

## Question Bank

### Physical and Chemical Changes

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1. (a) *Define physical change.*

(b) *State four characteristics of a physical change.*

(c) *Give four examples of physical changes.*

**Ans. (a) Physical change :** A change which alters some specific property of matter (its state, texture, magnetic or electrical conditions or colour), without any change in the composition of its molecules, is called physical change, provided it gets reversed, if the cause producing the change is removed.

**(b) Characteristics of a physical change :**

(i) No new or different products are formed.

(ii) The change is temporary and reversible.

(iii) There is no gain or loss of energy.

(iv) There is no change in the weight of the substance.

**(c) Examples of physical changes :**

(i) Formation of dew.

(ii) Evaporation of water.

(iii) Crystallisation of sugar from its saturated solution.

(iv) Ringing of an electric bell.

2. (a) *Define chemical change.*  
(b) *State four characteristics of a chemical change.*  
(c) *Give four examples of chemical changes.*

**Ans. (a) Chemical change :** A change which alters the specific properties of a material by bringing about a change in its molecular composition, followed by a change in state, is called a chemical change.

**(b) Characteristics of a chemical change :**

- (1) A chemical change results in the formation of one or more new products.
- (2) The weight of the substance undergoing a chemical change, usually changes.
- (3) The chemical change is permanent and irreversible.
- (4) The chemical change is always accompanied with the liberation or absorption of energy.

**(c) Examples of chemical changes :**

- (i) Burning of wood or charcoal.
- (ii) Burning of candle.
- (iii) Decomposition of water into hydrogen and oxygen.
- (iv) Digestion of food

3. *By giving two examples, state what do you understand by an endothermic change?*

**Ans. Endothermic change :** When a chemical change takes place with the absorption of heat energy, the change is said to be endothermic.

**Examples of endothermic changes :**

(i) Decomposition of mercuric oxide to mercury and oxygen.

(ii) Decomposition of calcium carbonate to calcium oxide and carbon dioxide.

4. *By giving two examples, state what do you understand by an exothermic change?*

**Ans. Exothermic change :** When a chemical change takes place with the release of heat energy, the change is said to be exothermic.

**Examples of exothermic changes :**

(i) Sodium reacts with water to form sodium hydroxide and hydrogen with the release of heat energy.

(ii) Carbon (coke or coal), hydrocarbons (methane, butane), burn in air with the liberation of heat energy.

5. *When we mix iron filings with sulphur and grind the mixture, a physical change takes place. However, if we heat the mixture a chemical change takes place. Using the above example, give four differences between physical change and chemical change.*

Ans.

Physical change	Chemical change
<p><b>1.</b> There is no change in the specific properties of the constituents. <b>Example :</b> The particles of iron can be separated from sulphur with the help of a magnet or by dissolving sulphur in carbon disulphide.</p>	<p><b>1.</b> There is a specific change in the properties of the constituents. <b>Example :</b> The particles of iron or sulphur cannot be separated by a magnet or carbon disulphide.</p>
<p><b>2.</b> No new substance is formed. <b>Example :</b> The mixture of iron and sulphur does not form any new substance.</p>	<p><b>2.</b> A new substance is formed. <b>Example:</b> Iron sulphide is the new substance formed when iron and sulphur are heated.</p>
<p><b>3.</b> There is no net release or absorption of energy. <b>Example :</b> When iron and sulphur particles are mixed, heat energy is neither given out nor absorbed.</p>	<p><b>3.</b> There is a net release or absorption of energy when a chemical change takes place. <b>Example :</b> When iron sulphide is formed, the test tube gets red hot on account of the release of a large amount of heat energy.</p>
<p><b>4.</b> It is a temporary change and can be reversed by removing the cause of the change. <b>Example :</b> The particles of iron can be separated from the mixture with the help of a magnet.</p>	<p><b>4.</b> It is a permanent change and cannot be reversed by removing the cause of change. <b>Example :</b> The particles of iron and sulphur cannot be separated by any physical means, such as a magnet, heating, cooling, etc.</p>

6. Classify the following changes as physical and chemical changes?

- |   |  |
|---|--|
| (i) Formation of dew.   | (ii) Evaporation of water.             |
| (iii) Crystallisation of sugar from saturated sugar solution. |  |
| (iv) Drying of paint.   | (v) Smoking of cigarette.              |
| (vi) Burning of petrol.                                       | (vii) Ringing of electrical bell.      |
| (viii) Rusting of iron.                                       | (ix) Ripening of fruits.               |
| (x) Butter turning rancid.                                    | (xi) Breaking of glass pane.           |
| (xii) Clotting of blood.                                      | (xiii) Fading of colour of dyed cloth. |
| (xiv) Burning of L.P.G gas.                                   | (xv) Making of ice-cream.              |
| (xvi) Baking of cake.   | (xvii) Magnetisation of iron.          |
| (xviii) Glowing of tubelight.                                 | (xix) Making of grape-wine.            |
| (xx) Plucking of fruits.                                      |  |

