Worksheet 1.3

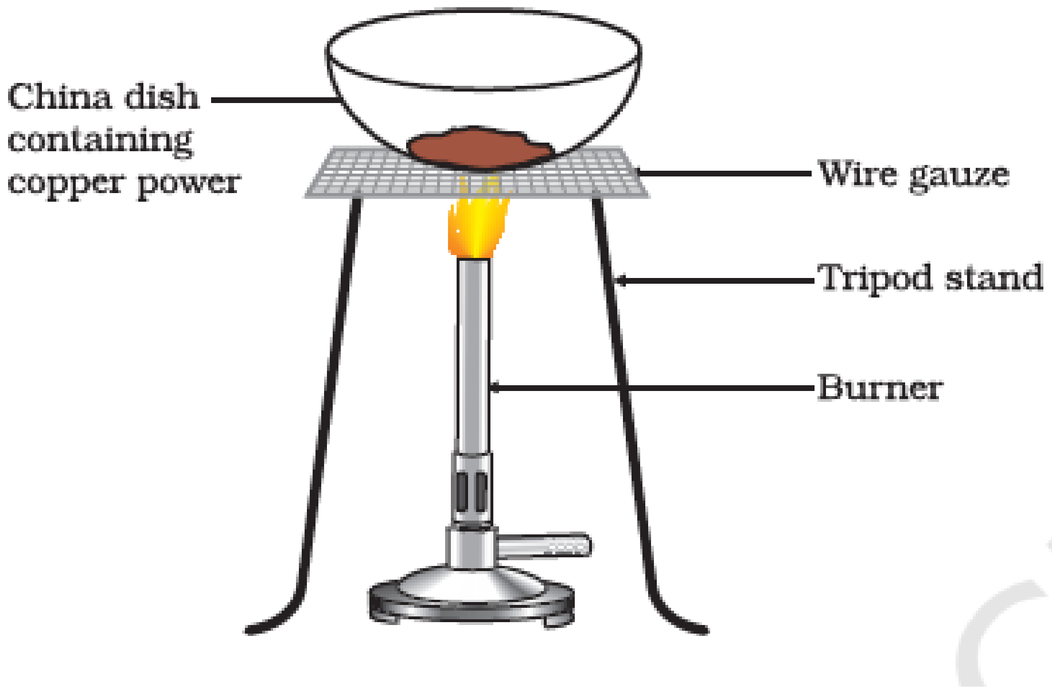
Marks - 25

Case study based questions

10th Science

Chemical Reactions and Equations

Passage - 1 **5 Marks**



In the above image, an experiment is performed where the china dish containing about 1.2 g of copper powder is heated. We observe that the surface of the copper powder becomes black.

Q 1. What is the type of the chemical reaction in the above experiment?

(1) Reduction
(2) Decomposition
(3) Addition
(4) Oxidation

Q 2. State true or false: The copper powder becomes black because oxygen is added to copper and copper oxide is formed.

(1) TRUE
(2) FALSE

Q 3. If hydrogen gas is passed over this heated material (CuO), the black coating on the surface turns

(1) White
(2) Brown

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(3) Grey
(4) Red

Q 4. In which of the following chemical reaction there is gain of oxygen atoms and loss of hydrogen atoms?
(1) Reduction
(2) Displacement
(3) Oxidation
(4) None of the above

Q 5. Which of the following statement is incorrect about reducing agent?
(1) It gives hydrogen
(2) It gives oxygen
(3) It gains oxygen
(4) It oxidises itself

Passage - 2 **5 Marks**

You must have observed that iron articles are shiny when new, but get coated with a reddish brown powder when left for some time. This process is commonly known as rusting of iron or corrosion. Some other metals also get tarnished in this manner.

Q 1. State true or false: Corrosin is an oxidation reaction.
(1) TRUE
(2) FALSE

Worksheet 1.3

Marks - 25

Q 2. Which of the following metal(s) get tarnished when they come in contact with oxygen and water?

(1) Iron
(2) Silver
(3) Copper
(4) All of the above

Q 3. Which of the following statements are correct about the reaction $3Fe(s) + 4H_2O \rightarrow Fe_3O_4(s) + 4H_2(g)$?

(1) Iron metal is getting oxidised
(2) Water is getting reduced
(3) Water is acting as an oxidising agent
(4) All of the above

Q 4. Which of the following statements is not true?

(1) Corrosion is a chemical change
(2) Corrosion of iron is called rusting
(3) Corrosion is enhsnced by stains on metal surface
(4) Corrosion can take place in vaccum

Q 5. Which of the following is(are) example(s) of corrosion?

