

STATISTICAL ASSISTANT GR II

STATISTICS REVISION TEST

1. Which of the following is not a use of index numbers?

- a) Measuring inflation
- b) Studying population growth
- c) Comparing standard of living
- d) Analyzing cost of living

Answer: b) Studying population growth

2. Price relative is defined as:

- a) $(\text{Current price} / \text{Base price}) \times 100$
- b) $(\text{Base price} / \text{Current price}) \times 100$
- c) Base price – Current price
- d) None of these

Answer: a) $(\text{Current price} / \text{Base price}) \times 100$

3. Which index uses the average of price relatives?

- a) Laspeyres
- b) Paasche
- c) Simple Aggregative
- d) Simple Average of Price Relatives

Answer: d) Simple Average of Price Relatives

4. Link relative is computed as:

- a) $(\text{Current year} / \text{Base year}) \times 100$
- b) $(\text{Current year} / \text{Previous year}) \times 100$
- c) $(\text{Previous year} / \text{Base year}) \times 100$

- d) None of these

Answer: b) $(\text{Current year} / \text{Previous year}) \times 100$

5. In chain index numbers, the current year becomes the base year for:

- a) Previous year
- b) Every 10 years
- c) Next year
- d) Only the first year

Answer: c) Next year

6. Simple aggregative index is calculated by:

- a) Sum of current prices / Sum of base prices $\times 100$
- b) Sum of base prices / Sum of current prices $\times 100$
- c) $(\text{Current} - \text{Base}) \times 100$
- d) None of these

Answer: a) Sum of current prices / Sum of base prices $\times 100$

7. The main drawback of the simple aggregative index is:

- a) It gives too much weight to low-priced items
- b) It ignores price changes
- c) It treats all items equally regardless of importance
- d) It is very complex

Answer: c) It treats all items equally regardless of importance

8. Which of the following is a weighted index number?

- a) Laspeyres
- b) Simple Aggregative
- c) Link Relatives
- d) Chain Index

Answer: a) Laspeyres

9. Laspeyres index uses quantities of the:

- a) Current year
- b) Previous year
- c) Base year
- d) Next year

Answer: c) Base year

10. Paasche's index number uses:

- a) Base year quantities
- b) Average quantities
- c) Current year quantities
- d) Weighted quantities

Answer: c) Current year quantities

11. Time reversal test requires that:

- A) Index of base and current year multiplied gives 100
- B) Reversing time doesn't change the index
- C) Index number becomes zero

D) Index and its reciprocal add up to 200

Answer: B

12. Fisher's Ideal Index satisfies:

- a) Time reversal only
- b) Factor reversal only
- c) Both time and factor reversal
- d) None

Answer: c) Both time and factor reversal

13. Factor Reversal Test checks whether:

- A) Price index = Quantity index
- B) Price \times Quantity = Value index
- C) Quantity is held constant
- D) Price and quantity indices are equal

Answer: B

14. Which index fails the time reversal test?

- a) Fisher
- b) Laspeyres
- c) Marshall-Edgeworth
- d) None

Answer: b) Laspeyres

**15. Which index satisfies only the time reversal test
but not factor reversal test?**

- a) Paasche
- b) Laspeyres
- c) Marshall-Edgeworth

d) Simple Aggregative

Answer: c) Marshall-Edgeworth

16. **National Income is the:**

- a) Total income of government
- b) Income earned by residents
- c) Total value of goods and services produced in a country
- d) Money supply in the economy

Answer: c) Total value of goods and services produced in a country

17. **Which of the following is not included in national income?**

- a) Rent
- b) Transfer payments
- c) Wages
- d) Profits

Answer: b) Transfer payments

18. **Which method of national income estimation is based on adding incomes of all sectors?**

- a) Product method
- b) Income method
- c) Expenditure method
- d) Value added method

Answer: b) Income method

19. Value Added Method is also known as:

- a) Expenditure method
- b) Income method
- c) Output method
- d) Transfer method

Answer: c) Output method

20. In expenditure method, national income is calculated by summing up:

- a) All taxes
- b) All wages
- c) Final consumption and investment
- d) Government subsidies

Answer: c) Final consumption and investment

21. CSO stands for:

- a) Central Statistics Office
- b) Central Survey Organisation
- c) Consumer Statistical Office
- d) Census and Statistics Office

