a) Temperature
60. (d) Gender
61. (c) Educational Level
62. (a) Temperature
63. (c) Ratio scale
64. (d) Grade in a subject
65. (a) $\prod x_i^2$
66. (b) Continuous variable
67. (c) Mean monthly income in a city is 60,000 taka
68. (d) 13
69. (c) 93
70. (c) 99
71. (d) 119
72. (d) -34
73. (a) Room no.
74. (d) No. of member in a family
75. (c) Nominal
76. (b) 155
77. (a) 225
78. (c) 37
79. (b) 33
80. (a) 20
81. (b) 504
82. (c) 82
83. (a) 71
84. (d) 24
85. (c) 66
86. (a) 74
87. (b) 74
88. (c) 476
89. (a) 61
90. (d) 2
91. (a) Data
92. (a) Primary data
93. (c) $\theta_i = \frac{f_i}{N} \times 360$
94. (d) John Tukey
95. (b) Sample
96. (a) $K = 1 + 3.322logN$
97. (b) Bar Diagram
98. (c) 36

99. (b) 45

100. (a) 44%

101. (a) 50

102. (b) 45

103. (b) 75%

104. (a) 55

105. (c) 65

106. (c) 60%

107. (d) 0.35

108. (d) Ogive

109. (a) i and ii

110. (a) i and ii

111. (a) i and iii

112. (a) i and iii

113. (d) i, ii and iii

114. (a) i and ii

115. (a) i and ii

116. (a) i and ii

117. (a) Quartiles are well defined

118. (b) Mode

119. (c) Range

120. (b) When all the values are equal

121. (c) Geometrtic Mean

122. (d) 5

123. (d) Mode

124. (b) Geometric Mean

125. (c) 7.5

126. (b) 8

127. (d) Mode

128. (d) 110th Percentile

129. (a) $\sum_{i=1}^{n}(X_i - Median)^2$

130. (b) Geometric Mean

131. (a) All values are equal

132. (b) Median

133. (b) Geometric Mean

134. (b) Geometric Mean

135. (c) Median

136. (c) Median

137. (b) Harmonic mean

138. (d) Mode

139. (b) $AM \times HM = GM^2$

140. (b) 6.67

141. (b) 18

142. (a) 15

143. (b) $\bar{x}$

144. (a) 40

145. (c) 5.5

146. (b) 13

147. (c) 109

148. (d) 10

149. (a) 20

150. (b) 20

151. (a) 88.36

152. (a) 0

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

154. (c) 47

155. (b) n

156. (b) $n + 1$

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

158. (c) 32.00

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

160. (c) 14.39

161. (c) Harmonic Mean

162. (a) Arithmetic Mean

162. (c) Harmonic Mean

163. (c) Reciprocal of Mean of Reciprocal

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

165. (c) 5.66

166. (b) Geometric Mean

167. (d) 10.5

168. (b) 5.66

169. (a) Histogram

170. (c) 8

171. (c) Median

172. (c) Ogive

173. (b) 44

174. (c) 30

175. (d) 53.75

176. (b) 32

177. (b) 25-50

178. (c) 3.5

179. (b) 70

180. (d) 74

181. (d) 70th percentile

182. (b) 70

183. (c) 51.5

184. (c) 74.6

185. (c) i & ii

186. (c) ii and iii

187. (c) ii and iii

188. (a) i and ii

189. (a) i and ii

190. (b) i and iii

191. (a) i and ii

192. (a) i and ii

193. (a) i and ii

194. (b) i and iii

195. (c) Standard deviation

196. (c) 0

197. (a) (2,4)

198. (a) 2.87

199. (d) Coefficient of variation

200. (d) Rectified Moments

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

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

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

204. (c) Moments

204. (d) i, ii and iii

205. (c) μ_2

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

207. (d) Arithmetic Mean

208. (c) First central moment

209. (b) μ_3

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

211. (b) 0

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

213. (b) -2

214. (c) 0

215. (a) 2

216. (a) 2

217. (a) 10

218. (b) -3.4

219. (b) i and iii

220. (a) Positive Skew

221. (a) 0

222. (b) Negative Skew

223. (a) Positive Skew

224. (d) All of the above

225. (b) Median

226. (c) Mode

227. (a) Mean

228. (b) Positively skewed

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

231. (b) leptokurtic

232. (d) 29.45

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

234. (c) 0

235. (a) Left Skew

236. (c) Right Skew

237. (b) Symmetry

238. (c) 3

239. (c) 8.25

240. (c) Symmetric

241. (a) Positively skewed

242. (b) Negatively skewed

243. (a) i and ii

244. (c) ii and iii

245. (b) i and iii

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

247. (a) A

248. (b) 3

249. (d) 48

250. (c) Mesokurtic

251. (c) 3

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

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

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

255. (a) Mode

256. (d) i, ii &iii

257. (a) Arithmetic Mean

258. (c) No. of earthquakes in different regions

259. (c) Number of students in a each class

260. (a) Number of calls received by a call center each month

261. (a) i and ii

262. (c) Moving average method

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

264. (d) Seasonal variation

265. (b) 190

266. (a) a curved line

267. (a) Increase in ice cream sales during summer

268. (b) A toy store

269. (a) Boom and recession phases in an economy

270. (a) Gradual increase in global average temperature

271. (a) Upward trend

272. (a) Declining birth rates in a country over several decades

273. (a) Improved marketing strategies over time

274. (b) Long-term business cycles

275. (d) Any of the above

276. (b) Graphical method

277. (b) 90.37

278. (a) Upward

279. (c) Irregular Variation

280. (b) 90.37

281. (a) Upward

282. (c) Irregular Variation

283. (b) 165

284. (d) Fluctuating

285. (a) Seasonal Variation

286. (c) 4

287. (b) Cyclic Variation

288. (d) Regular Variation

289. (b) General Trend

290. (d) Moving Median

291. (c) 95.33

292. (c) 95.33

293. (c) Irregular Variation

294. (a) Trend

295. (b) Seasonal Variation

296. (c) Irregular Variation

297. (b) Seasonal Variation

298. (d) Cyclic Variation

299. (a) 1350

300. (c) 1650

301. (a) 1350

302. (b) Seasonal Variation

303. (b) 2013

304. (c) Irregular Variation

305. (a) 2

306. (d) Any of the above

307. (c) 6

308. (b) 6

309. (c) 10.65

310. (b) 3.5%

311. (b) 3.1%

312. (c) 3.8%

313. (b) 92 cm

314. (a) 86.5 cm

315. (b) 89 cm

316. (c) 21.5°C

317. (b) 18°C

318. (c) 26°C

319. (c) Jul

320. (a) 52.5

321. (b) 60

322. (d) i, ii and iii

323. (b) 3

324. (a) Official statistics

325. (c) Semi-official statistics

326. (b) BBS

327. (b) Non-official statistics

328. (a) UNICEF

329. (c) 10

330. (c) Semi-official statistics

331. (c) Finance