**Ans. Following are the physical changes :**

- |  |                              |
|--|------------------------------|
| (i) Formation of dew.  | (ii) Evaporation of water.   |
| (iii) Crystallisation of sugar from saturated solution of sugar. |                              |
| (iv) Ringing of electric bell.                                   | (v) Breaking of glass pane.  |
| (vi) Making of ice-cream.  | (vii) Magnetisation of iron. |
| (viii) Glowing of tubelight                                      | (ix) Plucking of fruits.     |

**Following are the chemical changes :**

- |                          |                             |
|--------------------------|-----------------------------|
| (i) Drying of paint.     | (ii) Smoking of cigarette.  |
| (iii) Burning of petrol. | (iv) Rusting of iron.       |
| (v) Ripening of fruits.  | (vi) Butter turning rancid. |

- (vii) Clotting of blood.                      (viii) Fading of colour of dyed cloth.  
(ix) Burning of L.P.G gas.                      (x) Baking of cake.  
(xi) Making of grape-wine.

7. *A person eats chocolate and digests it. In doing so there takes place a physical change and a chemical change. Identify the changes and give reasons for your answer.*

**Ans.** Eating of chocolate, which involves chewing, such that it melts in the mouth is a physical change.

During digestion of chocolate, the material in it ultimately breaks down in the cells to form carbon dioxide and water with the release of energy.

Thus, digestion is a chemical change.

8. *By giving at least one reason state whether the changes listed below are physical or chemical changes.*

(a) *Sugar dissolves in water.*

(b) *Milk sours in hot humid weather.*

(c) *Anhydrous copper sulphate (white in colour) turns blue when a few drops of water are poured over it .*

(d) *A frog breathes heavily.*

(e) *A platinum wire is heated in a non-luminous flame till it starts glowing.*

(f) *A bar magnet is strongly heated .*

(g) *Heating of zinc oxide in a hard glass test tube.*

(h) *Blackening of silverware.*

- (i) *Making of curd from milk.*
- (j) *Sublimation of ammonium chloride.*
- (k) *Skimming of milk.*
- (l) *Fermenting of grape juice.*
- (m) *Bursting of cracker.*
- (n) *Discharging of a car battery.*
- (o) *Adding concentrated sulphuric acid to water.*
- (p) *Pouring drops of water over quicklime.*

**Ans. (a) Sugar dissolves in water :** It is a physical change.

**Reason :** No new products are formed and the change can be reversed by evaporation and crystallisation.

**(b) Milk sours in hot humid weather :** It is a chemical change.

**Reason :** On souring, milk forms lactic acid and hence curdles. As new products are formed and the change cannot be reversed, therefore it is a chemical change.

**(c) Anhydrous copper sulphate turns blue :** It is a physical change.

**Reason :** The water molecules attach loosely to the molecules of copper sulphate. The change can be reversed by heating.

**(d) A frog breathes heavily :** It is a both a physical and chemical change.

**Reason :** As such breathing involves inhaling and exhaling of air and hence a physical change. However, as breathing is associated with respiration,

such that composition of inhaled air is different from exhaled air, therefore, it is a chemical change.

**(e) Heating of platinum wire :** It is a physical change.

**Reason :** No chemical change takes place in the composition of platinum. Moreover, the change can be reversed on cooling the platinum wire.

**(f) Heating of bar magnet :** It is a physical change.

**Reason:** No doubt magnet gets demagnetised because straight line molecular chains break to form closed molecular chains on heating, yet change is physical as no new products are formed. Moreover, the change can be reversed and iron can be remagnetised.

**(g) Heating of zinc oxide :** It is a physical change.

**Reason :** The zinc oxide becomes yellow on heating, but changes to white colour on cooling. As the change is reversible and no new product is formed, therefore, the change is a physical change.

**(h) Blackening of silverware :** It is a chemical change.

**Reason :** The silver blackens on account of the presence of hydrogen sulphide gas in air. This gas reacts with silver to form black coloured silver (II) sulphide. As the new product is formed and the change cannot be reversed, therefore it is a chemical change.

**(i) Making of curd from milk :** It is a chemical change.



**Reason :** The milk (liquid) changes to curd (semi solid state) with the formation of a new product, which cannot be converted into milk. Thus, the change is a chemical change.

