



## CHEMISTRY

### BOOKS - OSWAAL CHEMISTRY (KANNADA ENGLISH)

### CHEMICAL REACTIONS AND EQUATIONS

#### Topic 1 Chemical Reactions And Equations Multiple Choice Question

1.  $\text{Si} + \text{C} \Rightarrow \text{SiC}$ . This chemical reaction is an example for :

- A. exothermic reaction
- B. endothermic reaction
- C. dissociation reaction
- D. displacement reaction

**Answer:**



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## Topic 1 Chemical Reactions And Equations Match The Column

1.

Column A

- (1) Sodium burning in chlorine.
- (2) Sodium hydroxide reacts with hydrochloric acid
- (3) Silver nitrate solution reacted with sodium chloride .
- (4) Sodium metal reacts with water.

Column B

- (a) neutralisation
- (b) double displacement
- (c) displacement
- (d) combination

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## Topic 1 Chemical Reactions And Equations Very Short Answer Type Questions

1. What is chemical combination reaction ?

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2. What is meant by a chemical reaction?

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3. Which one is a chemical change - rusting of iron or melting of ice ?

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4. Name and state the law which is kept in mind while we balanced a chemical equation

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5. State one basic difference between a physical change and a chemical change.

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6. What happens chemically when quicklime is added to water filled in a bucket ?

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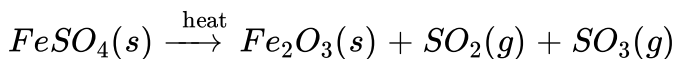
7. What happens when  $ZnCO_3$  is heated in the absence of air ? Give the relevant equation.

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8. Is burning of a candle wax a physical change or a chemical change ?

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9. Write balanced chemical equation



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10. Write the chemical equation for reaction when lead nitrate and potassium iodide are mixed.



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11. Write a balanced chemical equation for the following reaction.

Ethanol is warmed with ethanoic acid to form ethyl acetate in the presence of concentrated  $H_2SO_4$ .



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## Topic 1 Chemical Reactions And Equations Short Answer Type Questions I

1. In test-tubes A and B, zinc sulphate solution and silver nitrate solution are taken respectively. Copper turnings are added to both test-tubes. In which of the two test-tubes do you observe the reaction. Justify your answer with scientific reason.



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

(i) Potassium bromide reacts with Barium iodide.

(ii) Zinc carbonate is heated.



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3. Which coloured fumes are obtained when lead nitrate is heated ? Write the balanced chemical equation for this reaction . Name the type of this chemical reaction .



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4. List four observation that helps us to determine whether a chemical reaction has taken place.

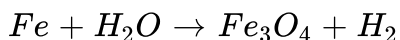


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5. (i) State the law which is followed in balancing a chemical equation .

(ii) Balance the following chemical equation:



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6. What is observed when carbon dioxide gas is passed through lime water.

(i) For a short duration

(ii) For long duration ? Also write the chemical equations for the reaction involved.

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7. A copper plate was dipped into a solution of silver nitrate . After sometime , a black layer was observed on the surface of copper plate.

State the reason for it and write chemical equation of the reaction involved.

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8. When iron rod is kept dipped in copper sulphate solution for some time, a brown coating is formed on the iron rod. What change will be observed in the colour of the solution? Also write chemical equation for the reaction involved.

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9. When Hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation with physical states for this reaction. State what kind of chemical reaction is this?

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**10.** Write the skeletal equation for the following reactions:

(i) Hydrogen sulphide reacts with sulphur dioxide to form sulphur and water.

(ii) Methane on burning combines with oxygen to produce carbon dioxide and water .

What is the need of balance equations ?

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**11.** Translate the following statement into chemical equation and then balance it :

'A metal in the form of ribbon burns with a dazzling white flame and changes into a white powder'.

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**12.** State what happens when zinc granules are heated with sodium hydroxide solution. Write the balanced chemical equation for the

reaction. Name the main product formed for the this reaction .

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**13.** Give reactions of calcium and magnesium with dilute nitric acid.

