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Answers Key:

Case Study Questions

1. (i) **(c)** 4 and 2
   (ii) **(c)** No reaction takes place
   (iii) **(b)** Reducing agent
   (iv) **(d)** Displacement reaction
   (v) **(c)** Fe (II) chloride and hydrogen gas

Assertion and reason

2. **(c)**: Reducing agent gives hydrogen to another substance.
3. **(c)**: This is because nitrogen is an antioxidant. It prevents the chips from being oxidised.

3 Marks

4. (i) Before heating, it is pale green.
   After heating, it is brown or reddish brown.
   Two observations are:
   (a) Change in state and colour
   (b) Evolution of gas
   (ii) Decomposition reaction
   $2FeSO_4(s) \xrightarrow{Heat} Fe_2O_3(s) + SO_2(g) + SO_3(g)$
5. (i) $Na_2CO_3(s) + 2HCl(aq) \longrightarrow 2NaCI(aq) + H_2O(I) + CO_2(g)$
   (ii) $CaO(s) + H_2O(I) \longrightarrow Ca(OH)_2(aq) + Heat$
   (iii) $Pb(NO_3)_2(aq) + NaCl(aq) \longrightarrow PbCI_2(s) + 2NaNO_3(aq)$
6. (i) Vegetable matter changing into compost is exothermic and decomposition reaction.
   (ii) Burning of natural gas is exothermic reaction.
   (iii) Adding water to quick lime to form slaked lime is combination reaction and exothermic in nature.
7. Sugar is a complex compound which on heating undergoes decomposition. Water from sugar gets evaporated thereby leaving behind only black carbon in the test tube.

2 Marks

8. Photosynthesis is a reaction in which energy is required to form glucose from carbon dioxide and water. Energy in the form of sunlight is also required to break the bonds of hydrogen and oxygen. hence it is termed as endothermic reaction.
9. (i) Mass can neither be created nor destroyed in a chemical reaction-Law of conservation of mass
   (ii) $3Fe+4H_2O \rightarrow Fe_3O_4+4H_2$
10. Double displacements well as precipitation reaction.
    (a) Double displacement as well as precipitation reaction.
    (b) $Pb(NO_3)_2(aq) + 2KI(as) \longrightarrow PbI_2(s) + 2KNO_3(aq)$
    Yellow ppt
11. It is a double displacement reaction.

Multiple Choice Question

12. (b) 2 : 1 by volume
13. (a) 3 and 3
14. (d) Heating of limestone.