**(j) Sublimation of ammonium chloride :** It is a physical change.

**Reason :** It is because no new products are formed, therefore the change is a physical change.

**(k) Skimming of milk :** It is a physical change.

**Reason :** During skimming the cream separates from milk. The cream can be remixed in skimmed milk to produce whole milk. As the change is reversible, therefore, it is a physical change.

**(l) Fermenting of grape juice :** It is a chemical change.

**Reason :** It is because the sugar in grapes is converted into ethyl alcohol, which is a new product. As this change cannot be reversed, therefore it is a chemical change.

**(m) Bursting of cracker :** It is a chemical change.

**Reason :** During bursting, carbon, nitre and sulphur burn to form sulphur dioxide and carbon dioxide, as new products. Moreover, the change cannot be reversed, and hence is a chemical change.

**(n) Discharging of a car battery :** It is a chemical change.

**Reason :** It is because during discharging the spongy lead coated at the cathode and lead dioxide coated at the anode change to form lead sulphate. As new products are formed, therefore it is a chemical change.

**(o) Adding concentrated sulphuric acid to water :** It is a physical change.

**Reason :** It is because the dilute sulphuric acid formed can be concentrated by evaporation, and hence is a physical change.

**(p) Pouring drops of water over quicklime :** It is a chemical change.

**Reason :** It is because, quicklime changes to another product slaked lime, which has a different chemical composition than quicklime. Thus, the change is a chemical change.

**9.** *Give two examples in which a physical and a chemical change takes place simultaneously.*

**Ans. Example 1.** When zinc hydroxide is heated, it decomposes to form zinc oxide and steam. As new products are formed the change is a chemical change. However, zinc oxide formed is yellow when hot and white when cold, but no change in its chemical composition takes place, hence the change is a physical change.

**Example 2.** When crystals of potassium nitrate are heated, they melt and hence a physical change takes place.

The molten potassium nitrate decomposes to form potassium nitrite and oxygen, and hence it is a chemical change.

**10.** *How does dissolving of common salt in water differ from dissolving of sodium metal in water?*

**Ans.** When common salt dissolves in water, no new products are formed, no energy is released or absorbed and the change can be reversed. Thus, dissolving of common salt in water involves a physical change.

When sodium metal dissolves in water, it forms new products sodium hydroxide and hydrogen, with the release of heat energy and the change cannot be reversed. Thus, dissolving of sodium in water involves a chemical change.

**11.** *Heat is produced when,*

*(i) water is added to concentrated sulphuric acid.*

*(ii) water is added to quicklime.*

*However, (i) is a physical change and (ii) is a chemical change. Explain.*

**Ans.** In case of concentrated sulphuric acid, on addition of water heat is produced, but no new products are formed. Furthermore, the change can be reversed, therefore it is a physical change.

In case of water and calcium oxide (quicklime), heat is produced but at the same time new product calcium hydroxide (slaked lime) is formed. As new chemical product is formed, therefore change is a chemical change.

**12.** *When ammonium chloride is heated strongly, it decomposes to form ammonia gas and hydrochloric acid gas, but the change is regarded as physical.*

*However, when ammonium nitrate is heated, it decomposes to form nitrous oxide gas and steam, but the change is regarded as a chemical change.*

*Explain the above statements.*

**Ans.** No doubt ammonium chloride decomposes to form ammonia gas and hydrochloric acid gas, but these gases very quickly recombine to form white fumes. As no new chemical products are formed, therefore, the change is regarded as a physical change.

However, when ammonium nitrate decomposes to form nitrous oxide and steam, they cannot be recombined to form ammonium nitrate. As new chemical products are formed and the change cannot be reversed, therefore it is a chemical change.

**13. (a)** *What do you understand by the term “chemical reaction”?*

*(b) Name four main types of chemical reaction.*

**Ans. (a) Chemical reactions :** When one or more substances (elements or compounds) undergo a chemical change, with the absorption or liberation of energy so as to form one or more new products, then the change so taking place is collectively called a chemical reaction.

**(b)** (i) Chemical combination                      (ii) Chemical decomposition

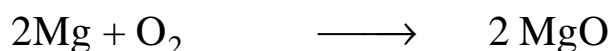
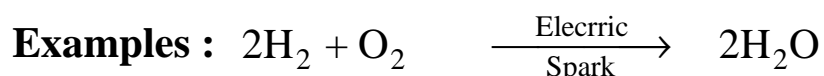
(iii) Chemical displacement                      (iv) Chemical double displacement

**14.** *Define the following terms, supporting your answer by at least two fully balanced chemical equations.*

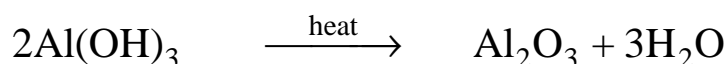
**(a)** *Chemical combination*    **(b)**    *Chemical decomposition*

**(c)** *Chemical displacement*    **(d)**    *Chemical double decomposition.*

**Ans. (a) Chemical composition or chemical combination :** When two or more elements or compounds react chemically to form one new compound, then the chemical reaction is said to be chemical combination or chemical composition.