Answer: a) Central Statistics Office

22. NSSO is now merged into:

- a) NSO
- b) CSO
- c) RBI
- d) Ministry of Finance

Answer: a) NSO

23. The Census in India is conducted every:

- a) 5 years
- b) 7 years
- c) 10 years
- d) 15 years

Answer: c) 10 years

24. The first Census in India was conducted in the year:

- a) 1872
- b) 1881
- c) 1901
- d) 1951

Answer: a) 1872

25. The organization responsible for national income data in India is:

- a) RBI
- b) NSO
- c) Planning Commission
- d) Ministry of Home Affairs

Answer: b) NSO

26. The arithmetic mean of the numbers 2, 4, 6, 8, 10 is:

- A) 6
- B) 5
- C) 7
- D) 4

Answer: A) 6

27. Which measure of central tendency is not affected by extreme values?

- A) Mean
- B) Median
- C) Mode
- D) None of these

Answer: B) Median

28. The mode of the data set: 3, 4, 5, 3, 6, 3, 2 is:

- A) 3
- B) 4
- C) 5
- D) 2

Answer: A) 3

29. If the mean is 50 and median is 40, then the distribution is:

- A) Symmetrical
- B) Positively skewed
- C) Negatively skewed
- D) Normal

Answer: B) Positively skewed

30. The sum of deviations from the arithmetic mean is always:

- A) Maximum

- B) Minimum
 - C) Zero
 - D) One
- Answer:** C) Zero

31. Which of the following is an absolute measure of dispersion?

- A) Standard deviation
- B) Coefficient of variation
- C) Coefficient of range
- D) Coefficient of mean deviation

Answer: A) Standard deviation

32. The most commonly used measure of dispersion is:

- A) Range
- B) Standard deviation
- C) Mean deviation
- D) Quartile deviation

Answer: B) Standard deviation

33. The formula for **coefficient of variation** is:

- A) $(\text{Standard Deviation} / \text{Mean}) \times 100$
- B) $(\text{Mean} / \text{Standard Deviation}) \times 100$
- C) $(\text{Range} / \text{Mean}) \times 100$
- D) $(\text{Mean} / \text{Range}) \times 100$

Answer: A) $(\text{Standard Deviation} / \text{Mean}) \times 100$

34. Range is defined as:

- A) Highest value – Lowest value
- B) Mean – Median
- C) Sum of values / Number of values

D) Highest value + Lowest value

Answer: A) Highest value – Lowest value

35. Which of the following is a **probability sampling** method?

A) Convenience sampling

B) Judgment sampling

C) Simple random sampling

D) Quota sampling

Answer: C) Simple random sampling

36.. Which of the following is a **non-probability sampling** method?

A) Systematic sampling

B) Cluster sampling

C) Snowball sampling

D) Stratified sampling

Answer: C) Snowball sampling

37. In **systematic sampling**, if the population size is 100 and sample size is 10, the sampling interval is:

A) 5

B) 10

C) 15

D) 20

Answer: B) 10

38. Type I error occurs when:

A) A true null hypothesis is rejected

B) A false null hypothesis is accepted

- C) The sample size is too small
- D) The test statistic is not computed

Answer: A) A true null hypothesis is rejected

39. **Type II error** occurs when:

- A) A true null hypothesis is accepted
 - B) A false null hypothesis is accepted
 - C) A false null hypothesis is rejected
 - D) A true alternative hypothesis is accepted
- Answer:** B) A false null hypothesis is accepted

40. A **two-tailed test** is used when:

- A) We test for increase only
- B) We test for decrease only
- C) We test for any significant difference
- D) The sample is small

Answer: C) We test for any significant difference

41. The total variation in ANOVA is split into:
- A) Between-group variation only
 - B) Within-group variation only
 - C) Between-group and within-group variation
 - D) Residual variation only
- Answer:** C) Between-group and within-group variation

42. In a Completely Randomized Design, treatments are:
- A) Assigned randomly to blocks
 - B) Assigned randomly to all experimental units
 - C) Assigned in a fixed pattern
 - D) Not assigned at all

Answer: B) Assigned randomly to all experimental units

43.CRD is most suitable when experimental units are:

- A) Homogeneous
- B) Heterogeneous
- C) Grouped in blocks
- D) Limited in number

Answer: A) Homogeneous

44.In RBD, the experimental material is grouped into:

- A) Treatments
- B) Blocks
- C) Factors
- D) Classes

Answer: B) Blocks

45.In RBD, the error degrees of freedom is:

