Statistics MCQ Question Bank

First Paper

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1 Basic Concept of Statistics

1. **Who is known as the Father of modern statistics?**
   (a) P.C. Mahalanobis (b) Kazi Motaher Hossain (c) Karl Pearson (d) R.A. Fisher

2. **If** $\sum_{i=1}^{20} x_i^2 = 20$ **and** $\sum_{i=1}^{20} x_i = 30$**, what is the value of** $\sum_{i=1}^{20} x_i^2 + \sum_{i=1}^{20} x_i + 100$**?**
   (a) 130 (b) 200 (c) 150 (d) 2130

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

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

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

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

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

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

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

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

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

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

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

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

14. **Which one is product of square?**

(a) $\prod x_i^2$ (b) $(\prod x_i)^2$ (c) $\sum x_i^2 \times \sum x$ (d) $\sum x_i^2$

15. **For which variable, determining number of terms is not possible?**

(a) Discrete variable (b) Continuous variable (c) Quantitative variable (d) Qualitative variable

Answer the next three question based on the following information.

A farmer collects growth (in cm) of 10 plants in a month and finds that $\sum x_i = 7$ and $\sum x_i^2 = 15$

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

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

17. **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) 109

18. **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

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

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

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

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

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

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

22. **Which one is discrete?**

(a) Weight (b) Amount of rainfall

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

23. **Which type of scale of measurement are religion and blood group?**

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

2 Collection, Organization, and Presentation of Data

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

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

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

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

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

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

Answer the next THREE questions based on the following information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3 Measures of Central Tendency

3.1 General Questions

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

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

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

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

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

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

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

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

39. **Inappropriate for algebraic analysis–**

i. Median
ii. Mode
iii. Geometric Mean

Which one is true?

(a) i (b) ii (c) i & ii (d) ii & iii

Answer the next two questions based on the following information

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

40. **Fifth Decile is –**

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

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

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

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

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

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

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

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

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

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

46. **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

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

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

48. **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

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

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

50. **Which relationship is correct?**

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

51. **With negative observations, which cannot be used**

i. Arithmetic Mean
ii. Geometric Mean
iii. Harmonic Mean

Which one is correct?

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

3.2 Arithmetic Mean

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

53. **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

54. **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

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

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

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

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

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

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

61. **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

62. **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

63. **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

64. **A rate is defined as $R = \frac{c}{d}$; c and d are arbitrary numbers. If neither c or d is constant, which mean is used?**
i. Weighted Arithmetic Mean
ii. Weighted Harmonic Mean
iii. Harmonic Mean

Which one is correct?

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

(a) Arithmetic Mean (b) Geometric Mean

(c) Harmonic Mean (d) Weighted Geometric Mean

65. **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

66. **Which data set is suitable for Geometric Mean?**

(a) $1, -1, 2, 4, 6, 7$ (b) $1, 2, 4, 8, 16, 32$ (c) $0, 1, 2, 3, 4, 6$ (d) $1, 1, 2, 3, 4, 4, 5$

3.5 Mode

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

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

3.6 Median

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

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

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

Class	≤ 20	20-25	25-50	50-60	69-70	≥ 70
Frequency	5	10	10	7	5	3
Cumulative Frequency	5	15	25	32	37	40

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

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

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

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

3.7 Partition Values

Answer the next two questions as per the following information.

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

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

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

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

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

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

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

4 Measures of Dispersion

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

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

76. **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)

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

78. **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

79. **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

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

81. **The formula of coefficient of variance (CV) is –**
    (a) $\frac{\mu_2}{n} \times 100$ (b) $\frac{\mu_2}{\mu_1} \times 100$ (c) $\frac{\mu_2}{\bar{x}} \times 100$ (d) $\frac{\mu_3}{\sigma} \times 100$

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

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

84. **2nd Central Moment is –**
    (a) $\mu_2 - \mu_1'$ (b) $\mu_2 + \mu_1'$ (c) $\mu_2 - \mu_1'^2$ (d) $\mu_2' - \mu_1'^2$