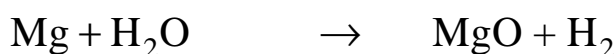
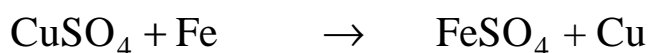


**(b) Chemical decomposition or chemical decomposition :** When a chemical compound decomposes on absorbing some kind of energy (heat, electricity, light, etc.) so as to form two or more new substances, then the chemical reaction is said to be chemical decomposition or chemical decomposition.



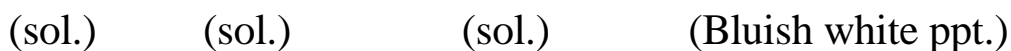
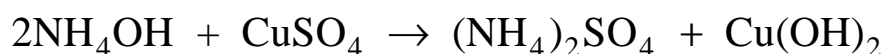
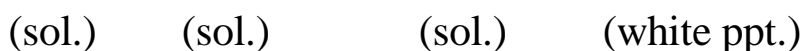
**(c) Chemical displacement reaction or chemical replacement reaction :**

**Examples :** When one element displaces another element from its compound the reaction is called chemical displacement.



**(d) Chemical double decomposition or chemical double displacement reaction :**

A chemical reaction in which two compounds in their aqueous state react by exchanging their radicals is called chemical double decomposition.



**15. (a)** *What do you understand by the following terms ? Support your answer by one chemical equation.*

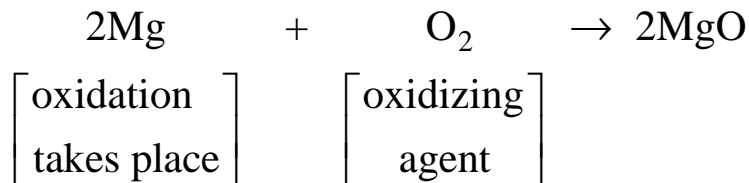
(1) *Oxidation*

(2) *Oxidising agent.*

**Ans. (a) (1) Oxidation :** When a substance gains oxygen or loses hydrogen, oxidation of the substance takes place.

(2) **Oxidising agent :** A substance which loses (or supplies) oxygen or gains hydrogen is called an oxidising agent.

**Example of oxidation and oxidising agent :**



**16. (a)** *What do you understand by the following terms ? Support your answer by one chemical equation :*

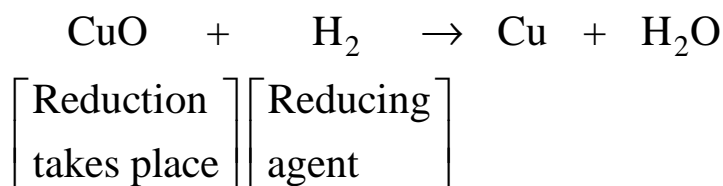
(1) *Reduction*

(2) *Reducing agent.*

**Ans. (a)(1) Reduction :** When a substance gains hydrogen or loses oxygen then reduction of the substance takes place.

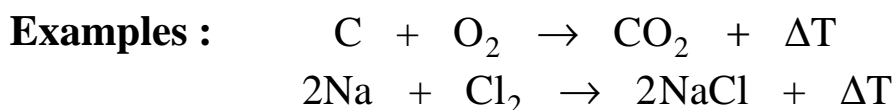
(2) **Reducing agent :** When a substance gains oxygen or loses hydrogen then the substance is said to be a reducing agent.

**Example of reduction and reducing agent :**



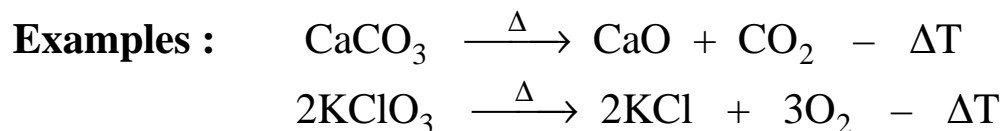
17. *By giving two examples define exothermic reactions.*

**Ans. Exothermic reactions :** The chemical reactions which proceed with the evolution of heat energy are called exothermic reactions.



