

# CHEMICAL REACTION

## DPP -I

### A. Very Short Answer Type Questions

**Q.1** Why is that when a metal reacts with a non-metal, the reaction is always a redox reaction ?

**Q.2** What are the two methods which can prevent the rancidity fatty foods ?

**Q.3** Find the oxidising and reducing agent in the following reaction :  
$$\text{PbS(s)} + 4\text{H}_2\text{O}_2\text{(aq)} \longrightarrow \text{PbSO}_4\text{(s)} + 4\text{H}_2\text{O(l)}$$

**Q.4** It is said that "decomposition of calcium carbonate to calcium oxide and carbon dioxide on heating is an important decomposition reaction used in various industries". Explain how ?

**Q.5** What happens when green coloured crystals of ferrous sulphate are heated ? Which term is used to represent such type of reaction ?

**Q.6** Write a balanced chemical equation for the following reactions ? Use symbols to make equations more informative.

(i) Barium chloride reacts with zinc sulphate forming zinc chloride and precipitates of barium sulphate.

(ii) Aluminium metal displaces manganese in liquid form when heated with manganese dioxide.

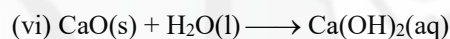
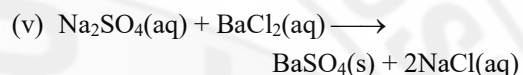
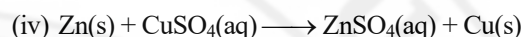
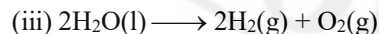
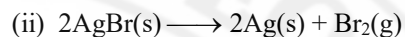
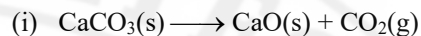
**Q.7** Consider the following reaction :  
$$\text{SO}_2\text{(g)} + 2\text{H}_2\text{S(g)} \longrightarrow 3\text{S(s)} + 2\text{H}_2\text{O(l)}$$

- Name the substance oxidized
- Name the oxidising agent.
- Name the substance reduced.
- Name the reducing agent.

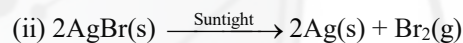
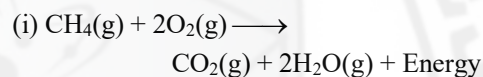
**Q.8** Gives suitable reason for the following -

- Can a displacement reaction be a redox reaction ?
- Gold and platinum do not get affected even if there is presence of moist air or acidic gases. Why
- Corrosion of aluminium is considered to be advantageous ?

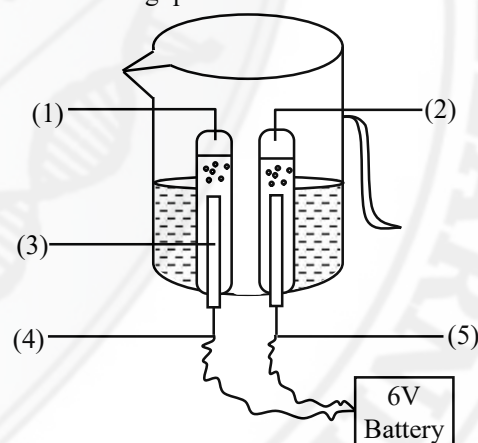
**Q.9** Classify each of the following reaction as : thermal decomposition, displacement, double displacement, electrical decomposition, combination or photo decomposition reaction.



**Q.10** [A] What interpretations can be made from the following reaction :



[B] Observe the figure carefully and answer the following question :



- Label the parts 1 to 5
- Why is the amount of gas collected in one of the test-tube is double of the amount collected in the other ?
- How you will test the presence of gases in both the test tubes ?