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

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

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

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

88. **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

89. **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

90. **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

91. **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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.3 Kurtosis

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

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

99. **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

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

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

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

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

5.4 Misc

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

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

103. **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

104. **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

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

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

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

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

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

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

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

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

109. **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

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

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

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

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

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

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

113. **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

114. **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

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

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

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

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

8 Published Statistics in Bangladesh

117. **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

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

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

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

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

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

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

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

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

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

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

Answer Key:

1. (d) R.A. Fisher
2. (c) 150
3. (c) Sample
4. (c) 4
5. (d) Success rate
6. (c) Ratio scale
7. (d) Grade in a subject
8. (c) 206
9. (c) 90
10. (a) i and ii
11. (a) Temperature
12. (c) Ratio scale
13. (d) Grade in a subject
14. (a) $\prod x_i^2$
15. (b) Continuous variable
16. (b) 47
17. (c) 93
18. (c) 99
19. (d) 119
20. (d) -34
21. (a) Room no.
22. (d) No. of member in a family
23. (c) Nominal
24. (d) 2
25. (a) Data
26. (a) Primary data
27. (c) 36
28. (b) 45
29. (a) 44%
30. (c) $\theta_i = \frac{f_i}{N} \times 360$
31. (d) John Tukey
32. (b) Sample
33. (a) $K = 1 + 3.322 log N$
34. (b) Bar Diagram
35. (c) Geometrtic Mean
36. (d) 5
37. (d) Mode
38. (b) Geometric Mean
39. (c) i & ii
40. (c) 7.5
41. (b) 8
42. (d) Mode
43. (d) 110th Percentile
44. (a) $\sum_{i=1}^{n}(X_i - Median)^2$
45. (b) Geometric Mean
46. (a) All values are equal
47. (b) Median
48. (b) Harmonic mean
49. (d) Mode
50. (b) $AM \times HM = GM^2$
51. (c) ii and iii
52. (b) 13
53. (d) 10
54. (a) 88.36
55. (a) 0
56. (a) $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$
57. (c) 47
58. (b) n
59. (b) $n + 1$
60. (b) $\frac{n+1}{2}$
61. (c) 32.00
62. (c) Harmonic Mean
63. (a) Arithmetic Mean
64. (a) i and ii
64. (c) Harmonic Mean
65. (c) Reciprocal of Mean of Reciprocal
66. (b) $1, 2, 4, 8, 16, 32$
67. (a) Histogram
68. (c) Ogive
69. (b) 32
70. (b) 25-50
71. (b) 70
72. (d) 74
73. (d) 70th percentile
74. (c) Standard deviation
75. (c) 0
76. (a) (2,4)
77. (a) 2.87
78. (d) Coefficient of variation
79. (c) Moments
79. (d) i, ii and iii
80. (c) μ_2
81. (c) $\frac{\mu_2}{\bar{x}} \times 100$
82. (d) Arithmetic Mean
83. (b) μ_3
84. (d) $\mu_2' - \mu_1'^2$
85. (b) 0
86. (d) $\bar{x} - a$
87. (b) -2
88. (b) i and iii
90. (b) leptokurtic
91. (d) 29.45
92. (a) $Mean > Median > Mode$
93. (c) 0
94. (a) Left Skew
95. (c) 3
96. (c) 8.25
97. (a) Positively skewed

98. (b) 3
99. (d) 48
100. (c) Mesokurtic
101. (c) 3
102. (a) Mode
103. (d) i, ii &iii
104. (a) Arithmetic Mean
105. (c) 4
106. (b) Cyclic Variation
107. (d) Regular Variation
108. (b) General Trend
109. (d) Moving Median
110. (c) 95.33
111. (c) 95.33
112. (c) Irregular Variation
113. (b) Seasonal Variation
114. (b) 2013
115. (c) Irregular Variation
116. (a) 2
117. (d) i, ii and iii
118. (b) 3
119. (a) Official statistics
120. (c) Semi-official statistics
121. (b) BBS
122. (c) 10