Worksheet 1.5

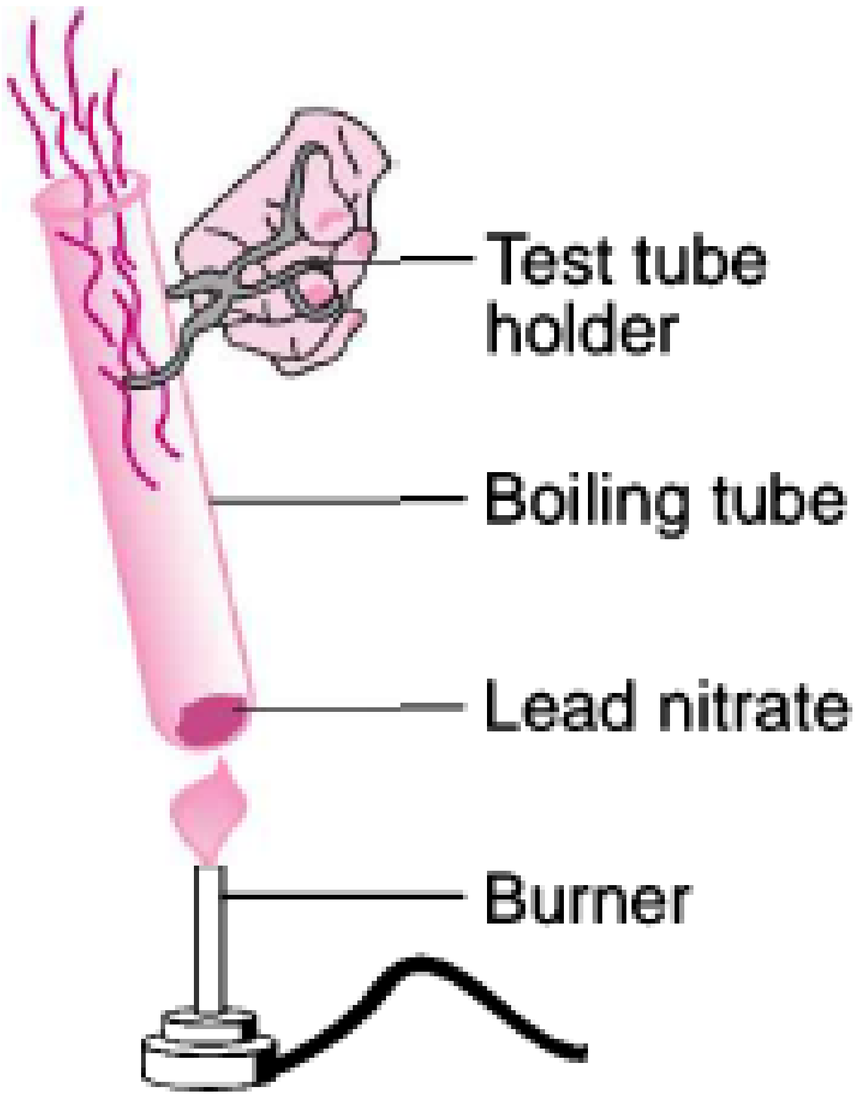
Marks - 25

Case study based questions

10th Science

Chemical Reactions and Equations

Passage - 1 **5 Marks**



In the above image, an experiment is performed where 3 g of lead nitrate powder is heated in a boiling tube over the flame. We observe fumes of some gas and some solid compound is percipitated at bottom of the boiling tube.

Q 1. What is the colour of the fumes formed?

(1) Brown
(2) Red
(3) Yellow
(4) White

Worksheet 1.5

Marks - 25

Q 2. What is the colour of the solid compound percipitated at bottom of the boiling tube?

(1) Brown
(2) Red
(3) Yellow
(4) White

Q 3. What is the chemical formula of the gas whose fumes are formed ?

(1) NO
(2)
(3)
(4)

Q 4. What is the chemical formula of the compound percipitated at the bottom of the boiling tube?