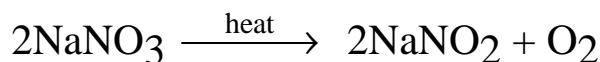
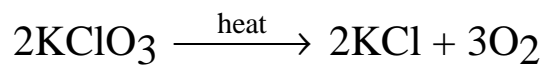
18. *By giving two examples define endothermic reactions.*

**Ans. Endothermic reactions :** The chemical reactions which proceed with the absorption of heat energy are called endothermic reactions.

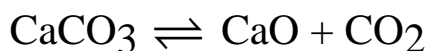
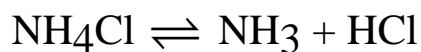


19. *By giving two examples each bring out clearly the difference between thermal decomposition and thermal dissociation.*

**Ans.** During thermal decomposition a chemical compound breaks into simpler compounds. The simpler compounds *do not reunite* to form the original compound on cooling.

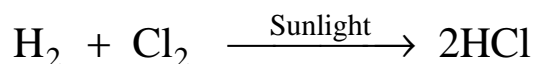
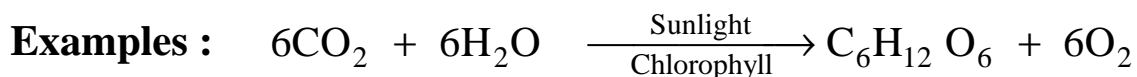


During thermal dissociation a chemical compound breaks into simpler compounds. The simpler compounds on cooling *reunite* to form the original compound.



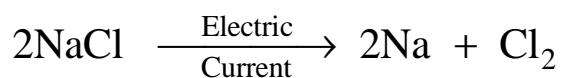
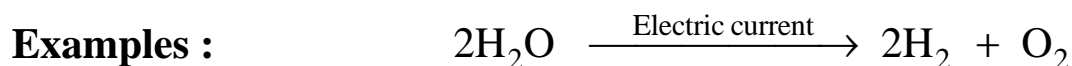
**20.** By giving two examples define photochemical reaction.

**Ans. Photo-chemical reactions :** The chemical reactions which proceed with the absorption of light energy are called photo-chemical reactions.



**21.** By giving two examples define electrochemical reaction.

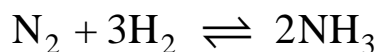
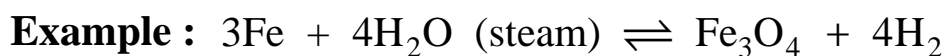
**Ans. Electro-chemical reactions :** The chemical reactions which proceed with the absorption of electric energy are called electrochemical reactions.





22. What do you understand by the term “Reversible reaction” ? Give two examples.

**Ans. Reversible reaction :** A chemical reaction in which both the forward as well as backward reactions proceed at the same time and a stage is reached when the overall composition of reactants and products remains unaltered is called a reversible reaction.



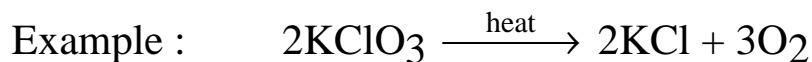
23. Name four factors which favour a chemical reaction. Support your answer by one example in each case.

**Ans. (1) Close contact :** Certain chemical reactions proceed only when the particles of reactants are in intimate contact.

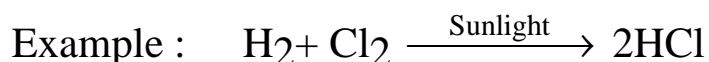
Example : Potassium iodide crystals react with mercury (II) chloride crystals only when thoroughly ground.



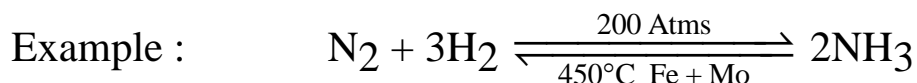
**(2) Heat :** A large number of chemical reactions take place only when the reactants are strongly heated.



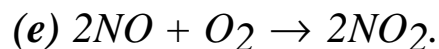
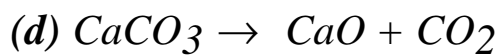
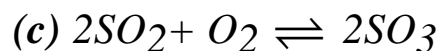
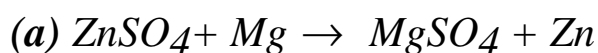
**(3) Light :** Certain chemical reactions take place only when the reactants are directly exposed to sunlight.



**(4) Pressure :** Certain chemical reactions take place only when subjected to high pressure.



**24.** *Classify the following reactions as (1) chemical composition (2) chemical decomposition (3) chemical displacement (4) chemical double decomposition (5) reversible reaction.*



**Ans.(a)** It is chemical displacement.

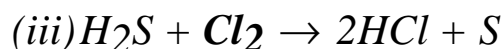
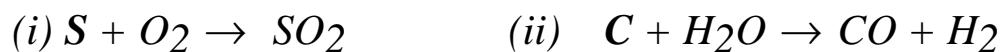
**(b)** It is chemical double decomposition.