- A) $(\text{Number of blocks} - 1) \times (\text{Number of treatments} - 1)$
- B) Total number of observations – 1
- C) $(\text{Number of blocks} \times \text{Number of treatments}) - (\text{Treatments} + \text{Blocks} - 1)$
- D) $(\text{Treatments} - 1)(\text{Blocks} - 1)$

Answer: C) $(\text{Number of blocks} \times \text{Number of treatments}) - (\text{Treatments} + \text{Blocks} - 1)$

Explanation for this answer is given below:

In a Randomized Block Design (RBD), the error degrees of freedom (Error df) is calculated as:

$$\text{Error df} = \text{Total number of observations} - (\text{Number of treatments} + \text{Number of blocks} - 1)$$

Or simply:

$$\text{Error df} = (r \times t) - (r + t - 1)$$

Where:

- r = Number of blocks (replications)
- t = Number of treatments

46. If A and B are **mutually exclusive events**, then $P(A \cup B) =$

- A) $P(A) \times P(B)$
- B) $P(A) + P(B) - P(A \cap B)$
- C) $P(A) + P(B)$
- D) $P(A \cap B)$

Answer: C) $P(A) + P(B)$

47. If A and B are **not mutually exclusive**, then

$P(A \cup B) =$

- A) $P(A) \times P(B)$
- B) $P(A) + P(B) - P(A \cap B)$
- C) $P(A) + P(B) + P(A \cap B)$
- D) $P(A \cap B)$

Answer: B) $P(A) + P(B) - P(A \cap B)$

48. If A and B are **dependent events**, then

$P(A \cap B) =$

- A) $P(A) \times P(B|A)$
- B) $P(A) + P(B)$
- C) $P(B|A) + P(A)$

D) $P(A) / P(B)$

Answer: A) $P(A) \times P(B|A)$

49. Conditional probability is defined as:

A) $P(A \cup B) / P(B)$

B) $P(A) / P(B)$

C) $P(A \cap B) / P(B)$

D) $P(B) - P(A)$

Answer: C) $P(A \cap B) / P(B)$

50. Bayes' theorem is expressed as:

A) $P(A) + P(B)$

B) $P(B|A) = [P(A|B) \times P(B)] / P(A)$

C) $P(A \cap B) = P(A) + P(B)$

D) $P(A) = P(B) \times P(B|A)$

Answer: B) $P(B|A) = [P(A|B) \times P(B)] / P(A)$

51. The multiplication rule for **independent events A and B** is:

A) $P(A \cup B) = P(A) + P(B)$

B) $P(A \cap B) = P(A) + P(B)$

C) $P(A \cap B) = P(A) \times P(B)$

D) $P(A \cap B) = P(A) - P(B)$

Answer: C) $P(A \cap B) = P(A) \times P(B)$

52. Which of the following is **not** a valid property of a **probability mass function (pmf)**?

- A) $P(X = x) \geq 0$ for all x
 - B) $\sum P(X = x_i) = 1$
 - C) $P(X = x) > 1$ for some x
 - D) The values must be between 0 and 1
- Answer: C) $P(X = x) > 1$ for some x

53. The **r-th raw moment** about the origin is defined as:

- A) $E[(X - \mu)^r]$
- B) $E[X^r]$
- C) $E[X + r]$
- D) $E[X^2]$

Answer: B) $E[X^r]$

54. The **second central moment** of a distribution is:

- A) Mean
- B) Variance
- C) Skewness
- D) Kurtosis

Answer: B) Variance

55. The **third central moment** of a distribution indicates:

- A) Mean
- B) Variance
- C) Skewness
- D) Kurtosis

Answer: C) Skewness

56. A perfectly symmetrical distribution has a **skewness** of:

- A) 0
- B) 1
- C) -1
- D) ∞

Answer: A) 0

57. The **moment generating function (MGF)** of a random variable X is defined as:

- A) $M_X(t) = E[e^{tX}]$
- B) $M_X(t) = E[tX]$
- C) $M_X(t) = e^{tE(X)}$
- D) $M_X(t) = E[X^t]$

Answer: A) $M_X(t) = E[e^{tX}]$

58. The variance of a binomial distribution is:

S I P P Y N O U R D E E N

A) np

B) np^2

C) $np(1 - p)$

D) n^2p

Answer: C) $np(1 - p)$

59. The binomial distribution becomes symmetrical when:

- A) $p = 1$
- B) $p = 0.5$
- C) $p = 0$
- D) $p = 0.25$

 **Answer:** B) $p = 0.5$

60. The Poisson distribution is appropriate when:

- A) Probability of success is large
- B) Number of trials is small
- C) Number of trials is large and probability of success is small
- D) None of these