(1)
(2) PbO
(3)
(4)

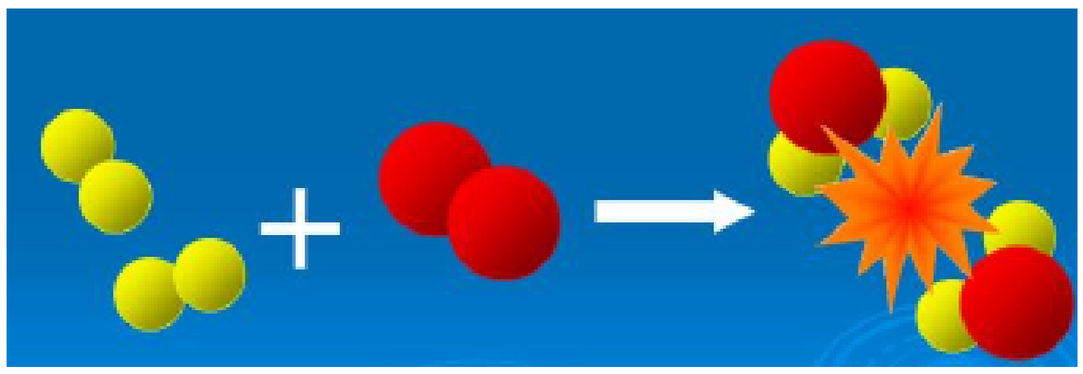
Q 5. What is the type of the chemical reaction happening in the above experiment?

(1) Thermal decomposition
(2) Combination
(3) Displacement
(4) Redox

Passage - 2 **5 Marks**

Worksheet 1.5

Marks - 25



Whenever a chemical change occurs, we can say that a chemical reaction has taken place. A schematic representation of any chemical reaction with the help of symbols and formulas of various species is called a chemical equation. A chemical equation should include all the information regarding the reaction

Q 1. The gaseous state of reactants and products is represented by which of the following symbol?

(1) (g)
(2) (gas)
(3) (ga)
(4) None of the above

Q 2. The solid state of reactants and products is represented by which of the following symbol?

(1) (solid)
(2) (s)
(3) (sld)
(4) None of the above

Q 3. The liquid state of reactants and products is represented by which of the following symbol?

(1) (l)
(2) (aqueous)
(3) (aq)
(4) None of the above

Worksheet 1.5

Marks - 25

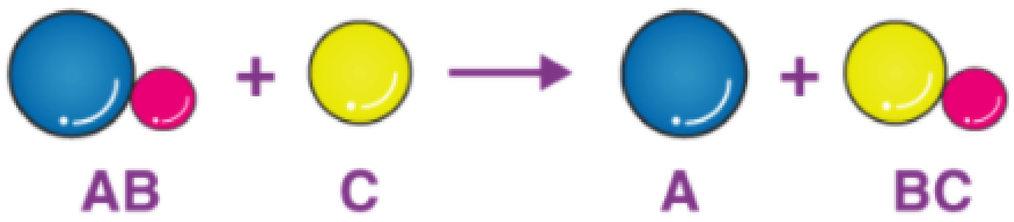
Q 4. State true or false: The word aqueous (aq) is written if the reactant or product is present in liquid state.

(1) TRUE
(2) FALSE

Q 5. State true or false: The reaction conditions, such as temperature, pressure, catalyst, etc., for the reaction are indicated only above the arrow in the equation.

(1) TRUE
(2) FALSE

Passage - 3 **5 Marks**



Chemical reaction in which a more reactive element displaces a less reactive element from its compound is called as displacement reaction. Both metals and non-metals take part in displacement reactions.Some applications of displacement reactions are thermite welding, steel making, extraction of metals, and relief from acid indigestion.

Q 1. What is the type of the chemical reaction:
$AgNO_3 + HCl \rightarrow AgCl + HNO_3$

(1) Double displacement reaction
(2) Single displacement reaction
(3) Decomposition reaction
(4) Combination reaction

Worksheet 1.5

Marks - 25

Q 2. What is the type of the chemical reaction: $Mg + 2HCl \rightarrow MgCl_2 + 2H_2$

(1) Double displacement reaction
(2) Single displacement reaction
(3) Combination reaction
(4) Decomposition reaction

Q 3. What changes in the colour of iron nails and copper sulphate solution do you observe after keeping the iron nails dipped in copper sulphate solution for about 30 minutes?