**(c)** It is a reversible reaction.

**(d)** It is chemical decomposition.

**(e)** It is chemical combination.

**25.** *In the equations given below state whether the substances printed in bold are oxidised or reduced. Support your answer with a reason.*



**Ans.**(i) Sulphur is oxidised as it gains oxygen.

(ii) Carbon is oxidised as it gains oxygen.

(iii) Chlorine is reduced as it gains hydrogen.

**26.** Give balanced equations, wherever possible, or where this is not possible, explain the following by means of examples :

(a) A reaction which gives out heat.

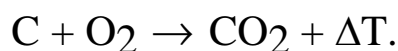
(b) A reaction which takes place with the help of sunlight.

(c) A reaction which is brought about by electric current.

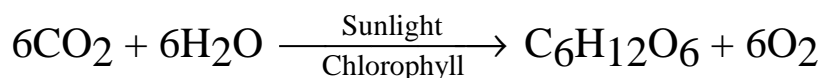
(d) A reversible reaction.

(e) A reaction between a solid and a gas which produces heat.

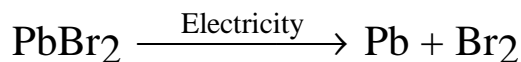
**Ans.**(a)Coke on heating in air, catches fire and liberates a large amount of heat.



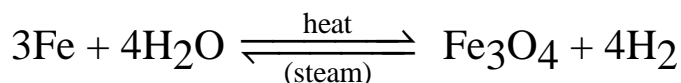
(b) Carbon dioxide and water react in the presence of chlorophyll and sunlight to form glucose and oxygen.



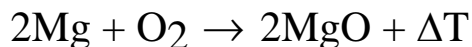
(c) Molten lead bromide decomposes into lead metal and bromine on the passage of electric current.



(d) The reaction between red hot iron and steam is reversible.



(e) When magnesium burns in air or oxygen it liberates a large amount of heat.



27. Complete the following word equations by writing down the products in each case.

(a) Red hot iron + water (steam).

(b) Copper oxide + carbon monoxide.

(c) Sodium hydroxide solution + aluminium + water.

(d) Sodium hydroxide solution + iron (III) chloride solution.

Ans.(a) Red hot iron + water (steam) → Magnetic oxide of iron + hydrogen.

(b) Copper oxide + carbon monoxide → Copper + carbon dioxide.

(c) Sodium hydroxide solution + aluminium + water → Sodium aluminate  
+ hydrogen.

(d) Sodium hydroxide solution + ferric chloride → Sodium chloride + ferric  
solution hydroxide.

28. State what will be observed and write a chemical equation when lead nitrate is heated in a test tube?

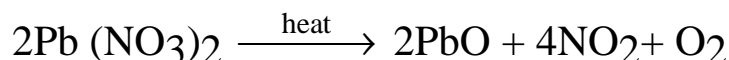
Ans. (1) The white coloured crystals decrepitate with crackling noise to form a powdery mass.

(2) It gives off reddish brown nitrogen dioxide gas.

(3) It gives off oxygen gas, which relights a glowing wooden splinter.

(4) The residue is reddish brown when hot.

- (5) The residue changes to yellow colour on cooling.  
(6) The residue partly fuses with the glass test tube and stains it yellow.

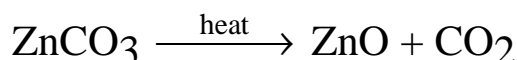


**29.** Describe what happens or what would you observe, when each of the following substances are heated in separate test tubes.

- (a) Zinc carbonate (b) Lead dioxide.

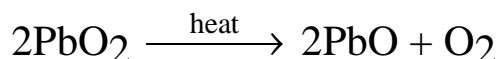
**Ans. (a) Action of heat on zinc carbonate :**

- (1) Zinc carbonate on strong heating gives off a colourless gas, carbon dioxide. The gas can be tested with lime water, which turns milky.  
(2) The residue is yellow when hot.  
(3) On cooling, the residue changes to white colour.



**(b) Action of heat on lead dioxide :**

- (1) The chocolate brown lead dioxide on heating changes to reddish brown colour.  
(2) It gives off a colourless gas, oxygen, which can be tested by a glowing wooden splinter, which bursts into flame.  
(3) On cooling, the residue changes to yellow colour.  
(4) The residue partly fuses with glass and stains it yellow.



