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Chemistry Grade 9 — Chapter 8

Energetics

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Practice MCQs extracted from the supplied Class 9 Chemistry chapter tests (Section A). Total: 10 questions.

A. Important / Main Topics

1. The study of energy changes in chemical reactions is called:

(A) Thermochemistry
(B) Electrochemistry
(C) Stoichiometry
(D) Chemical kinetics

Correct Answer: A

Explanation: The branch of chemistry that deals with heat or thermal energy changes in chemical reactions is called thermochemistry (or chemical energetics).

2. Which of the following processes **releases energy?**

(A) Breaking a chemical bond
(B) Forming a chemical bond
(C) Melting ice
(D) Boiling water

Correct Answer: B

Explanation: Forming a chemical bond — this correctly answers the question.

3. A reaction in which heat is absorbed from the surroundings is called:

(A) Exothermic
(B) Neutralization
(C) Endothermic
(D) Combustion

Correct Answer: C

Explanation: An endothermic reaction absorbs heat from the surroundings, causing the surroundings to cool.

4. In an exothermic reaction, the sign of \(\Delta H\) is:

(A) Positive (+)
(B) Zero
(C) Cannot be determined
(D) Negative (−)

Correct Answer: D

Explanation: In an exothermic reaction, heat is released, so the enthalpy change \(\Delta H\) is negative.

5. The minimum energy required to remove the outermost electron from an isolated gaseous atom is called:

(A) Ionization energy
(B) Activation energy
(C) Bond energy
(D) Enthalpy change

Correct Answer: A

Explanation: Ionization energy is the minimum energy required to remove the outermost electron from an isolated gaseous atom.

B. Less Important / Secondary Topics

6. A catalyst increases the rate of a chemical reaction by:

(A) Lowering the activation energy
(B) Increasing the activation energy
(C) Changing the enthalpy of the reaction
(D) Increasing the temperature

Correct Answer: A

Explanation: A catalyst provides an alternative pathway with lower activation energy, increasing the reaction rate. It does not change \(\Delta H\).

7. Which of the following is an **exothermic process?**

(A) Photosynthesis
(B) Respiration
(C) Melting of ice
(D) Decomposition of limestone

Correct Answer: B

Explanation: Respiration is a biochemical process that releases energy (exothermic). Photosynthesis, melting ice, and decomposition of limestone are endothermic.

8. In a thermochemical equation, the physical states of reactants and products are important because:

(A) They affect the color of the reaction
(B) They determine the reaction rate
(C) They affect the enthalpy change of the reaction
(D) They determine the activation energy

Correct Answer: C

Explanation: Different physical states have different energy contents, so the enthalpy change depends on the states of the substances involved.

9. The amount of energy released when neutral atoms form one mole of a bond is called:

(A) Bond dissociation energy
(B) Activation energy
(C) Lattice energy
(D) Bond energy

Correct Answer: D

Explanation: Bond energy is the energy released when neutral atoms form one mole of a bond. Bond dissociation energy is the energy required to break a bond.

10. Which of the following is **not true about a catalyst?**

(A) It changes the enthalpy change (\(\Delta H\)) of the reaction
(B) It speeds up a reaction
(C) It remains chemically unchanged at the end
(D) It provides an alternative reaction pathway

Correct Answer: A

Explanation: It changes the enthalpy change (\(\Delta H\)) of the reaction — this correctly answers the question.