(1) Iron nails become brownish in colour
(2) Blue colour of copper sulphate solution fades
(3) Both (1) and (2)
(4) No change

Q 4. In the above image, What are the reducing and oxidising agent?

(1) H_2S is reducing agent and SO_2 is oxidising agent
(2) H_2S is oxidising agent and SO_2 is reducing agent
(3) H_2O is oxidising agent and SO_2 is reducing agent
(4) S is oxidising agent and SO_2 is reducing agent

Q 5. State true or false: Butylated hydroxyanisole(BHA) is synthetic antioxidant

(1) TRUE
(2) FALSE

Passage - 4 **5 Marks**

Worksheet 1.5

Marks - 25

Chemical reactions are characterized by the change in the state, colour and the temperature.Many changes which happens around us are the result of the chemical reaction. Therefore, the chemical reactions are classified into various categories to simplify their study .

Q 1. Which type of chemical reaction occurs when nitrogen gas is treated with hydrogen gas in the presence of a catalyst at 773 K to form ammonia gas?

(1) Combination reaction
(2) Displacement reaction
(3) Redox reaction
(4) Double diplacement reaction

Q 2. Which type of chemical reaction occurs when Sodium hydroxide solution is treated with acetic acid to form sodium acetate and water?

(1) Redox reaction
(2) Combination reaction
(3) Displacement reaction
(4) Double diplacement reaction

Q 3. Which type of chemical reaction occurs when Ethanol is warmed with ethanoic acid to form ethyl acetate in the presence of concentrated H_2SO_4 ?

(1) Displacement reaction

(2) Double diplacement reaction
(3) Redox reaction
(4) Combination reaction

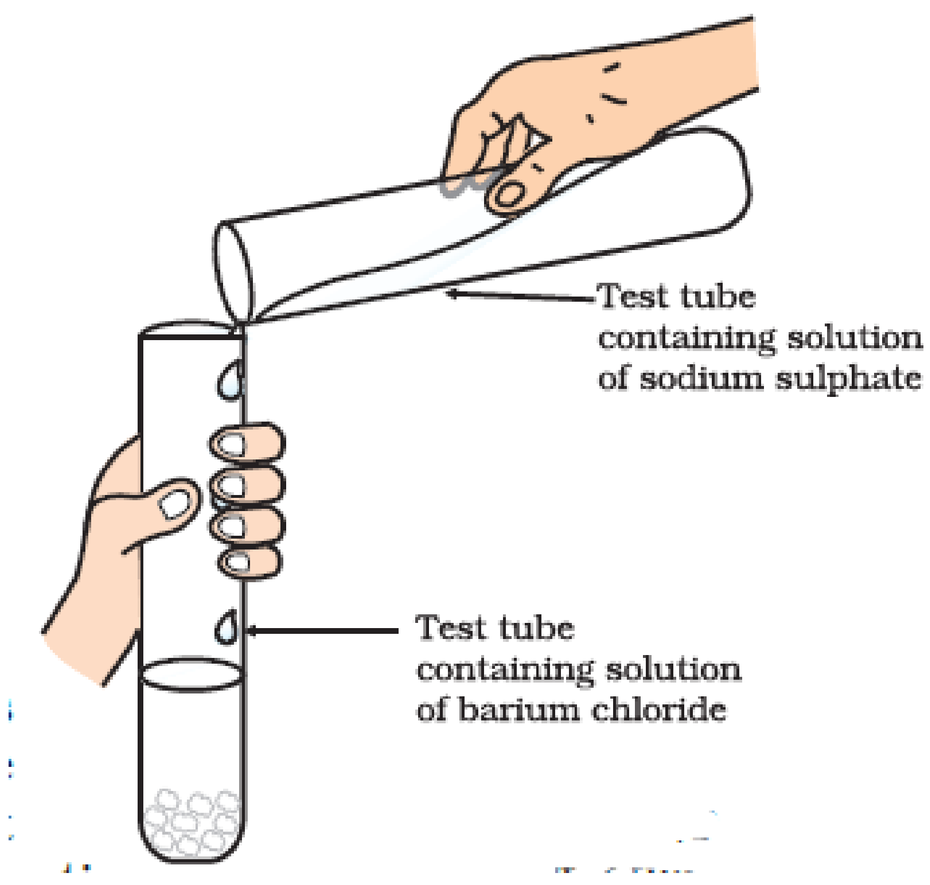
Q 4. Which type of chemical reaction occurs when Ethene is burnt in the presence of oxygen to form carbon dioxide, water and releases heat and light?

