

Super Short Tricky Chemistry By

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NCERT Solution

1. Why should a magnesium ribbon be cleaned before it is burnt in air?

Ans: Magnesium is a very reactive metal. When stored, it reacts with oxygen to form a layer of magnesium oxide on its surface. This layer of magnesium oxide is quite stable and prevents further reaction of magnesium with oxygen. The magnesium ribbon is cleaned by sand paper for removing this layer so that the underlying metal can be exposed to air.

2. Write the balanced equation for the following chemical reactions.

- (a) Hydrogen + Chlorine \rightarrow Hydrogen chloride
- (b) Barium chloride + Aluminium sulphate \rightarrow Barium sulphate + Aluminium chloride
- (c) Sodium + Water \rightarrow Sodium hydroxide + Hydrogen

Ans: (a) $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$ (b) $3BaCl_2(s) + Al_2(SO_4)_3(s) \rightarrow 3BaSO_4(s) + 2AlCl_3(s)$
 (c) $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$

3. Write a balanced chemical equation with state symbols for the following reactions.

- (a) Solutions of barium chloride and sodium sulphate in water react to give insoluble barium sulphate and the solution of sodium chloride.
- (b) Sodium hydroxide solution (in water) reacts with hydrochloric acid solution (in water) to produce sodium chloride solution and water.

Ans: (a) $BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$
 (b) $NaOH(aq) + HCl(aq) \rightarrow NaCl(aq) + H_2O(l)$

Page No: 10**1. A solution of a substance 'X' is used for white washing.**

- (a) Name the substance 'X' and write its formula.
- (b) Write the reaction of the substance 'X' named in (a) above with water.

Ans: (a) The substance 'X' is calcium oxide. Its chemical formula is CaO .
 (b) Calcium oxide reacts vigorously with water to form calcium hydroxide (slaked lime).
 $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$
 Calcium Oxide (Quick Lime) + Water \rightarrow Calcium Hydroxide (Slaked Lime)

Page No: 13**1. Why does the colour of copper sulphate solution change when an iron nail is dipped in it?**

Ans: When an iron nail dipped in the copper sulphate solution than iron displaces copper from the copper sulphate because iron is more reactive than copper. Therefore the colour of the copper sulphate solution changes.
 The reaction involved here is: $Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$

2. Give an example of a double displacement reaction other than the one given in Activity 1.10.

Ans: $2KBr(aq) + BaI_2(aq) \rightarrow 2KI(aq) + BaBr_2(aq)$

3. Identify the substances that are oxidised and the substances that are reduced in the following reactions.

- (a) $4Na(s) + O_2(g) \rightarrow 2Na_2O(s)$ (b) $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(l)$

Ans: (a) Sodium (Na) is oxidised as it gains oxygen and oxygen gets reduced.
 (b) Copper oxide (CuO) is reduced to copper (Cu) while hydrogen (H_2) gets oxidised to water (H_2O).

Page No: 14**1. Which of the statements about the reaction below are incorrect? $2PbO(s) + C(s) \rightarrow 2Pb(s) + CO_2(g)$**

(a) Lead is getting reduced.	(b) Carbon dioxide is getting oxidised.		
(c) Carbon is getting oxidised.	(d) Lead oxide is getting reduced.		
(i) (a) and (b)	(ii) (a) and (c)	(iii) (a), (b) and (c)	(iv) all

Ans: (a) (a) and (b)

2. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$. The above reaction is an example of a-

- (a) combination reaction.
- (b) double displacement reaction.
- (c) decomposition reaction.
- (d) displacement reaction.

Ans: (d) displacement reaction.

Page No: 15**3. What happens when dilute hydrochloric acid is added to iron filings? Tick the correct answer.**

- (a) Hydrogen gas and iron chloride are produced.
- (b) Chlorine gas and iron hydroxide are produced.
- (c) No reaction takes place.
- (d) Iron salt and water are produced.

Ans: (a) Hydrogen gas and iron chloride are produced.

4. What is a balanced chemical equation? Why should chemical equations be balanced?

Ans: A reaction which has an equal number of atoms of all the elements on both sides of the chemical equation is called a balanced chemical equation. Chemical reaction should be balanced to follow law of conservation of mass.

5. 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.