Answer: C) Number of trials is large and probability of success is small

61. A UMVUE is always:

- A) Biased
- B) Consistent but not efficient
- C) The best unbiased estimator with the least variance
- D) Not unique

Answer: C) The best unbiased estimator with the least variance

62. UMVUE exists only if the estimator is:

- A) Biased and complete
- B) Unbiased and complete
- C) Consistent

D) Maximum likelihood

Answer: B) Unbiased and complete

63. An estimator is **unbiased** if:

- A) It always overestimates
- B) Its expected value equals the true parameter
- C) It has minimum variance
- D) It is always equal to the parameter

Answer: B) Its expected value equals the true parameter

64. Completeness is a property of:

- A) Sample
- B) Estimator
- C) Sufficient statistic
- D) Random variable

Answer: C) Sufficient statistic

65. UMVUE stands for:

- A) Uniform Minimum Variance Unbiased Estimator
- B) Unbiased Method of Variance Estimation
- C) Uniform Maximum Variance Unbiased Estimator
- D) Uniform Minimum Value Unbiased Estimator

Answer: A) Uniform Minimum Variance Unbiased Estimator

66. The Chi-square distribution is used mainly for:

- A) Testing means
- B) Testing variances and independence
- C) Testing proportions

D) Testing regression coefficients

Answer: B) Testing variances and independence

67. Degrees of freedom in a Chi-square test for a contingency table =

A) (Rows + Columns – 1)

B) (Rows – 1)(Columns – 1)

C) Rows × Columns

D) None of these

Answer: B) (Rows – 1)(Columns – 1)

68. The Chi-square distribution is:

A) Symmetrical for all degrees of freedom

B) Always negatively skewed

C) Positively skewed

D) Uniform

Answer: C) Positively skewed

69. F-distribution is used to compare:

A) Means of two samples

B) Proportions

C) Two variances

D) Medians

Answer: C) Two variances

70. The F-distribution is defined only for:

A) Positive values ($F \geq 0$)

B) Negative values

C) Real numbers

D) Integers only

Answer: A) Positive values ($F \geq 0$)

71. The F-distribution has:

A) One degree of freedom

B) Two degrees of freedom (numerator and denominator)

C) No degrees of freedom

D) Fixed shape

Answer: B) Two degrees of freedom (numerator and denominator)

72. Adaptive sampling modifies:

A) Sample weights

B) Sample size based on observed values

C) Confidence levels

D) Mean square error

Answer: B) Sample size based on observed values

73. A key benefit of adaptive sampling is:

A) Simpler computation

B) Lower sample size

C) Better efficiency in detecting rare events

D) No requirement for pilot studies

Answer: C) Better efficiency in detecting rare events

74. The regression estimator of population mean is:

- A) \bar{y}
 - B) $\bar{y} + b(\bar{X} - \bar{x})$
 - C) $\bar{x} + b(\bar{Y} - \bar{y})$
 - D) $\bar{x} \cdot \bar{y}$
- Answer:** B) $\bar{y} + b(\bar{X} - \bar{x})$

75. Regression estimator is used when the relationship between x and y is:

- A) Linear
 - B) Constant
 - C) Random
 - D) Unrelated
- Answer:** A) Linear

76. The value of Pearson's correlation coefficient (r) lies between:

- A) 0 and 1
- B) -1 and $+1$
- C) $-\infty$ and $+\infty$
- D) 0 and ∞

Answer: B) -1 and $+1$

77. If $r=0$, then the variables are:

- A) Highly correlated
 - B) Positively correlated
 - C) Negatively correlated
 - D) Not linearly correlated
- Answer:** D) Not linearly correlated

78. The slope of regression line of Y on X is:

- A) $r \cdot \frac{\sigma_y}{\sigma_x}$
 - B) $r \cdot \frac{\sigma_x}{\sigma_y}$
 - C) $\frac{\sigma_y}{\sigma_x}$
 - D) $\frac{\sigma_x}{\sigma_y}$
-  **Answer:** A) $r \cdot \frac{\sigma_y}{\sigma_x}$

79. Multiple correlation refers to the relationship between:

- A) Two variables
- B) Three variables
- C) One dependent variable and two or more independent variables
- D) All variables being dependent

Answer: C) One dependent variable and two or more independent variables

80. The multiple correlation coefficient $R_{Y.X_1X_2}$:

- A) Lies between -1 and $+1$
- B) Is always negative
- C) Lies between 0 and 1
- D) Can exceed 1