(1) Black coating on silver
(2) Green coating on copper
(3) Rust on iron articles
(4) All of the above

Passage - 3 **5 Marks**

Worksheet 1.3

Marks - 25

Ravi is very curious to know why the bags of chips are half filled, he asks this question to his friend ramu and ramu tells that chips manufacturers usually flush bags of chips with gas to prevent the chips from getting spoiled.

Q 1. Oxidation of oils or fats in food resulting in bad taste and smell is known as ?

(1) Corrosion
(2) Rancidity
(3) Acidity
(4) Erosion

Q 2. Which of the following is the method to prevent rancidity?

(1) Vaccum packaging
(2) Adding antioxidants
(3) Replacing air by nitrogen
(4) All of the above

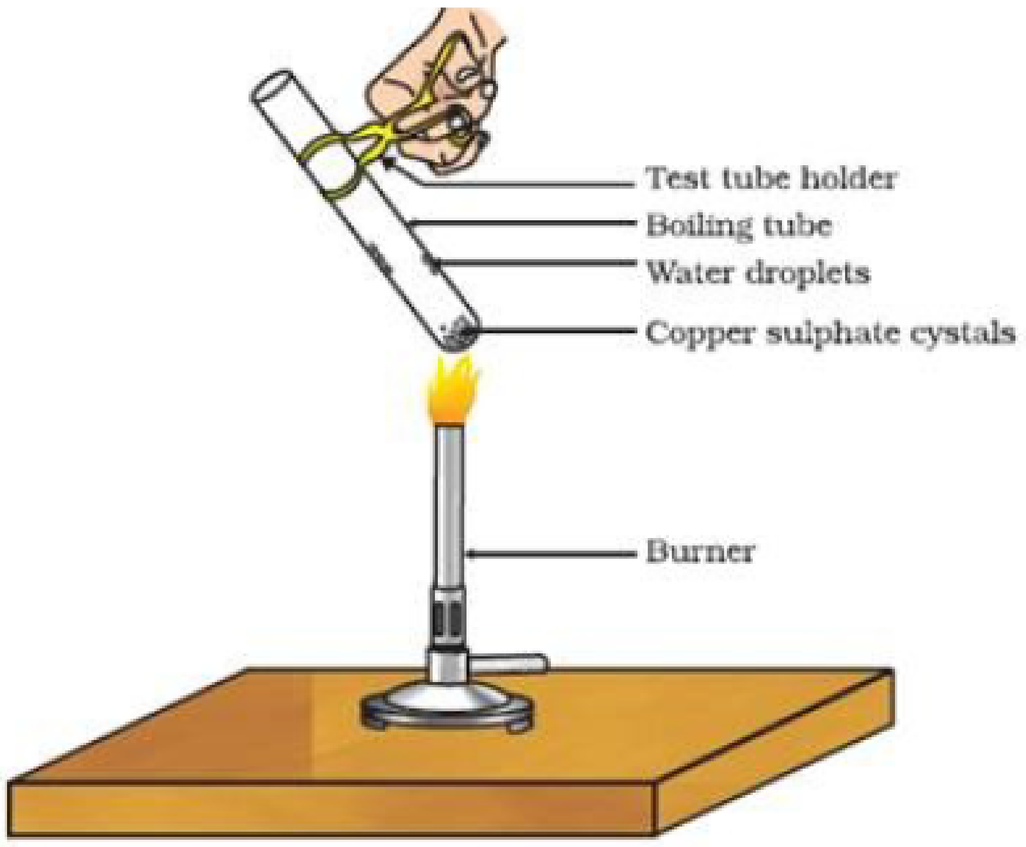
Q 3. State true or false: Rancidity is an reduction reaction.

(1) TRUE
(2) FALSE

Q 4. Which of the following statement(s) is(are) true about rancidity?
(1) It is an oxidation reaction
(2) It results in bad taste and smell
(3) It takes place in oils and fats
(4) All of the above

Q 5. Oil and fat containing food items are flushed with which gas?
(1) Oxygen
(2) Nitrogen
(3) Carbon dioxide
(4) Sulphur dioxide

Passage - 4 **5 Marks**



In the above image, an experiment is performed where the Copper sulphate crystals are heated .When we heat the crystals, they turn white. If you moisten the crystals again with water, you will find that colour of the crystals reappears.

