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 of the following is an example of a finite population?**
    (a) Books in a school library (b) Stars in the universe
    (c) Grains of sand on a beach (d) Atoms in the atmosphere

13. **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

14. **Cities ranked according to habitability level show – measurement scale**

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

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

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

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

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

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

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

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

19. **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

20. **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

21. **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

22. **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

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

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

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

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

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

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

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

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

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

30. **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

31. **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

32. **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

33. **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

34. **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

35. **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

36. **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

37. **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

38. **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

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

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

40. **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

41. **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

42. **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

43. **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) 54 (d) 60

44. **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

45. **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

46. **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

47. **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

48. **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

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

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

50. **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

51. **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

52. **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

53. **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

54. **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

55. **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

56. **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

57. **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

58. **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

59. **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

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

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

61. **Which one falls in the category of nominal scale?**
(a) Height (b) Temperature (c) Gender (d) Age

62. **Which of the following is an example of an ordinal scale?**
(a) Temperature (b) IQ Score (c) Educational Level (d) Weight

63. **Which of the following is not example of a ratio scale?**
(a) Temperature (b) Time (c) Blood Pressure (d) Speed

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

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

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

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

68. **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

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

70. **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

71. **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

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

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

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

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

75. **Which one is discrete?**

(a) Weight (b) Amount of rainfall

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

76. **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

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

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

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

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

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

Answer the next two questions based on the following information

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

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

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

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

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

Answer the next two questions based on the following information

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

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

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

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

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

Answer the next two questions based on the following information

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

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

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

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

(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

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

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

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

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

87. **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

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

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

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

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

90. **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

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

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

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

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

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

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

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

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

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

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

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

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

98. **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

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

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

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

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

101. **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

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

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

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

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

104. **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

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

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

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

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

107. **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

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

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

109. **Which curve is suitable for**

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

110. **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

111. **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

112. **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

113. **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

114. **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

115. **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

116. **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

117. **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

118. **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

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

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

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

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

121. **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

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

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

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

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

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

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

125. **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

126. **Fifth Decile is –**

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

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

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

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

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

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

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

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

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

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

132. **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

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

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

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

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

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

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

136. **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

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

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

138. **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

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

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

140. **Which relationship is correct?**

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

141. **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

142. **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

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

(a) 7.07 (b) 20 (c) 25 (d) 30

3.2 Arithmetic Mean

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

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

145. **If $\sum(x_i - a)^2$ is minimized, then the value of a is:**

(a) $\bar{x}$ (b) 0 (c) Median (d) Mode

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

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

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

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

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

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

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

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

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

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

151. **Given the relationship $y = 2x - 4$, and $\bar{x} = 15$, find the value of $\bar{y}$.**

(a) 26 (b) 34 (c) -26 (d) 35

152. **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

153. **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

154. **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

155. **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

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

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

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

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

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

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

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

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

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

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

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

162. **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

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

164. **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

165. **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

166. **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

167. **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

168. **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) $1, 1, 2, 3, 4, 4, 5$

169. **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

170. **Which measure is suitable?**

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

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

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

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

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

3.5 Mode

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

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

174. **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

175. **What is the mode of the data set: 4, 7, 2, 4, 9, 4, 2, 9?**

(a) 2 (b) 4 (c) 9 (d) 7

176. **Which of the following best defines the mode of a data set?**

(a) The middle value when data are arranged in order

(b) The average of all the values

(c) The value that occurs most frequently

(d) The difference between highest and lowest values

177. **Find the mode of the following frequency distribution:**

Value	2	3	4	5	6
Frequency	3	5	2	7	1

(a) 3 (b) 5 (c) 6 (d) 5

178. **In a symmetrical unimodal distribution, which of the following is usually true?**

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

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

3.6 Median

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

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

180. **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

181. **What is the median?**

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

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

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

183. **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

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

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

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

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

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

186. **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.

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

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

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

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

189. **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.

190. **What is the median?**

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

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

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

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

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

3.9 Multiple Completion

193. **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

194. **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

195. **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

196. **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

197. **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

198. **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

199. **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

200. **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

201. **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

202. **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

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

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

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

(a) ∞ (b) -1 (c) 0 (d) 1

205. **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)

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

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

207. **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

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

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

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

210. **Which relatonship is correct?**

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

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

212. **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

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

(a) μ_2' (b) μ_1 (c) μ_2 (d) μ_1'

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

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

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

216. **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

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

(a) μ_4 (b) μ_3 (c) μ_2' (d) μ_2

218. **2nd Central Moment is –**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

226. **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

227. **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

228. **If the values in a dataset have mean 4.8, what is the first moment about the mean?**

(a) 0 (b) 4.8 (c) 1.0 (d) -4.8

229. **The mean of a variable is 3.2. Find the first raw moment around 0.**

(a) 3.2 (b) -3.2 (c) 0 (d) 1.2

230. **Moments can be–**

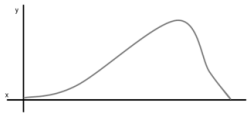
i. positive
ii. not negative
iii. positive or negative

Which one is correct?