Answer: C) Lies between 0 and 1

81. If $R=0$, it means:

- A) Perfect fit
- B) No relationship between Y and independent variables
- C) Model explains all variation

D) Model is overfitted

Answer: B) No relationship between Y and independent variables

82. Time series analysis is primarily used to:

- A) Compare two datasets
- B) Establish cause-effect relationship
- C) Analyze data across time for patterns and forecasting
- D) Test statistical hypotheses

Answer: C) Analyze data across time for patterns and forecasting

83. Which of the following is **not** a component of time series?

- A) Secular trend
- B) Seasonal variation
- C) Cyclical variation
- D) Random sampling error

Answer: D) Random sampling error

84. The long-term movement in a time series is called:

- A) Seasonal variation
- B) Trend
- C) Cyclical variation
- D) Irregular variation

Answer: B) Trend

85. Fluctuations that repeat over a short period (like a year or quarter) are:

- A) Trend
- B) Cyclical

- C) Seasonal
- D) Irregular

Answer: C) Seasonal

86. An **economic time series** typically includes:

- A) National income, inflation, GDP
- B) Temperature records
- C) Biological growth rates
- D) Survey responses

Answer: A) National income, inflation, GDP

87. The **cyclical component** in time series reflects:

- A) Regular weekly changes
- B) Sudden unpredictable events
- C) Long-term business cycle fluctuations
- D) Daily stock prices

Answer: C) Long-term business cycle fluctuations

S I P P Y N O U R D E E N

88. Which component of a time series is **unpredictable** and caused by unusual events like strikes or natural disasters?

- A) Trend
- B) Seasonal
- C) Cyclical
- D) Irregular or Residual

Answer: D) Irregular or Residual

89. The method of moving averages is used to estimate:

- A) Seasonal variation
- B) Irregular variation

- C) Trend
 - D) Cyclical variation
- Answer:** C) Trend

90. In a **multiplicative time series model**, the value is represented as:

- A) $Y = T + S + C + I$
- B) $Y = T \times S \times C \times I$
- C) $Y = T \times S + I$
- D) $Y = S + I$

Answer: B) $Y = T \times S \times C \times I$

 (T = Trend, S = Seasonal, C = Cyclical, I = Irregular)

91. In the **least squares method**, a linear trend is expressed as:

S I P P Y N O U R D E E N

- A) $Y = ab^t$
- B) $Y = a + bt$
- C) $Y = a^t + b$
- D) $Y = ab + t$

Answer: B) $Y = a + bt$

92. In a **3-year moving average**, the trend value is obtained by:

- A) Multiplying three values
- B) Adding three consecutive values and dividing by 3

- C) Taking median of values
- D) Averaging random numbers

Answer: B) Adding three consecutive values and dividing by

93. The sum of seasonal indices in **monthly data** using the ratio-to-moving-average method is approximately:

- A) 100
- B) 1200
- C) 300
- D) 0

Answer: B) 1200

 (12 months × 100)

94. Which of the following is **not** a method to determine seasonal indices?

- A) Method of simple averages
- B) Ratio-to-moving-average method
- C) Method of least squares
- D) Link relative method

Answer: C) Method of least squares

(It is used for **trend**, not seasonal index.)

95. The **method of simple averages** for seasonal indices involves:

- A) Dividing average of each season by grand average
- B) Adding trend values
- C) Multiplying values by 100
- D) Estimating slope

Answer: A) Dividing average of each season by grand average

96. A BIBD is defined by the parameters:

A) v, b, r, k, λ

B) n, p, q

C) x, y, z

D) μ, σ

 **Answer:** A) v, b, r, k, λ

97. In a BIBD, the basic identity is:

A) $r = k$

B) $vr = bk$

C) $v = b$

D) $\lambda = 1$

 **Answer:** B) $vr = bk$

98. The number of times each treatment appears in BIBD is denoted by:

A) λ

B) b

C) k

D) r

Answer: D) r

99. Split-plot designs are particularly useful when:

A) All treatments are difficult to apply

B) Resources are unlimited

C) Some treatments are hard to randomize completely

D) All treatments are easily randomized

Answer: C) Some treatments are hard to randomize completely

100. In split-plot design, whole plots are assigned to:

- A) Subplot treatments
- B) Replications
- C) Main plot treatments
- D) Random samples

Answer: C) Main plot treatments





S I P P Y N O U R D E E N