Q 1. _____ water molecules are present in one formula unit of copper sulphate.
(1) Five

(2) Two
(3) Six
(4) Seven

Q 2. The salt which possesses water of crystalline solution is _____.
(1) baking soda
(2) Gypsum
(3) washing soda
(4) bleaching powder

Q 3. If the crystal is moistened with water _____ colour of crystal reappear
(1) Green
(2) Red
(3) Blue
(4) Yellow

Q 4. The chemical formula for hydrated copper sulphate is
(1) $CuSO_4.2H_2O$
(2) $CuSO_4.6H_2O$
(3) $CuSO_4.4H_2O$
(4) $CuSO_4.5H_2O$

Q 5. State true or false: The water of crystallization is the variable number of water molecules present in a salt
(1) TRUE
(2) FALSE

Passage - 5 **5 Marks**

Worksheet 1.3

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 of the following is the type of a chemical reaction?

(1) Combination reaction
(2) Decomposition reaction
(3) Displacement reaction
(4) All of the above

Q 2. How many types of decomposition reaction are there ?

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

Q 3. Which of the following is not a physical change?

(1) Boiling of water to give water vapour
(2) Melting of ice to give water
(3) Dissolution of salt in water
(4) Combustion of Liquefied Petroleum Gas(LPG)

Q 4. Which one of the following processes involve chemical reactions?

(1) Storing of oxygen gas under pressure in a gas cylinder
(2) Liquefaction of air
(3) Keeping petrol in a China dish in the open

(4) Heating copper wire in the presence of air at high temperature

Q 5. 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 1.4

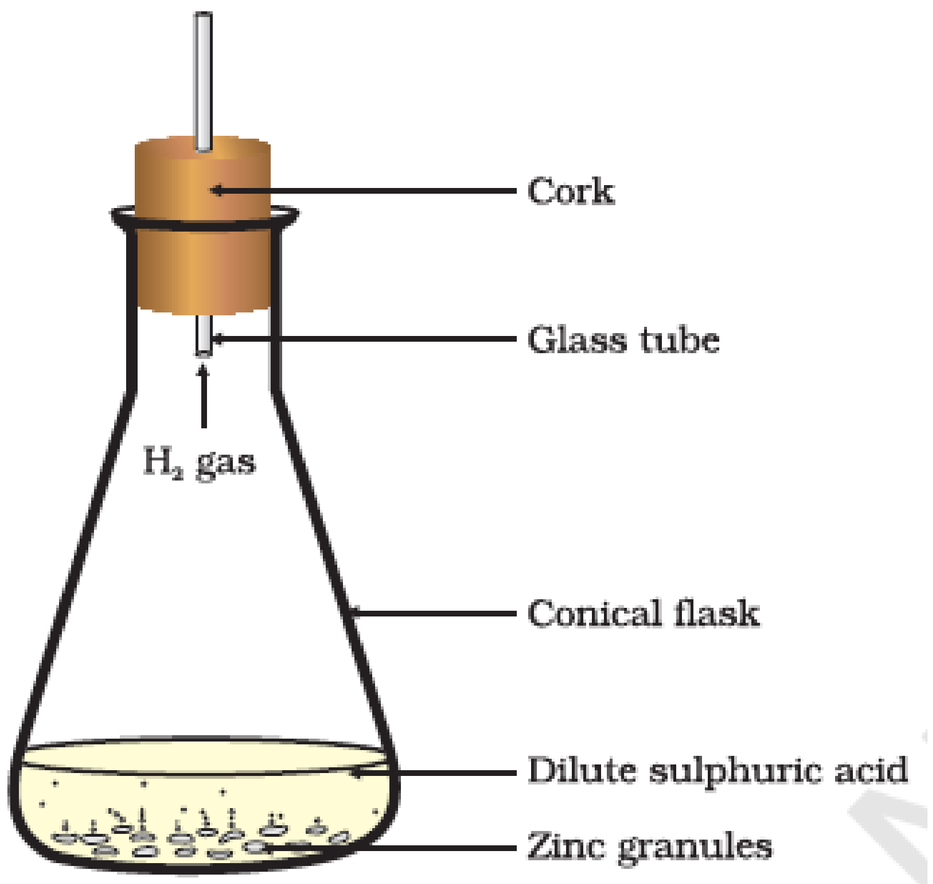
Marks - 25

Case study based questions

10th Science

Chemical Reactions and Equations

Passage - 1 **5 Marks**



In the above image, an experiment is performed where the few zinc granules are added in a conical flask.Then dilute sulphuric acid is added to the conical flask.

Q 1. The chemical reaction happening in the above experiment is characterized by which of the following things ?

(1) evolution of a gas

(2) change in temperature

(3) Both (1) and (2)

(4) change in state

Q 2. What is pH range of sulphuric acid?

