CUET Mathematics Test

Chapter: Unit V: Index Numbers and Time Based Data

General Instructions

1. Total Questions: **20**
2. Duration: **60 Minutes**
3. All questions are compulsory.
4. Each question carries **5 marks**.
5. For each correct answer: **+5 marks**.
6. For each incorrect answer: **-1 mark**.
7. No negative marking for unanswered questions.
8. Use of calculator or electronic devices is strictly prohibited.
9. Choose the most appropriate answer from the given options.

1. The additive model of a time series is expressed as:
   (A) $Y = T \times S \times C \times I$
   (B) $Y = T + S + C + I$
   (C) $Y = T + S \times C + I$
   (D) $Y = T \times (S + C + I)$

2. Which component of a time series is associated with a long-term smooth variations over a long period?
   (A) Seasonal Variations
   (B) Cyclical Variations
   (C) Secular Trend
   (D) Irregular Variations

3. The rise and fall of a time series over a period of more than one year, typically 3 to 10 years, is called:
   (A) Secular Trend
   (B) Seasonal Variations
   (C) Cyclical Variations
   (D) Random Variations

4. In a time series analysis, the method of moving averages is used to:
   (A) Measure seasonal variations only
   (B) Eliminate the effect of trend
   (C) Smooth out variations and identify the trend
   (D) Predict irregular fluctuations

5. Given a set of data for 5 years: 10, 12, 15, 18, 20. The 3-year moving average for the third year is:
   (A) 12.33
   (B) 15.00
   (C) 12.00
   (D) 17.66

6. Which of the following is an example of seasonal variation?
   (A) An increase in sales during a recession
   (B) A decrease in agricultural production due to a flood
   (C) An increase in the sale of woolen clothes during winter
   (D) A long-term increase in the use of smartphones

7. If the straight line trend is $Y = a + bX$, where X is the time and $\sum X = 0$, the value of 'a' is calculated as:
   (A) $\sum Y/n$
   (B) $\sum XY/\sum X^2$
   (C) $\sum Y$
   (D) $\sum X/n$

8. The method of least squares is used to find the "line of best fit". For the trend line $Y = a + bX$, the normal equations are:
   (A) $\sum Y = na + b\sum X$ and $\sum XY = a\sum X + b\sum X^2$
   (B) $\sum Y = a + b\sum X$ and $\sum XY = a\sum X + b$
   (C) $\sum Y = n + ab$ and $\sum XY = na + b$
   (D) $\sum Y = \sum X$ and $\sum XY = \sum X^2$

9. A time series consists of 4 years of data. If we calculate a 4-year centered moving average, the first value will correspond to:

(A) The end of the 1st year
(B) The middle of the 2nd year
(C) The end of the 2nd year
(D) The middle of the 3rd year

10. The "Irregular Variations" in a time series are also known as:
(A) Systematic variations
(B) Predictable variations
(C) Random or episodic variations
(D) Periodic variations

11. In the multiplicative model $Y = T \times S \times C \times I$, if the seasonal index for a particular month is 1.20, it means:
(A) Sales are 20 percent below the trend
(B) Sales are 120 units
(C) Sales are 20 percent above the trend
(D) Sales are constant

12. For the trend line $Y = 20 + 1.5X$ (origin at 2020, X in years), the predicted value for the year 2024 is:
(A) 24.5
(B) 26.0
(C) 27.5
(D) 23.0

13. Which component of time series is impossible to predict?
(A) Secular Trend
(B) Seasonal Variation
(C) Cyclical Variation
(D) Irregular Variation

14. In the method of semi-averages, if the number of years is odd (say 7), we usually:
(A) Drop the middle year
(B) Average all 7 years
(C) Divide into 4 and 3
(D) Add a dummy year

15. The slope 'b' in the trend equation $Y = a + bX$ represents:
(A) The value of Y when $X = 0$
(B) The average rate of change in Y per unit of time
(C) The total sum of Y values
(D) The seasonal index