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

5.2 Skewness

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

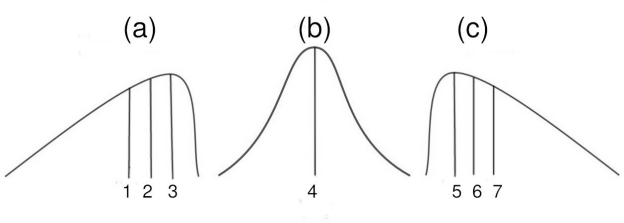


(a) Positive Skew (b) Negative Skew (c) No Skew (d) Not detectable

232. **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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

240. **Which relationship is correct?**

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

241. **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

242. **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

243. **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

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

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

245. **For a symmetrical distribution,** $\beta_1 =$—

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

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

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

247. $\gamma_1 = 0.43$ **implies–**

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

248. $\gamma_1 = 0.0001$ **implies–**

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

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

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

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

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

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

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

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

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

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

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

254. **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

255. **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

256. **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?

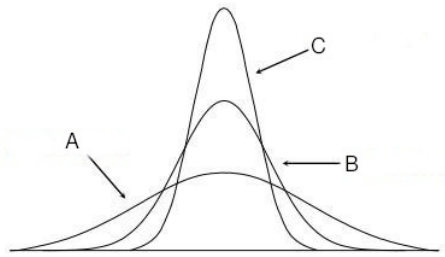
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

257. **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

258. **Which curve is platykurtic?**



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

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

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

260. **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

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

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

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

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

263. **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

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

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

266. **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

267. **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

268. **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

269. **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

270. **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

271. **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

272. **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

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

(a) Graphical method (b) Semi-average method

(c) Moving average method (d) Quarter-average method

274. **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

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

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

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

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

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

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

278. **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

279. **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

280. **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

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

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

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

282. **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

283. **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

284. **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

285. **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

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

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

287. **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

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

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

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

(a) Upward (b) Downward

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

290. **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

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

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

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

(a) Upward (b) Downward

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

293. **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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

301. **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

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

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

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

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

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

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

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

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

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

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

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

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

308. **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

309. **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:

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

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

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

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

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

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

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

313. **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

314. **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

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

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

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

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

317. **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:

318. **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

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

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

320. **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

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

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

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

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

323. **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

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

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

325. **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

326. **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

327. **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

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

(a) 16°C (b) 18°C (c) 20°C (d) 22°C

329. **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

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

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

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

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

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

(a) 57.5 (b) 55 (c) 62.5 (d) 65

8 Published Statistics in Bangladesh

333. **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

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

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

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

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

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

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

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

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

338. **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

339. **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)

