

CEnT-S 2025 Preparation Book

**600+ Expert Selected Questions with Explanations for
Mathematics, Reasoning, Biology, Chemistry & Physics**

First Edition

November 2025

*Note: This book has been specifically designed for
CEnT-S 2025. It focuses on updated question
patterns and the new unified syllabus, with the goal of helping
students achieve a high score in their first attempt.*

Structure of the CEnT-S

The CEnT-S structure consists of 55 questions divided into 5 sections.

- Mathematics
- Reasoning on Texts and Data
- Biology
- Chemistry
- Physics

SECTIONS	QUESTIONS	DURATION
Mathematics	15	30
Reasoning on Texts and Data	15	30
Biology	10	20
Chemistry	10	20
Physics	5	10
TOTAL	55	110

Each section has a time limit: once you're up, you must move on to the next section. If you complete a section before the time runs out, you can move on to the next one, but keep in mind that you'll lose the remaining time and can't return to the previous section.

Test evaluation and normalization

The result of each CEnT-S is determined by the number of correct, incorrect, and unanswered questions, which determine an absolute score:

- **1 point** for each correct answer
- **0 points** for each unanswered question
- **a penalty of 0.25 points** for each incorrect answer

To calculate the normalized score (the final test score), the absolute score is adjusted by adding a normalization coefficient. This coefficient is higher for more difficult tests, compensating for their complexity. The coefficient is calculated at the end of each macro-period by analyzing the difficulty of the questions (unknown beforehand) to determine the actual difficulty of each test. The normalized score is available in the CISIA Test Area at the end of the macro-period:

- January 30 for the first macro-period
- March 31 for the second macro-period
- June 30 for the third macro-period
- October 30 for the fourth macro-period

Syllabus of the CEnT-S

Mathematics

- Numbers
- Algebra
- Geometry
- Functions
- Exponential and logarithms
- Combinatorics and probability
- Basic Statistics

Reasoning on Texts and Data

- Logic and deductive reasoning
- Interpretation and manipulation of data
- Problem solving and basic mathematical language

Biology

- Biological molecules
- Cell biology
- Cell cycle, cell division, inheritance
- Elements of plant biology and ecology
- Elements of animal anatomy and physiology

Chemistry

- Macroscopic Properties of Matter
- Microscopic Properties of Matter and Composition of Substances
- Periodic Trends and Atomic Structure
- Chemical Reactions and Stoichiometry
- Thermodynamics and Kinetics
- Compounds and Solutions
- Acids and Bases
- Oxidation and Reduction (Redox)
- Organic Chemistry
- Applied Chemistry

Physics

- Physical quantities and measurement
- Point particle kinematics
- Point particle dynamics, energy and work
- Fluid mechanics and Thermodynamics
- Electromagnetism principles

Mathematics

1. Two friends discuss divisibility criteria for integers. Alberto states: “A positive integer n is divisible by 6 if and only if the sum of its digits is divisible by 6.”

Bruno says this is false. Which value of n is a counterexample?

- A) 3333
- B) 6666
- C) 5505
- D) 7777
- E) 4404

Answer: A

Explanation: Sum of digits of 3333 is $3 + 3 + 3 + 3 = 12$, divisible by 6. But $3333 \div 6 = 555.5$, not a whole number. So, it's a counterexample.

2. The number $x = \log_2 18$ is:

- A) greater than 4 and less than 5
- B) less than 4
- C) equal to 9
- D) greater than 5
- E) negative

Answer: A

Explanation: $\log_2 16 = 4$, $\log_2 32 = 5$, and 18 lies between them. So, $\log_2 18$ is between 4 and 5.

3. A student has an average of 24/30 after three exams. After scoring 30/30 on the fourth exam, what is the new average?

- A) 25.5/30
- B) Data not enough
- C) 26.5/30
- D) 27/30
- E) 25/30

Answer: A

Explanation: Total = $3 \times 24 + 30 = 102$, Average = $102 \div 4 = 25.5$.

4. The solution to the inequality $\log_{10} x > \log_{10}(x - 1)$ is:

- A) $0 < x < 1$
- B) $x > 0$
- C) every real value of x
- D) $x \geq 1$
- E) $x > 1$

Answer: E

Explanation: Since log is increasing, $\log x > \log(x - 1)$ when $x > x - 1$, implying $x > 1$ (domain $x > 1$).

5. In the plane, the locus of points equidistant from two distinct points is:

- A) one or two lines, depending on the position
- B) a line
- C) an ellipse
- D) an oval
- E) two perpendicular lines

Answer: B

Explanation: Points equidistant from two fixed points form the perpendicular bisector a line.

6. In a rhombus, if one diagonal equals the side, the other diagonal is:

- A) $\sqrt{3}$ times the side
- B) equal to the side
- C) independent of previous data, arbitrary
- D) $\sqrt{2}$ times the side
- E) double the side

Answer: A

Explanation: If one diagonal = side s , by Pythagoras, other diagonal = $s\sqrt{3}$.

7. If an angle α measures 3 radians, then:

- A) $\tan \alpha > 0$
- B) $\cos \alpha < 0$
- C) $\sin \alpha = \frac{1}{2}$
- D) $\sin \alpha < \tan \alpha$
- E) $\cos \alpha = \frac{1}{10}$

Answer: B

Explanation: $\alpha = 3$ radians $\approx 171.9^\circ$ (second quadrant), where $\cos \alpha$ is negative.

8. A rectangle has an area of 90 cm^2 and side ratio 5:2. Its perimeter is:

- A) 42 cm
- B) 38 cm
- C) $14/5$ cm
- D) 21 cm
- E) 14 cm

Answer: A

Explanation: Let sides be $5x$ and $2x$. Then $10x^2 = 90 \Rightarrow x = 3$. Perimeter = $2(5x + 2x) = 14x = 42 \text{ cm}$.

9. For a positive real number a , the expression $(a^{-3} : a^{-2})^{-1/2}$ equals:

- A) $a^{-1/2}$
- B) $a^{1/2}$
- C) a
- D) $a^{-1/3}$
- E) $a^{2/3}$

Answer: B

Explanation: $a^{-3}/a^{-2} = a^{-1} \Rightarrow (a^{-1})^{-1/2} = a^{1/2}$.

10. In the Cartesian plane, only one of the following equations represents a parabola with the axis parallel to the x -axis. Which one?

- A) $y = 2x^2$
- B) $y = 3x - 1$
- C) $x^2 + 2xy + y^2 - x = 1$
- D) $y^2 = x + 2$
- E) $x^2 - 2xy = 1$

Answer: D

Explanation: Equation $y^2 = x + 2$ is a parabola opening sideways, so its axis is parallel to the x -axis.