**Q.11** What is a chemical equation ?

**Q.12** What is a skeletal equation ?

**Q.13** Name the term used for the solution of a substance in water

- Q.14** In electrolysis of water. Why is the volume of gas collected over one electrode double that of gas collected over the other electrode
- Q.15** Give reason for keeping hydrogen peroxide in coloured bottles ?
- Q.16** Balance the following chemical equation :  
 $\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- Q.17** On the basis of the following reactions, indicate which is most reactive and which is least reactive metal out of zinc, copper and iron.  
 $\text{CuSO}_4(\text{aq}) + \text{Fe}(\text{s}) \longrightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$   
 $\text{FeSO}_4(\text{aq}) + \text{Zn}(\text{g}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe}(\text{s})$
- Q.18** In a chemical equation, what do the notations (s), (l) and (g) stand for ?
- Q.19** Balance the following chemical equation :  
 $\text{FeCl}_2 + \text{H}_2\text{S} \longrightarrow \text{HCl} + \text{FeS}$
- Q.20** Write two conditions for rusting of an iron article.

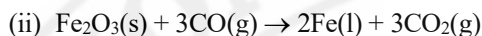
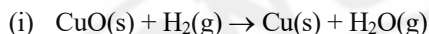
### **B. Short Answer Type Questions**

- Q.21** How do we come to know that a chemical reaction has taken place ?
- Q.22** What is an oxidation reaction ? Identify in the following reaction :  
 (i) The substance oxidised,  
 (ii) The substance reduced :  
 $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$
- Q.23** Why cannot we stir silver nitrate solution with copper spoon ?
- Q.24** Among the following displacement reactions which one will take place and which one will not occur and why ?  
 (i)  $\text{MgSO}_4(\text{aq}) + \text{Zn}(\text{s}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{Mg}(\text{s})$   
 (ii)  $\text{CuSO}_4(\text{aq}) + \text{Fe}(\text{s}) \longrightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$
- Q.25** What is an oxidation reaction ? Give an example of oxidation reaction. Is oxidation an exothermic or an endothermic reaction.
- Q.26** On the basis of the following chemical equations, find out which is the least reactive metal amongst iron, copper and zinc ?  
 (i)  $\text{FeSO}_4(\text{aq}) + \text{Zn}(\text{s}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe}(\text{s})$   
 (ii)  $\text{CuSO}_4(\text{aq}) + \text{Fe}(\text{s}) \longrightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$
- Q.27** What happens when iron nails are put in copper sulphate solution ?  
 (i) Write the equation for the reaction that takes place  
 (ii) Name the type of reaction involved
- Q.28** What type of chemical equation are the following equations :  
 (i)  $\text{A} + \text{BC} \longrightarrow \text{AC} + \text{B}$   
 (ii)  $\text{A} + \text{B} \longrightarrow \text{AB}$   
 (iii)  $\text{AB} \longrightarrow \text{A} + \text{B}$   
 (iv)  $\text{AB} + \text{CD} \longrightarrow \text{AD} + \text{CB}$
- Q.29** Why does stale food give a bad taste and bad smell ?
- Q.30** Why do silver, gold and platinum not corrode in moist air ?

## DPP-II

### A. Long Answer Type Questions

**Q.1** Consider the following chemical equations :



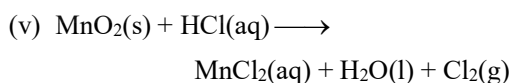
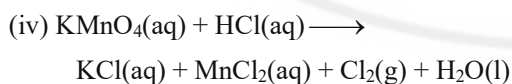
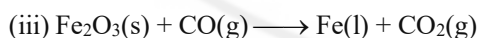
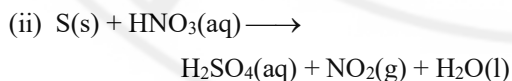
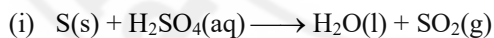
Identify the following in these equations, giving reasons :

- (a) The substance getting oxidised.
- (b) The substance getting reduced
- (c) The oxidising agent
- (d) The reducing agent

**Q.2** Translate the following statements into chemical equations and then balance them.

- (a) Hydrogen gas combines with nitrogen to form ammonia.
- (b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.
- (c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.
- (d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.
- (e) Aluminium chloride reacts with ammonium hydroxide to form a gelatinous white precipitate of aluminium hydroxide and a salt of ammonium chloride.