Ans: (a) $3\text{H}_2(\text{g}) + \text{N}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$

(b) $2\text{H}_2\text{S}(\text{g}) + 3\text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + 2\text{SO}_2(\text{g})$

(c) $3\text{BaCl}_2(\text{aq}) + \text{Al}_2(\text{SO}_4)_3(\text{aq}) \rightarrow 2\text{AlCl}_3(\text{aq}) + 3\text{BaSO}_4(\text{s})$

(d) $2\text{K}(\text{s}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{KOH}(\text{aq}) + \text{H}_2(\text{g})$

6. Balance the following chemical equations.

(a) $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$

(b) $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$

(c) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$

(d) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$

Ans: (a) $2\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + 2\text{H}_2\text{O}$

(b) $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$

(c) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$

(d) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$

7. Write the balanced chemical equations for the following reactions.

(a) Calcium hydroxide + Carbon dioxide \rightarrow Calcium carbonate + Water

(b) Zinc + Silver nitrate \rightarrow Zinc nitrate + Silver

(c) Aluminium + Copper chloride \rightarrow Aluminium chloride + Copper

(d) Barium chloride + Potassium sulphate \rightarrow Barium sulphate + Potassium chloride

Ans: (a) $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$

(b) $\text{Zn} + 2\text{AgNO}_3 \rightarrow \text{Zn}(\text{NO}_3)_2 + 2\text{Ag}$

(c) $\text{Al} + 3\text{CuCl}_2 \rightarrow 2\text{AlCl}_3 + 3\text{Cu}$

(d) $\text{BaCl}_2 + \text{K}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{KCl}$

8. Write the balanced chemical equation for the following and identify the type of reaction in each case.

(a) Potassium bromide (aq) + Barium iodide(aq) \rightarrow Potassium iodide (aq) + Barium bromide(s)

(b) Zinc carbonate (s) \rightarrow Zinc oxide (s) + Carbon dioxide (g)

(c) Hydrogen (g) + Chlorine (g) \rightarrow Hydrogen chloride (g)

(d) Magnesium (s) + Hydrochloric acid (aq) \rightarrow Magnesium chloride(aq) + Hydrogen(g)

Ans: (a) $2\text{KBr}(\text{aq}) + \text{BaI}_2(\text{aq}) \rightarrow 2\text{KI}(\text{aq}) + \text{BaBr}_2(\text{s})$

: Double displacement reaction

(b) $\text{ZnCO}_3(\text{s}) \rightarrow \text{ZnO}(\text{s}) + \text{CO}_2(\text{g})$

: Decomposition reaction

(c) $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g})$

: Combination reaction

(d) $\text{Mg}(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2(\text{g})$

: Displacement Reaction

9. What does one mean by exothermic and endothermic reactions? Give examples.

Ans: Chemical reactions that release energy in the form of heat, light, or sound are called exothermic reactions.

Example: $\text{C}(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{CO}_2 + \text{Heat Energy}$

Reactions that absorb energy or require energy in order to proceed are called endothermic reactions.

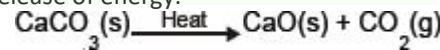
Example: $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \xrightarrow{\text{Heat}} 2\text{NO}$

10. Why is respiration considered an exothermic reaction? Explain.

Ans: Respiration is considered as an exothermic reaction because in respiration oxidation of glucose takes place which produces large amount of heat energy. $\text{C}_6\text{H}_{12}\text{O}_6(\text{aq}) + 6\text{O}_2(\text{g}) \rightarrow 6\text{CO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{l}) + \text{Energy}$

11. Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions.

Ans: Decomposition reactions are those in which a compound breaks down to form two or more substances. These reactions require a source of energy to proceed. Thus, they are the exact opposite of combination reactions in which two or more substances combine to give a new substance with the release of energy.



For Example: Decomposition Reaction:



14. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

Ans: $2\text{AgNO}_3(\text{aq}) + \text{Cu}(\text{s}) \rightarrow \text{Cu}(\text{NO}_3)_2(\text{aq}) + 2\text{Ag}(\text{s})$

18. Why do we apply paint on iron articles?

Ans: Iron articles are painted because it prevents them from rusting. When painted, the contact of iron articles from moisture and air is cut off. Hence, rusting is prevented.

19. Oil and fat containing food items are flushed with nitrogen. Why?

Ans: Oil and fat containing food items flushed with nitrogen because nitrogen acts as an antioxidant and it prevent them from being oxidised.

20. What is the difference between displacement and double displacement reactions? Write relevant equations for the above?

Ans: Double Displacement: $\text{Na}_2\text{CO}_3(\text{aq}) + \text{CaCl}_2(\text{aq}) \rightarrow \text{CaCO}_3(\text{ppt}) + 2\text{NaCl}(\text{aq})$

Single Displacement: $\text{CuSO}_4(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{ZnSO}_4 + \text{Cu}(\text{s})$



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