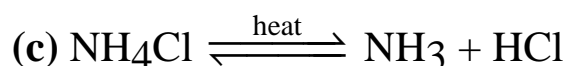
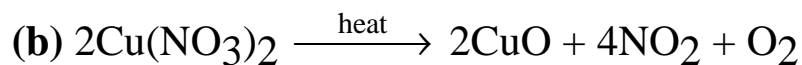
30. Write balanced equations for :

(a) Reaction between steam and red hot iron.

(b) Action of heat on copper nitrate crystals.

(c) Action of heat on ammonium chloride.

Which of the above reactions involves sublimation, decomposition and reversible reactions?



Reaction (a) involves a reversible reaction.

Reaction (b) involves decomposition.

Reaction (c) involves sublimation.

31. Explain what would you observe and write chemical equations, when :

(a) Copper (II) carbonate is heated?

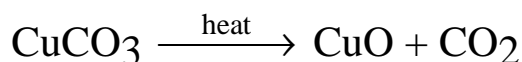
(b) Lead (II) nitrate is heated?

(c) Washing soda is heated?

Ans. (a) **Action of heat on copper carbonate :**

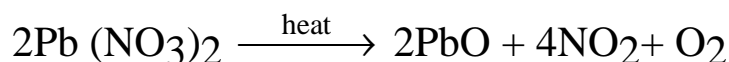
(1) Green coloured copper carbonate on heating decomposes to form black residue of copper oxide.

- (2) A colourless gas carbon dioxide is evolved. This gas turns lime water milky.



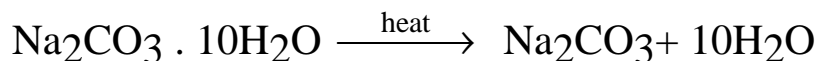
**(b) Action of heat on lead nitrate :**

- (1) The white coloured crystals decrepitate with crackling noise to form a powdery mass.
- (2) It gives off reddish brown nitrogen dioxide gas.
- (3) It gives off oxygen gas, which relights a glowing wooden splinter.
- (4) The residue is reddish brown when hot.
- (5) The residue changes to yellow colour on cooling.
- (6) The residue partly fuses with the glass test tube and stains it yellow.



**(c) Action of heat on washing soda :**

- (1) Washing soda crystals on heating crumbles to form powdery white residue of anhydrous sodium carbonate.
- (2) It gives off large amount of steam.



**32.** *Photosynthesis is a process which involves, water along with sunlight and chlorophyll.*

- (a) *Which gas in the atmosphere is involved in the reaction?*
- (b) *Which gas in the atmosphere is produced in the reaction?*

(c) *What type of organic compound is produced in this reaction?*

**Ans.** (a) Carbon dioxide gas. (b) Oxygen gas.(c) Carbohydrate (Glucose).

**33.** *Fill in the blank spaces.*

(a) *When zinc carbonate is heated, the colour of residue is .....*

(b) *When sodium nitrate is being heated, the gas evolved is .....*

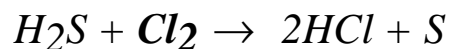
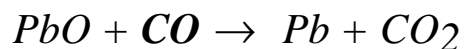
(c) *When a piece of calcium is dropped in water, it becomes cloudy after some time, due to the formation of .....*

(d) *When aqueous iron (III) chloride and aqueous caustic soda are mixed, the colour of the precipitate is .....*

**Ans.** (a) Yellow. (b) Oxygen.

(c) Calcium hydroxide suspension.(d) Reddish brown.

**34.** *In the equations given below, state giving reasons, whether the substances printed in bold have been oxidised or reduced.*



**Ans.** Carbon monoxide is **oxidised** as it gains oxygen.

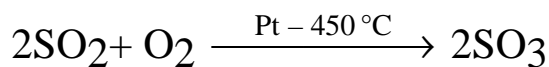
Chlorine is **reduced** as it gains hydrogen.



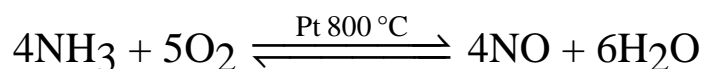
35. Give two examples of industrial processes involving (i) oxidation  
(ii) reduction.

**Ans. (i) Industrial processes involving oxidation :**

- (a) Sulphur dioxide is oxidised to sulphur trioxide in “contact process” for the manufacture of sulphuric acid.

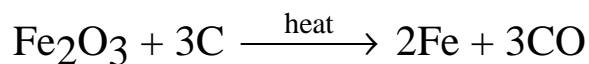


- (b) Ammonia is oxidised to nitric oxide in Ostwald’s process.