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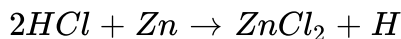
**14.** Write balanced chemical equations for the following reactions:

(i) Silver bromide on exposure to sunlight decomposes into silver and bromine .

(ii) Sodium metal reacts with water to form sodium hydroxide and hydrogen gas.

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**15.** In a test-tube, hydrochloric acid is poured over a few zinc granules. List two observations that suggest that a chemical reaction has occurred.



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**16.** Convert the following statements into balanced chemical equations:

(i) Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas

.

Magnesium burns in oxygen to form magnesium oxide.

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## Topic 1 Chemical Reactions And Equations Short Answer Type Questions Ii

**1.** Define a chemical reaction. Which observations help you to determine whether a chemical reaction has taken place ?

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2. Define the term decomposition reaction . Give one example each of thermal decomposition and electrolytic decomposition.

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3. Write the steps for balancing the chemical equation for the formation of ammonia by the combination of nitrogen and hydrogen.

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4. (a) Mention the four informations given by an equation.

(b) State the law of conservation of mass as applicable in a chemical reaction.

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5. When a copper wire was left in silver nitrate solution for sometime, it was observed that the solution turned bluish green.

(i) Explain the observation .

(ii) Write the balanced chemical equation to represent the change taking place.

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6. 2g ferrous sulphate crystal are heated in a dry boiling tube.

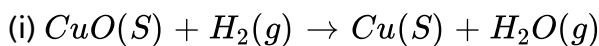
(i) List any two observations.

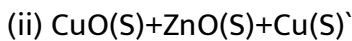
(ii) Name the type of chemical reaction taking place.

(iii) Write the chemical equation of the reaction.

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7. (a) In the following reactions, name the reactants, which undergo oxidation and reduction:





(b) State one industrial application of reduction.

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8. (a) Write chemical equations.

(i) When carbon dioxide gas is passed through lime water.

(ii) When excess of carbon dioxide gas is passed through lime water.

(b) List two natural forms of calcium carbonate.

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9. Identify the type of each of the following reactions. Also write balanced chemical equation for each .

(i) The reaction mixture becomes warm .

(ii) An insoluble substance is formed.

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10. (i) Solution of a substance 'X' is used for testing carbon dioxide . Write the equation of the reaction of 'X' with carbon dioxide.

(ii) How is 'X' obtained? Write chemical equation.

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11. What happens when :

(i) Dilute hydrochloric acid is added to solid sodium carbonate.

Quicklime is treated with water .

(iii) Sodium chloride solution is added to lead nitrate solution .

Also write the chemical equation in each case.

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12. Write the chemical equation of the reaction with an example each in which the following change has taken place:

(i) Change in colour

(ii) Change in temperature

(iii) Formation of precipitate.

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**13.** Complete and balance the following chemical equations:

(i)  $CaCO_3 + HCl$  (ii)  $Al + HCl$

(iii)  $MnO_2 + HCl$

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**14.** Write balanced chemical equations for the following reactions :

(i) dilute sulphuric acid reacts with aluminium powder.

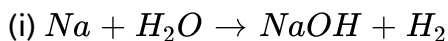
(ii) dilute hydrochloric acid reacts with sodium carbonate.

(iii) Carbon-dioxide is passed through lime water.

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15. Balance the following chemical equations and state whether they are exothermic or endothermic :



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16. Write the chemical equation involved in the following chemical reactions:

(i) White washing.

(ii) Black and white photography.

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17. 2g of ferrous sulphate crystals are heated in a boiling tube.

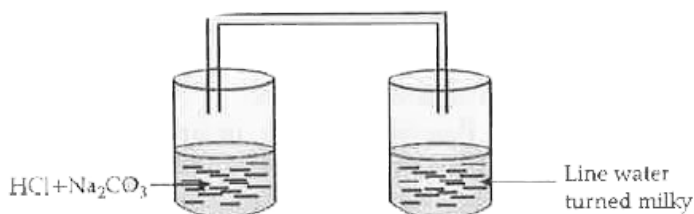
(i) State the colour of ferrous sulphate crystals both before heating and after heating.