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

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

341. **Population census is –**

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

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

99. (c) 36

100. (b) 45

101. (a) 44%

102. (a) 50

103. (b) 45

104. (b) 75%

105. (a) 55

106. (c) 65

107. (c) 60%

108. (d) 0.35

109. (d) Ogive

110. (a) i and ii

111. (a) i and ii

112. (a) i and iii

113. (a) i and iii

114. (d) i, ii and iii

115. (a) i and ii

116. (a) i and ii

117. (a) i and ii

118. (a) Quartiles are well defined

119. (b) Mode

120. (c) Range

121. (b) When all the values are equal

122. (c) Geometrtic Mean

123. (d) 5

124. (d) Mode

125. (b) Geometric Mean

126. (c) 7.5

127. (b) 8

128. (d) Mode

129. (d) 110th Percentile

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

131. (b) Geometric Mean

132. (a) All values are equal

133. (b) Median

134. (b) Geometric Mean

135. (b) Geometric Mean

136. (c) Median

137. (c) Median

138. (b) Harmonic mean

139. (d) Mode

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

141. (b) 6.67

142. (b) 18

143. (a) 7.07

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

145. (a) $\bar{x}$

146. (a) 40

147. (c) 5.5

148. (b) 13

149. (c) 109

150. (c) 109

151. (a) 26

152. (d) 10

153. (a) 20

154. (b) 20

155. (a) 88.36

156. (a) 0

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

158. (c) 47

159. (b) n

160. (b) $n + 1$

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

162. (c) 32.00

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

164. (c) 14.39

165. (c) Harmonic Mean

166. (a) Arithmetic Mean

166. (c) Harmonic Mean

167. (c) Reciprocal of Mean of Reciprocal

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

169. (c) 5.66

170. (b) Geometric Mean

171. (d) 10.5

172. (b) 5.66

173. (a) Histogram

174. (c) 8

175. (b) 4

176. (c) The value that occurs most frequ

177. (d) 5

178. (c) Mean = Median = Mode

179. (c) Median

180. (c) Ogive

181. (b) 44

182. (c) 30

183. (d) 53.75

184. (b) 32

185. (b) 25-50

186. (c) 3.5

187. (b) 70

188. (d) 74

189. (d) 70th percentile

190. (b) 70

191. (c) 51.5

192. (c) 74.6

193. (c) i & ii

194. (c) ii and iii

195. (c) ii and iii

196. (a) i and ii

197. (a) i and ii

198. (b) i and iii

199. (a) i and ii

200. (a) i and ii

201. (a) i and ii

202. (b) i and iii

203. (c) Standard deviation

204. (c) 0

205. (a) (2,4)

206. (a) 2.87

207. (d) Coefficient of variation

208. (d) Rectified Moments

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

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

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

212. (c) Moments

212. (d) i, ii and iii

213. (c) μ_2

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

215. (d) Arithmetic Mean

216. (c) First central moment

217. (b) μ_3

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

219. (b) 0

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

221. (b) -2

222. (c) 0

223. (a) 2

224. (a) 2

225. (a) 10

226. (b) -3.4

227. (b) -3.4

228. (a) 0

229. (a) 3.2

230. (b) i and iii

231. (a) Positive Skew

232. (a) 0

233. (b) Negative Skew

234. (a) Positive Skew

235. (d) All of the above

236. (b) Median

237. (c) Mode

238. (a) Mean

239. (b) Positively skewed

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

242. (b) leptokurtic

243. (d) 29.45

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

245. (c) 0

246. (a) Left Skew

247. (c) Right Skew

248. (b) Symmetry

249. (c) 3

250. (c) 8.25

251. (c) Symmetric

252. (a) Positively skewed

253. (b) Negatively skewed

254. (a) i and ii

255. (c) ii and iii

256. (b) i and iii

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

258. (a) A

259. (b) 3

260. (d) 48

261. (c) Mesokurtic

262. (c) 3

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

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

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

266. (a) Mode

267. (d) i, ii &iii

268. (a) Arithmetic Mean

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

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

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

272. (a) i and ii

273. (c) Moving average method

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

275. (d) Seasonal variation

276. (b) 190

277. (a) a curved line

278. (a) Increase in ice cream sales during

279. (b) A toy store

280. (a) Boom and recession phases in an

281. (a) Gradual increase in global averag

282. (a) Upward trend

283. (a) Declining birth rates in a country

284. (a) Improved marketing strategies ov

285. (b) Long-term business cycles

286. (d) Any of the above

287. (b) Graphical method

288. (b) 90.37

289. (a) Upward

290. (c) Irregular Variation

291. (b) 90.37

292. (a) Upward

293. (c) Irregular Variation

294. (b) 165

295. (d) Fluctuating

296. (a) Seasonal Variation

297. (c) 4

298. (b) Cyclic Variation

299. (d) Regular Variation

300. (b) General Trend

301. (d) Moving Median

302. (c) 95.33

303. (c) 95.33

304. (c) Irregular Variation

305. (a) Trend

306. (b) Seasonal Variation

307. (c) Irregular Variation

308. (b) Seasonal Variation

309. (d) Cyclic Variation

310. (a) 1350

311. (c) 1630

312. (a) 1350

313. (b) Seasonal Variation

314. (b) 2013

315. (c) Irregular Variation

316. (a) 2

317. (d) Any of the above

318. (c) 6

319. (b) 6

320. (c) 10.65

321. (b) 3.5%

322. (b) 3.1%

323. (c) 3.8%

324. (b) 92 cm

325. (a) 86.5 cm

326. (b) 89 cm

327. (c) 21.5°C

328. (b) 18°C

329. (c) 26°C

330. (c) Jul

331. (a) 52.5

332. (b) 55

333. (d) i, ii and iii

334. (b) 3

335. (a) Official statistics

336. (c) Semi-official statistics

337. (b) BBS

338. (b) Non-official statistics

339. (b) World Health Organization (WH

340. (c) 10

341. (a) Official statistics

342. (c) Finance