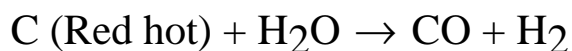


**(ii) Industrial processes involving reduction :**

- (a)  $\text{Fe}_2\text{O}_3$  is reduced to iron by heating with coke.



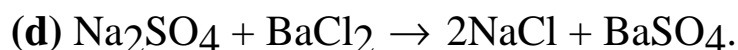
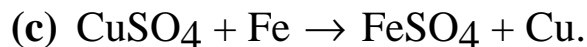
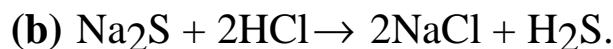
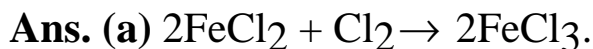
- (b) Water (steam) is reduced by red hot coke in the manufacture of water gas.



36. Give one example for each of the following types of changes taking place in aqueous solution.

- (a) Oxidation of a salt of a metal.  
(b) Reaction of a soluble salt of metal with dilute acid to give off a gas.  
(c) Displacement of a metal by a more active metal.  
(d) Precipitation of sulphate.

**Note :** *You must choose a compound of different metal for each reaction.*



**37.** *Write correct balanced equations for each of the following :*

*(1) When potassium chlorate is strongly heated in a hard glass test tube.*

*(2) When red lead [ $\text{Pb}_3\text{O}_4$ ] is heated.*

*(3) When carbon dioxide is passed over red hot coke.*

*(4) When ammonium nitrate is heated.*

*(5) When steam is passed over red hot iron.*

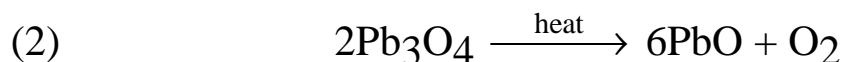
*(6) When lead nitrate is heated.*

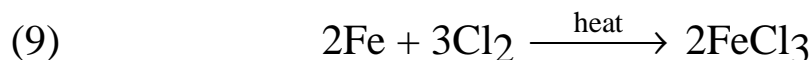
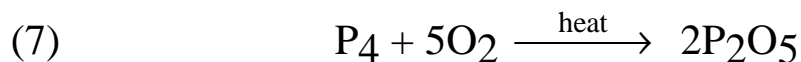
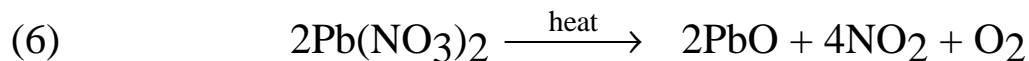
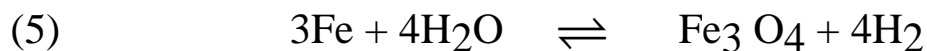
*(7) When phosphorus is burnt in a jar of oxygen.*

*(8) When zinc filings are added to concentrated solution of sodium hydroxide.*

*(9) When chlorine gas is passed over red hot iron.*

*(10) When lead (IV) oxide is heated.*





**38.** *A sample of water weed was placed in water and exposed to sunlight. Bubbles of a gas are seen on the surface of the leaves.*

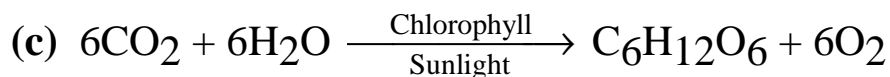
*(a) Name the gas evolved.*

*(b) Name the process taking place.*

*(c) Write a balanced equation of reaction taking place.*

**Ans. (a)** Oxygen

**(b)** Photosynthesis.



**39.** *What do you understand by the term combustion?*

**Ans. Combustion :** A chemical reaction in which substances combine with air or oxygen to liberate a large amount of energy in the form of heat and light is called combustion.

40. Define the following giving at least two examples.

(a) Combustible substances (b) Inflammable substances (c) Non-combustible substances.

**Ans. (a) Combustible substances :** The substances which combine with oxygen or air to liberate heat and light energy are called combustible substances.

**Examples :** Wood, charcoal, paper, petrol, etc.

**(b) Inflammable substances :** The combustible substances which combine with oxygen or air at comparatively low temperature to produce large amount of heat and light accompanied by a flame are called inflammable substances.

**Examples :** Petrol, ether, carbon disulphide, etc

**(c) Non-combustible substances :** The substances which do not burn in air or oxygen even on strong heating are called non-combustible substances.

**Examples :** Lime stone, sand stone, slate, cement.

41. State four factors which control the rate of combustion.

**Ans. Rate of combustion is controlled by :**

- (a) Size of a particles of the combustible substance.
- (b) Nature of the combustible substance.
- (c) Ignition temperature of the combustible substance.
- (d) Nature of the gaseous environment.