**Q.3** Balance the following chemical equations :



**Q.4** Matching columns

#### Column-I

#### Column-II

1. Displacement reaction (a)  $\text{CaCO}_3\text{(s)} \xrightarrow{\text{Heat}} \text{CaO(s)} + \text{CO}_2\text{(g)}$
2. Double displacement reactions. (b)  $\text{AgCl(s)} \xrightarrow{\text{Sunlight}} 2\text{Ag(s)} + \text{Cl}_2\text{(g)}$
3. Thermal decomposition reaction. (c)  $\text{Na}_2\text{SO}_4\text{(aq)} + \text{BaCl}_2\text{(aq)} \longrightarrow \text{BaSO}_4\text{(s)} + 2\text{NaCl(aq)}$
4. Photolytic decomposition reaction. (d)  $\text{Pb(NO}_3)_2\text{(s)} \xrightarrow{\text{Heat}} 2\text{PbO(s)} + 4\text{NO}_2\text{(g)} + \text{O}_2\text{(g)}$
5. Addition reaction involving combination of two compound (e)  $\text{Pb(NO}_3)_2\text{(aq)} + 2\text{KI(aq)} \longrightarrow \text{PbI}_2\text{(s)} + 2\text{KNO}_3\text{(aq)}$
6. Reaction involving combination between two elements (f)  $\text{Zn(s)} + \text{CuSO}_4\text{(aq)} \longrightarrow \text{ZnSO}_4\text{(aq)} + \text{Cu(s)}$
7. Reaction involving combination between element and compound (g)  $\text{AgNO}_3\text{(aq)} + \text{NaCl(aq)} \longrightarrow \text{AgCl(s)} + \text{NaNO}_3\text{(aq)}$
8. Reaction in which white precipitate is formed. (h)  $\text{CaO(s)} + \text{H}_2\text{O(l)} \longrightarrow \text{Ca(OH)}_2\text{(aq)}$
9. Reaction in which yellow precipitate is formed. (i)  $\text{SO}_2\text{(g)} + \text{O}_2\text{(g)} \longrightarrow \text{SO}_3\text{(g)}$
10. Reaction in which brown fumes are formed (j)  $\text{C(s)} + \text{O}_2\text{(g)} \longrightarrow \text{CO}_2\text{(g)}$

### B. Fill in the Blanks

**Q.5** In a reversible reaction both reactants and products are separated from each other by using ..... sign.

**Q.6** Combustion reactions are always ..... in nature.

**Q.7** Exothermic reactions are ..... common than endothermic reaction.

**Q.8** Decomposition reactions are ..... of combination reactions.

- Q.9 In a chemical equation, the symbol ..... indicates to produce.
- Q.10  $\text{Fe} + \text{CuSO}_4 \longrightarrow \text{FeSO}_4 + \dots\dots\dots$
- Q.11 Chemically rust is .....
- Q.12 The symbol aq in a chemical equation represents .....
- Q.13 The chemical change involving iron and hydrochloric acid illustrates a..... reaction
- Q.14 In the type of reaction called ..... two compounds exchange their positive and negative radicals.

### C. True /False Type Questions

- Q.15 On heating the crystals of ferrous sulphate, the colour changes from green to grey.
- Q.16 Calcium oxide is also called lime or quicklime.
- Q.17 On heating the crystals of lead nitrate crystals, the emission of brown fumes occurs.
- Q.18 The thermal decomposition reaction of calcium sulphate (gypsum) is used in black and white photography.
- Q.19 The decomposition reaction of silver bromide into silver and bromine by light is used in the manufacturing of cement.
- Q.20 The insoluble substance formed during a chemical reaction is known as a precipitate.
- Q.21 During endothermic reactions, heat is transferred from the reacting substances to the surroundings.
- Q.22 The reaction  $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$  is an example double displacement reaction.
- Q.23 Keeping food in airtight containers helps to slow down oxidation.
- Q.24 Due to corrosion iron gets a brown coating, copper gets a green coating and silver gets a black coating.