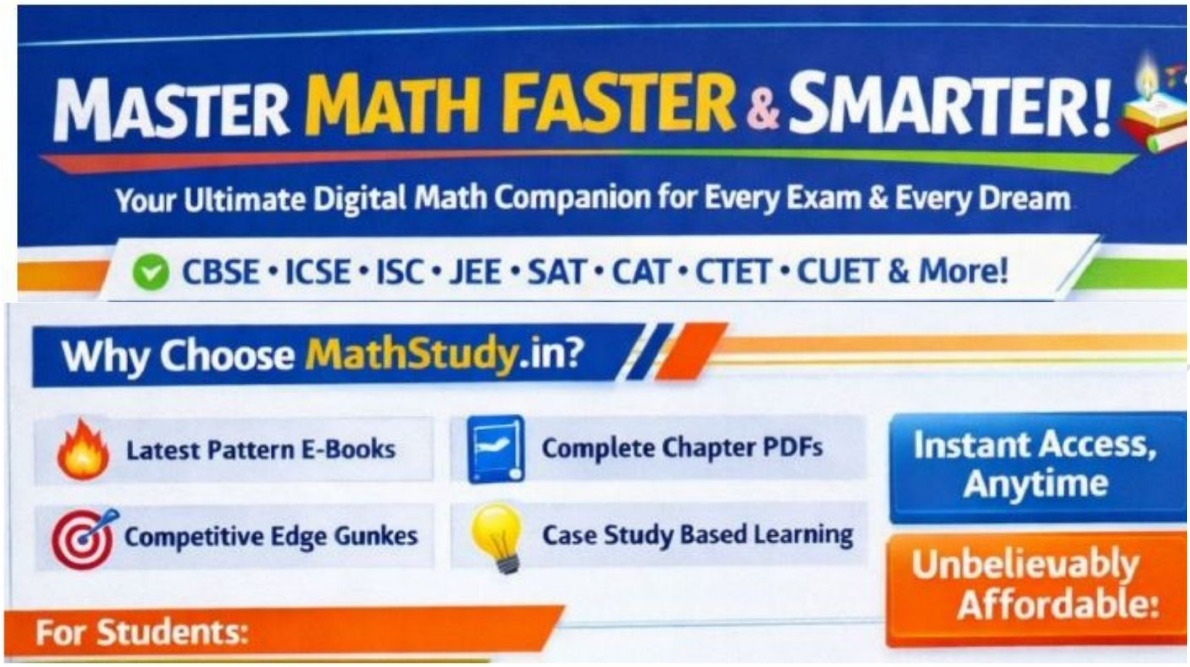
16. Given $\sum Y = 150$, $\sum X = 0$, $\sum X^2 = 10$, $\sum XY = 30$, and $n = 5$, the trend equation is:
(A) $Y = 30 + 3X$
(B) $Y = 150 + 30X$
(C) $Y = 3 + 30X$
(D) $Y = 30 + 10X$

17. The cyclical component of a time series is usually measured using:
(A) Weekly data
(B) Monthly data
(C) Annual data over a long period
(D) Hourly data

18. If the trend equation is $Y = 100 + 5X$ where $X = (Year - 2018)$, the trend value for 2015 is:
    (A) 115
    (B) 100
    (C) 85
    (D) 95

19. Which of the following is NOT a method of measuring trend?
    (A) Graphical Method
    (B) Method of Moving Averages
    (C) Method of Least Squares
    (D) Fisher's Ideal Index

20. The process of removing the seasonal component from a time series is called:
    (A) Forecasting
    (B) Smoothing
    (C) Deseasonalization
    (D) Linear Regression



Special Features

- **Board-Specific** – CBSE, ICSE, ISC, State Boards
- **Exam-Focused** – JEE, SAT, CAT, CTET, CUET, NTSE
- **Grade-Wise** – Class 6 to 12
- **Bilingual Options** – English & Hindi Medium Support
- **Printable & Shareable** – Use offline, anytime

How to Order:

Visit : https://www.mathstudy.in
Browse by Exam, Class, or Topic
Add to Cart & Checkout

Contact & Support:

Email: admin@mathstudy.in
WhatsApp Support Available : +91-+91 92118 65759

Why Wait? Empower your learning journey, save time, and achieve your dreams!

Explore & Start Learning Today:
https://www.mathstudy.in – Premium eBooks for success
https://www.udgamwelfarefoundation.com – Free PDFs, practice tests, & guida

MathStudy.in — Empowering Learners, Enabling Educators, Encouraging Excellence.
Digital Learning | Affordable Excellence | Trusted by Thousands