(1) Combustion reaction
(2) Redox reaction
(3) Both (1) and (2)
(4) Double diplacement reaction

Q 5. What is the type of the following reaction $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$?

(1) Decomposition reaction
(2) Displacement reaction
(3) Double diplacement reaction
(4) None of the above

Passage - 5 **5 Marks**



Worksheet 1.5

Marks - 25

In the above image, an experiment is being performed by a student where 3 mL of sodium sulphate solution is taken in a test tube. In another test tube, about 3 mL of barium chloride solution is taken. The solutions of both the test tubes are mixed and we observe that an insoluble substance is formed.

Q 1. What is the colour of the insoluble substance formed?

(1) White
(2) Yellow
(3) Grey
(4) Black

Q 2. State true or false: This insoluble substance formed is known as a precipitate

(1) TRUE
(2) FALSE

Q 3. What is the type of the chemical reaction occuring in the above experiment?

(1) Combination
(2) Double displacement
(3) Decomposition
(4) None of the above

Q 4. Which of the following is(are) the products of the above reaction?

(1) NaCl
(2) 
(3) Both (1) and (2)
(4) 

Worksheet 1.5

Marks - 25

Q 5. State true or false: The above reaction is an example of a percipitation reaction.

(1) TRUE
(2) FALSE

Worksheet 1.6

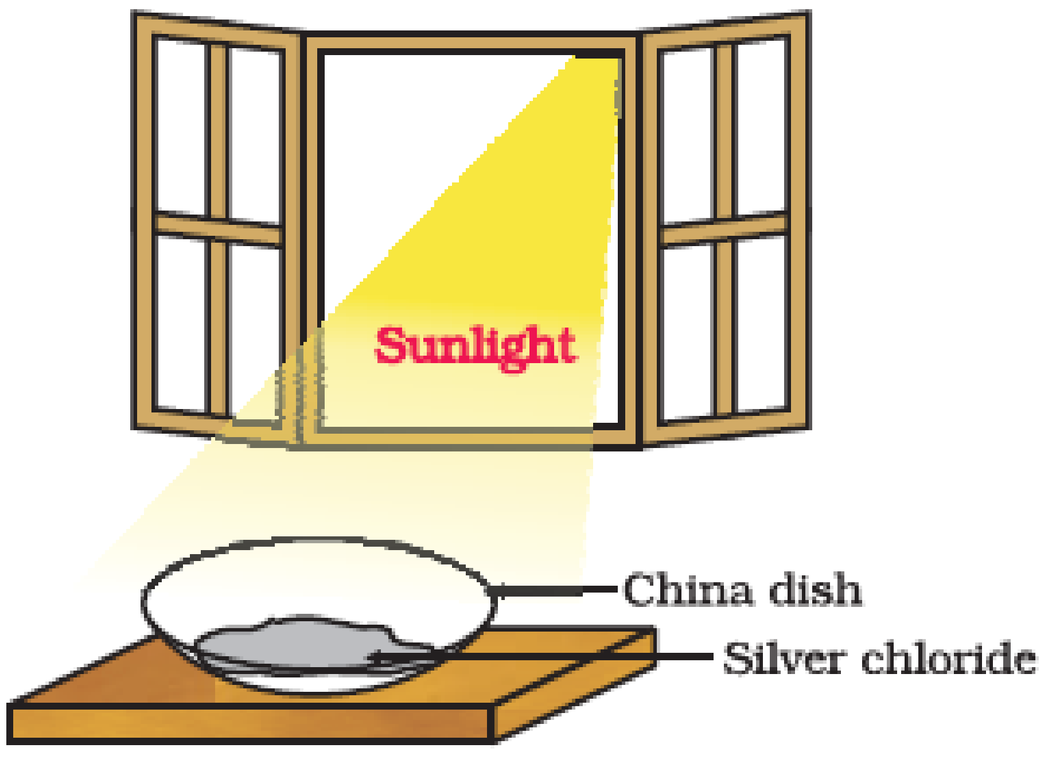
Marks - 25

Case study based questions

10th Science

Chemical Reactions and Equations

Passage - 1 **5 Marks**



