

CASE STUDY QUESTION 20

Read the following and answer any four questions from (i) to (v)

Chemical reaction, a process in which one or more substances, the reactants, are converted to one or more different substances, the products. Substances are either chemical elements or compounds. A chemical reaction rearranges the constituent atoms of the reactants to create different substances as products. Study this table related to the different types of reactions / processes and answer the questions that follow.

S. No.	Name of Process	Word equation
i.	Combustion	Magnesium + Oxygen $\xrightarrow{\text{heat}}$ Magnesium dioxide
ii.	Photosynthesis	Carbon dioxide + Water $\xrightarrow[\text{chlorophyll}]{\text{sunlight}}$ Glucose + Oxygen + Water
iii.	Combination	Iron + Sulphur $\xrightarrow{\text{heat}}$ Iron sulphide
iv.	Photodecomposition	Silver bromide $\xrightarrow{\text{light}}$ Silver + Bromine

(i) The reaction in which two or more substances combine to form a single substance under suitable conditions is

- (a) combination reaction (b) combustion
(c) decomposition reaction (d) photosynthesis.

Ans: (a) combination reaction

(ii) Which of the following is essential for photosynthesis?

- (a) Sunlight (b) Chlorophyll (c) Glucose (d) Both 'a' and 'b'

Photosynthesis is the process by which green plants and some other organisms use sunlight to synthesis nutrients from carbon dioxide and water.

Ans: (d) Both 'a' and 'b'

(iii) When a chemical compound decomposes on absorbing light and energy, then the reaction which takes place is known as

- (a) photosynthesis (b) photodecomposition
(c) combination (d) thermal decomposition.

A photodecomposition is a chemical reaction in which an inorganic chemical (or an organic chemical) is broken down by photons and is the interaction of one or more photons with one target molecule.

Ans: (b) photodecomposition

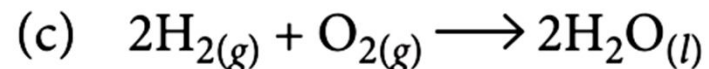
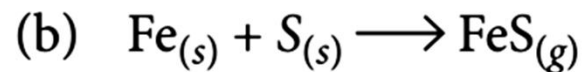
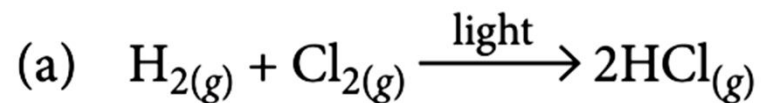
(iv) Which of the following reactions is an example of combustion reaction ?

- (a) $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$ (b) $Zn_{(s)} + H_2SO_{4(aq)} \longrightarrow ZnSO_{4(aq)} + H_{2(g)}$
(c) $Zn_{(s)} + 2HCl_{(aq)} \longrightarrow ZnCl_{2(aq)} + H_{2(g)}$ (d) $3Mg_{(s)} + N_{2(g)} \longrightarrow Mg_3N_{2(s)}$

Ans: (a) $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$

A combustion reaction is a reaction in which a substance reacts with oxygen gas, releasing energy in the form of light and heat.

(v) Which of the following is an example of combination reaction?



(d) All of them

A combination reaction (also known as a synthesis reaction) is a reaction where two or more elements or compounds (reactants) combine to form a single compound (product).

Ans: (d) All of them