01 When a solution of substance X is added to a solution of sodium sulphate, then a white solid separates out from the solution.

(a) What is substance X most likely to be?

(b) What does a white solid consist of ?

(c) Which characteristics of chemical is observed by this example ?

(d) Write a balanced chemical equation for the reaction which takes place. Mention the physical state of all the reactants and products involved in the chemical equation.

(a) Substance X is most likely to be Barium chloride.

(b) A white solid consists of Barium sullphate.

(c) Formation of a precipitate.

(d) $BaCl_2$ (aq) + Na_2SO_4 (aq) $\longrightarrow$

(Barium chloride) (Sodium sulphate)

X

$BaSO_4$ (s) + $2NaCl$ (aq)

(Barium sulphate) (Sodium chloride)

(White solid ppt.)

02 Gas P which is the major cause of global warming, combines with hydrogen oxide Q in nature in the presence of an environment factor R and a green material S to form a six carbon organic compound T and a gas U. The gas U is necessary for breathing.

(a) What is gas P ?

(b) What is the common name of Q ?

(c) What do you think could be R ?

(d) What is material S ? Where is it found?

(e) Name the organic compound T.

(f) What is gas U ? Name the natural process during which it is released.

(a) Gas P is carbon dioxide which is a major cause of global warming.

(b) The common name of Q is water, H_2O (hydrogen oxide).

(c) An environmental factor R could be sunlight.

(d) Material S is chlorophyll and it is found in green leaves of plants.

(e) The organic compound T is glucose with formula $C_6H_{12}O_6$.

(f) Gas U is oxygen which is released by plants during photosynthesis.

03 A metal X forms a water soluble salt XNO_3. When an aqueous solution of XNO_3 is added to common salt solution, then a white precipitate of compound Y is formed alongwith sodium nitrate solution. Metal X is said to be the best conductor of electricity and it does not evolve hydrogen when put in dilute hydrohloric acid.

(a) What is metal X ?

(b) What is salt XNO_3 ?

(c) Name the compound Y.

(d) Write the chemical equation of the reaction which takes place on reacting with XNO_3 solution and common salt solution giving the physical states of all the reactants and products.

(e) What type of chemical reaction is indicated by the above equation ?

(a) Metal X is silver (Ag)

(b) Salt XNO_3 is silver nitrate ($AgNO_3$) and it is soluble in water.

(c) Compound Y is silver chloride ($AgCl$).

(d) $AgNO_3\,(aq) + NaCl\,(aq) \longrightarrow AgCl\,(s) + NaNO_3\,(aq)$

(Silver nitrate) (Sodium chloride) (Silver chloride) (White precipitate) (Sodium nitrate)

(e) Double displacement reaction.

04 Given below is a redox reaction.

When copper oxide is heated with hydrogen, then copper metal and water are formed :

$$\underset{\text{Copper oxide}}{CuO} + \underset{\text{Hydrogen}}{H_2} \xrightarrow{\text{Heat}} \underset{\text{Copper}}{Cu} + \underset{\text{Water}}{H_2O}$$

(a) Which substance is oxidised.

(b) Which substance is reduced ?

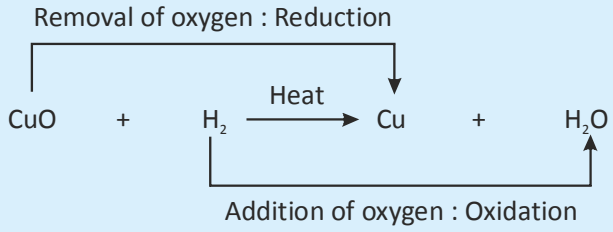
(c) Name the oxidising agent and reducing agent.

(a) H_2 is changing into H_2O as oxygen is being added to hydrogen. So, we can say that hydrogen is being oxidised to water.

(b) Copper oxide (CuO) is reduced.

In this reaction, CuO is changing into Cu as oxygen is being removed from copper. Copper oxide is being reduced to copper.

(c) Copper oxide is the oxidising agent and hydrogen is the reducing agent.



In the reaction given below, copper oxide (CuO) is giving the oxygen required for the oxidation of hydrogen. Therefore, copper oxide is the oxidising agent. Hydrogen is responsible for removing oxygen from copper oxide. Therefore, hydrogen is the reducing agent.

05 A strip of metal X is dipped in a blue coloured salt solution YSO_4. After some time, a layer of metal Y from the salt solution is formed on the surface of metal strip X. Metal X is used in galvanisation whereas metal Y is used in making electric wires. Metal X and metal Y together from an alloy Z.

(a) Guess. What could metal X be ?

(b) Which metal is Y ?

(c) Name the metal salt YSO_4.

(d) What type of chemical reaction took place when metal X reacts with salt solution YSO_4 ?

(e) Name the alloy Z.

(a) Metal X is zinc (Zn) strip.

(b) Metal Y is copper (Cu).

(c) Metal salt YSO_4 is copper sulphate ($CuSO_4$).

(d) Displacement reaction.

(e) The alloy Z is brass.