In the above image, 2 g silver chloride is taken in a china dish and is kept in sunlight, after sometime we observe that the colour of the silver chloride changes.

Q 1. What is initial colour of silver chloride?

(1) White
(2) Grey
(3) Black
(4) Yellow

Q 2. What is final colour of silver chloride?

(1) White
(2) Grey
(3) Black
(4) Yellow

Worksheet 1.6

Marks - 25

Q 3. What is the type of the chemical reaction occuring in the above experiment?

(1) Combination
(2) Double displacement
(3) Decomposition
(4) None of the above

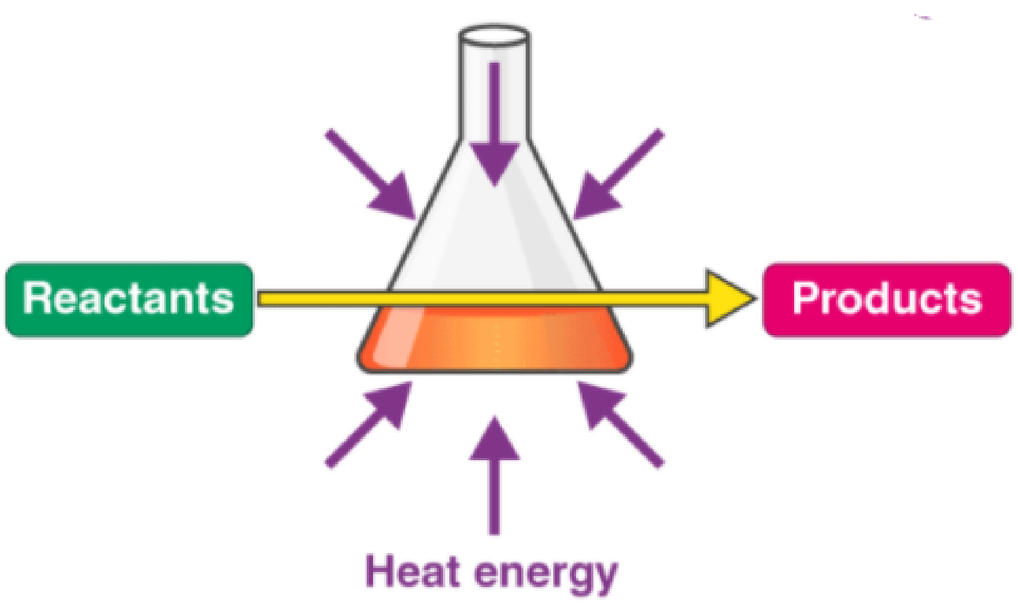
Q 4. State true or false: Silver bromide also behaves in the same way like Silver chloride in presence of sunlight.

(1) TRUE
(2) FALSE

Q 5. Which type of reactions are used in black and white photography ?

(1) Combination
(2) Displacement
(3) Redox
(4) Thermal decomposition

Passage - 2 **5 Marks**



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the decomposition reactions require energy either in the form of heat, light or electricity for breaking down the reactants. These type of reactions are used in manufacture of cement, metallurgical processes , getting relief from acid indigestion, thermite welding.

Q 1. In which of the following chemical reaction heat energy is absorbed?

(1) Endothermic reaction
(2) Exothermic reaction
(3) Displacement reaction
(4) Combination reaction

Q 2.
The above reaction is used for preparation of oxygen gas in laboratry. Which of the following statement is correct about the reaction?