(1) Less than 7

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(2) More than 7
(3) Equals to 7

Q 3. Which of the following is(are) the products of the above experiment?
(1) H_2
(2) $ZnSO_4$
(3) Both (1) and (2)
(4) O_2

Q 4. State true or false: When a burnt candle is brought near the gas evolved in the above reaction, it starts burning brightly.
(1) TRUE
(2) FALSE

Q 5. What is the type of the chemical reaction occuring in the above experiment?
(1) Combination reaction
(2) Decomposition reaction
(3) Displacement reaction
(4) None of the above

Passage - 2

5 Marks

The main gate of ravi's house is developing a powdery brown film of substance which is slowly deteriorating the gate. He asked his friend ramu for help who told him to paint the gate in order to protect it from deteriorating.

Worksheet 1.4

Marks - 25

Q 1. What is the chemical formula of the powdery brown film of the substance?

(1) $Fe_2O_3.xH_2O$

(2) $FeO_3.xH_2O$

(3) $Fe_3O_2.xH_2O$

(4) None of the above

Q 2. Which of the following elements undergoes corrosion?

(1) Gold

(2) Silver

(3) Platinum

(4) All of the above

Q 3. Which of the following is(are) the other ways in which the gate can be protected?

(1) Applying the film of grease and oil on the metal surface

(2) Covering metal surface of metal with another metal which is more electropositive

(3) All of the above

Q 4. State true or false: Silver sulphide is the chemical name of the compound formed on corrosion of silver.

(1) TRUE

(2) FALSE

Q 5. State true or false: Conversion of metals into their undesirable compunds (sulphides, carbonates, oxides, etc) by interaction with atmospheric gases and moisture is called as corrosion.

(1) TRUE

(2) FALSE

Passage - 3

5 Marks

Worksheet 1.4

Marks - 25

Samuel has a silver coin that turned black. He kept the coin in the bowl lined with aluminium foil. Then he filled the bowl with water and boiled it. After some-time, he found that the coin has become new.

Q 1. The blackness of the silver coin is due to which of the following compound?

(1) Silver sulphide
(2) Silver sulphite
(3) Silver sulphate
(4) None of the above

Q 2. What is the chemical formula of the black compound deposited on the silver coin surface?

(1) Ag_2S
(2) AgS
(3) AgS_2
(4) Ag_2S_2

Q 3. Which of the following is(are) the necessary condition(s) for corrosion?

(1) Presence of Oxygen
(2) Presence of Water
(3) Both (1) and (2)
(4) Presence of Vaccum

Q 4. The coin becomes shiny again due to which of the following compound?

(1) Aluminium sulphate
(2) Aluminium sulphite
(3) Aluminium sulphide

(4) None of the above

Q 5. State true or false : Aluminium displaces silver due to which the coin becomes shiny again.

(1) TRUE

(2) FALSE

Passage - 4

5 Marks

In the above image, the given substance is used intensively in the cement industry. This element is also present in the bones and it is an oxide of group 2 element.

Q 1. What is the chemical formula of the substance given above?

(1) CaO

(2) Ca(OH)

(3) $Ca(OH)_2$

(4) None of the above

Q 2. What is the other name of the given substance ?

(1) Quick lime

(2) Slaked lime

Q 3. When water is added to it, what is the nature of the solution formed?

(1) Acidic

(2) Basic

Q 4. What is the chemical formula of the compound formed on adding water to the above substance?

(1) CaO
(2) Ca(OH)
(3) $Ca(OH)_2$
(4) None of the above

Q 5. State true or false: Acidic solution turns red litmus paper blue.

(1) TRUE
(2) FALSE

Passage - 5 **5 Marks**

$$\mathbf{CuO + H_2 \xrightarrow{Heat} Cu + H_2O}$$

In the above image, the chemical reaction is shown which happens on heating Copper oxide in presence of hydrogen gas. Based on the reaction answer the questions given below.

Q 1. Which substance is getting oxidised?

(1) CuO
(2) H_2
(3) Cu
(4) H_2O

Q 2. Which substance is getting reduced?

(1) CuO
(2) H_2
(3) Cu
(4) H_2O

Q 3. What is oxidising agent in the above reaction?

(1) CuO
(2) H_2
(3) Cu
(4) H_2O

Q 4. What is reducing agent in the above reaction?
(1) CuO
(2) H_2
(3) Cu
(4) H_2O

Q 5. What is the type of the given chemical reaction?
(1) Combination reaction
(2) Decomposition reaction
(3) Redox reaction
(4) None of the above