

YEAR 10 SCIENCE SELF ASSESSMENT TEST



“Test yourself or your child at home, and reach out to us only if you need extra help. Otherwise, give yourself or your child a pat on the back and best of luck for the future!”

Instructions: Answer all questions. All questions are multiple-choice. Some questions require calculations. Calculators may be used where appropriate.

Section A: Conceptual & Application based MCQs

- Which statement best explains why increasing the temperature of a reaction generally increases the rate of reaction?
 - Particles gain mass and collide more often
 - Particles move faster, increasing the frequency of successful collisions
 - Activation energy of the reaction is reduced to zero
 - Reactant concentration increases automatically
- In a closed system, a chemical reaction occurs. Which observation best demonstrates the law of conservation of mass?
 - Temperature remains constant throughout the reaction
 - Mass of products equals mass of reactants
 - Volume of gas decreases
 - Colour change is observed
- Which change would increase the electrical resistance of a metal wire?
 - Increasing its temperature
 - Increasing its cross-sectional area
 - Decreasing its length
 - Using a material with more free electrons
- Which energy transformation occurs in a hydroelectric power station?
 - Electrical \rightarrow kinetic \rightarrow gravitational potential
 - Gravitational potential \rightarrow kinetic \rightarrow electrical
 - Chemical \rightarrow thermal \rightarrow electrical
 - Kinetic \rightarrow chemical \rightarrow electrical
- Why are fossil fuels considered non-renewable resources?
 - They release carbon dioxide when burned
 - They cannot be recycled
 - Their formation takes millions of years
 - They are inefficient energy sources
- Which statement best describes the structure of ionic compounds?
 - Discrete molecules held together by weak forces

- B. A lattice of oppositely charged ions held by electrostatic attraction
 - C. Atoms sharing electrons equally
 - D. Metallic ions surrounded by free electrons
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7. An increase in atmospheric carbon dioxide most directly contributes to:

- A. Ozone depletion
 - B. Increased albedo of Earth
 - C. Enhanced greenhouse effect
 - D. Reduced solar radiation
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8. Why are alloys generally stronger than pure metals?

- A. They contain heavier atoms
 - B. Different-sized atoms disrupt layer sliding
 - C. They conduct electricity better
 - D. They have higher melting points
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10. A force of 30 N acts on a mass of 5 kg. What is the acceleration produced?

- A. 1 m/s^2
 - B. 5 m/s^2
 - C. 6 m/s^2
 - D. 150 m/s^2
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11. A 240 V appliance draws a current of 2 A. What is the electrical power consumed?

- A. 120 W
 - B. 240 W
 - C. 360 W
 - D. 480 W
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12. If a resistor has a resistance of 10Ω and a current of 3 A flows through it, what is the potential difference across the resistor?

- A. 3 V
 - B. 10 V
 - C. 13 V
 - D. 30 V
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Section B: Numericals

9. A car accelerates uniformly from rest to a velocity of 20 m/s in 5 seconds. What is the acceleration of the car?

- A. 2 m/s^2
 - B. 4 m/s^2
 - C. 5 m/s^2
 - D. 10 m/s^2
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13. A substance absorbs 500 J of energy and its temperature increases. Which conclusion is most scientifically valid?

- A. The process is exothermic
- B. Chemical bonds are breaking overall
- C. The substance has a low specific heat capacity
- D. Energy is conserved but redistributed

14. A student investigates the effect of surface area on reaction rate. Which variable must be kept constant to ensure a fair test?

- A. Size of solid reactant
- B. Mass of solid reactant
- C. Rate of reaction
- D. Time taken

15. Which conclusion is best supported if repeated trials of an experiment produce consistent results but differ from the accepted value?

- A. The results are invalid
- B. The experiment lacks reliability
- C. There may be systematic error
- D. The hypothesis is proven



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