## Chemical Reactions

## DPP III

1. Which of the following reaction can also be termed as a thermal decomposition reaction?

- (a) Combination reaction (c) Displacement reaction  
(b) Decomposition reaction (d) Double displacement reaction

2. A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which of the following option gives the chemical equation of the reaction?

- (a)  $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_2$  (c)  $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$   
(b)  $2\text{Al} + \text{Cl}_2 \rightarrow 2\text{AlCl}$  (d)  $3\text{Al} + 3\text{Cl}_2 \rightarrow 3\text{AlCl}_3$

3. Give the ratio in which hydrogen and oxygen are present in water by volume.

- (a) 1:2 (c) 2:1  
(b) 1:1 (d) 1:8

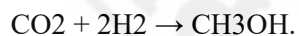
4. A researcher adds barium hydroxide to hydrochloric acid to form a white-coloured barium chloride. Which of the following option gives the balanced chemical equation of the reaction?

- (a)  $\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaCl}_2 + 2\text{HOH}$  (c)  $2\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaH}_2 + 2\text{HCl} + \text{O}_2$   
(b)  $2\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaCl}_2 + 2\text{HOH}$  (d)  $\text{HCl} + 2\text{Ba}(\text{OH}) \rightarrow 2\text{BaCl}_2 + 2\text{HOH} + \text{O}_2$

5. One of the following processes does not involve a chemical reaction, that is:

- (a) Melting of candle wax when heated (c) Digestion of food in your stomach  
(b) Burning of candle wax when heated (d) Ripening of banana

6. A student wrote a chemical equation of the reaction between carbon monoxide and hydrogen as,



How can the reaction be classified?

- (a) The reaction is an example of a combination reaction as a compound separates into two compounds.  
(b) The reaction is an example of a decomposition reaction as a compound dissociates into two compounds.

(c) The reaction is an example of a combination reaction as two compounds react to form a single compound.

(d) The reaction is an example of a decomposition reaction as two compounds react to form a single compound.

7. The chemical formula of magnesium oxide is \_\_\_\_\_.

(a)  $MgO_2$

(c)  $MgO$

(b)  $Mg_2O$

(d)  $Mg(OH)_2$

8. What happens when lead nitrate reacts with potassium iodide?

(a) They will not react

(c) Yellow ppt of lead iodide and potassium nitrate will be produced

(b) A large amount of hydrogen will be released

(d) Evolution of gas will occur

9. Which of the following shows an oxidation reaction?

(a) Gain of oxygen

(c) Gain of hydrogen

(b) Loss of oxygen

(d) None of the above

10. Which option shows oxidation?

(a)  $Zn \rightarrow Zn^{+2}$

(c)  $Zn^{+2} \rightarrow Zn$

(b)  $2H^+ \rightarrow H_2$

(d)  $H_2 \rightarrow 2H^+$

Q2. Explain the significance of photosynthesis.

Write the balanced chemical equation involved in the process

Q3. Write balanced chemical equations for the following chemical reactions:

(a) Hydrogen + Chlorine  $\rightarrow$  Hydrogen chloride

(b) Lead + Copper chloride  $\rightarrow$  Lead chloride + Copper

(c) Zinc oxide + Carbon  $\rightarrow$  Zinc + Carbon monoxide

Q4. A compound 'A' is used in the manufacture of cement. When dissolved in water, it evolves a large amount of heat and forms compound 'B'.

(i) Identify A and B.

- (ii) Write chemical equation for the reaction of A with water.  
(iii) List two types of reaction in which this reaction may be classified

Q5. Mention with reason the colour changes observed when:

- (i) silver chloride is exposed to sunlight.  
(ii) copper powder is strongly heated in the presence of oxygen.  
(iii) a piece of zinc is dropped in copper sulphate solution

Q6. Lead nitrate solution is added to a test tube containing potassium iodide solution.

- (a) Write the name and colour of the compound precipitated.  
(b) Write the balanced chemical equation for the reaction involved.  
(c) Name the type of this reaction justifying your answer