(1) It is a decomposition reaction and endothermic in nature
(2) It is a combination reaction
(3) It is a decomposition reaction and is accompanied by release of heat
(4) It is a photo-chemical decomposition reaction and exothermic in nature.

Q 3. Which of the following are exothermic processes?

(1) Reaction of water with quick lime
(2) Dilution of an acid
(3) Both (1) and (2)
(4) Evaporation of water

Q 4.
In the above image, a chemical reaction is shown which of the following state-ments is correct about the reaction?

(1) It is a decomposition reaction and endothermic in nature
(2) It is a combination reaction
(3) It is a decomposition reaction and accompanied by release of heat
(4) It is a photochemical decomposition reaction and exothermic in nature

Q 5. State true or false: Photosynthesis is an endothermic reaction.

(1) TRUE
(2) FALSE

Passage - 3

5 Marks

In order to increase the fertiility of the soil farmers use compost. It is prepared by decomposition of the vegetables, fruits and other organic waste, the process involves a chemical reaction.

Q 1. What is the type of the chemical reaction involved in the decomposition of vegetable matter into compost ?

(1) Exothermic
(2) Endothermic
(3) Combination
(4) Displacement

Worksheet 1.6

Marks - 25

Q 2. Which of the following are exothermic processes?

(1) Burning of Natural gas
(2) Dilution of an acid
(3) Both (1) and (2)
(4) Evaporation of water

Q 3. Which among the following changes are endothermic in nature?

(1) Decomposition of ferrous sulphate
(2) Dissolution of ammonium chloride in water
(3) Both (1) and (2)
(4) Dilution of sulphuric acid

Q 4. Which of the following is not the type of a decomposition chemical reaction?

(1) Thermal
(2) Electrical
(3) Displacement
(4) Photo

Q 5. How many types of decomposition reaction are there ?

(1) 1
(2) 2
(3) 3
(4) 4

Passage - 4 **5 Marks**

Worksheet 1.6

Marks - 25

Combustion forms the classic example of redox reactions in real-life. However, whenever we talk about combustion, we usually view it as a physical change than a chemical one. The burning of organic material and combustion of hydro-carbons in fossil fuels form yet another important example of redox reactions.

Q 1. Which of the following statement(s) is(are) true about combustion?

(1) The oxygen present in the atmosphere is being reduced
(2) The compound which is being burned is undergoing oxidation
(3) Both (1) and (2)
(4) Oxygen is reducing agent

Q 2. Which of the following is(are) example(s) of redox reaction?

(1) Respiration
(2) Photosynthesis
(3) Corrosion
(4) All of the above

Q 3. State true or false: During the process of respiration, the carbon-dioxide is reduced .

(1) TRUE
(2) FALSE

Q 4. If a substance gains oxygen during a reaction, it is said to be

(1) Oxidised
(2) Reduced

Q 5. If a substance loses oxygen during a reaction, it is said to be

(1) Oxidised
(2) Reduced

Passage - 5 **5 Marks**

Worksheet 1.6

Marks - 25

In the above image, a black substance is shown which is obtained by heating a shiny brown metal in presence of oxygen.When the given metal comes in contact with air and water it developes the green layer on it's surface.

Q 1. What is the name of the metal which is being burnt to ?

(1) Copper
(2) Iron
(3) Silver
(4) Gold

Q 2. What is the chemical formula of the black substance?

(1) 
(2) CuO
(3)
(4) None of the above

Q 3. What is the type of the chemical reaction in the above experiment?

(1) Decomposition
(2) Displacement
(3) Combination
(4) Redox

Q 4. State true or false: In combination reaction two products are formed from two or more reactants.

(1) TRUE
(2) FALSE

Q 5. Which of the following reactions represent a combination reaction?

(1) $CaO(s) + H_2O(l) \longrightarrow Ca(OH)_2(aq)$
(2) $CaCO_3(s) \longrightarrow CaO(s) + CO_2(g)$
(3) $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$
(4) $2FeSO_4(s) \longrightarrow Fe_2O_3(s) + SO_2(g) + SO_3(g)$