(ii) Name the gases produced during heating .

(iii) Write the chemical equation for the reaction .

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18. What do you observe in activity given in the figure? What are the causes of these observations explain giving reaction ?



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## Topic 1 Chemical Reactions And Equations Long Answer Type Questions

1. Define a chemical reaction . State four observations which help us to determine that a chemical reaction has taken place. Write one example of each observation with a balanced chemical equation.



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2. Write balanced chemical equations for the following statements :

- (i) Bleaching powder is kept open in air .
- (ii) Blue crystals of copper sulphate are heated.
- (iii) Chlorine gas is passed through dry slaked lime.
- (iv) Carbon dioxide gas is passed through lime water .



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3. Identify the type of chemical reaction in the following statements and define each of them:

- (i) Digestion of food in our body
- (ii) Rusting of iron
- (iii) Heating of manganese dioxide with aluminium powder
- (iv) Blue colour of copper sulphate solution disappears when iron filings are added to it



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4. Write balanced chemical equations for the following statements :

(i) Excess of carbon dioxide gas is passed through lime water .

(ii) Dilute sulphuric acid reacts with sodium carbonate .

(iii) Egg shells are dropped in hydrochloric acid

(iv) Copper (II) oxide reacts with dilute hydrochloric acid.

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5. (a) List any three observations which determine that a chemical reaction has taken place . Also list three informations that cannot be obtained about a chemical reaction, merely by its chemical equation.

(b) Balance the following chemical equations.

(i)  $Fe + H_2O \rightarrow Fe_3O_4 + H_2$

(ii)  $CO_2 + H_2O \rightarrow C_6H_{12}O_6 + O_2$

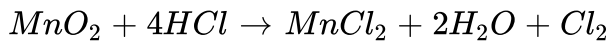
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6. What happens when zinc granules are treated with dilute solutions of  $H_2SO_4$ ,  $HNO_3$ ,  $NaCl$  and  $NaOH$ ? Also write the chemical equation.

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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Multiple Choice Questions

1. The substance that is oxidised in the following chemical reactions.



(i) HCl (ii)  $MnO_2$

(iii)  $MnCl_2$  (iv)  $H_2O$

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2. Food items on exposure to atmosphere become rancid due to the process of :

(i) oxidation (ii) reduction

(iii) corrosion (iv) hydrogenation

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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Match The Column

Column A      Column B

(1)  $CuSO_4$       (a) Pale green

1. (2)  $FeSO_4$       (b) Blue

(3)  $Na_2SO_4$       (c) White

(4)  $BaCl_2$       (d) Milky white

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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Very Short Answer Type Questions

1. Why is photosynthesis considered an endothermic reaction ?

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2. State the type of chemical reaction used for the extraction of metals from their naturally occurring chlorides or oxides.

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3. Why is hydrogen peroxide kept in coloured bottles ?

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4.  $N_2 + 3H_2 \rightarrow 2NH_3$ , name the type of reaction .

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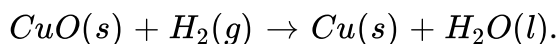
5. Why do silver articles become black after sometime when exposed to air ?

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6. Give reason: why do chips manufactures usually flush bags of chips with gas such as nitrogen ?

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7. Identify the substances that are oxidized and the substances that are reduced in the following reactions :



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8. Write a balanced chemical equation for a chemical combination reaction.

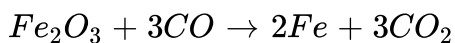
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9. Give an example of a double - displacement reaction.

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10. Identify the reducing agent in the following reaction :

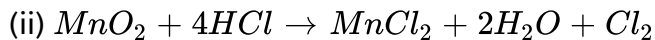
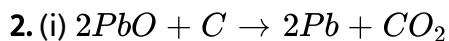


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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Short Answer Type Question

1. What is a combination reaction ? State one example giving balanced chemical equation for the reaction .

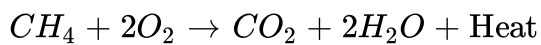
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What is redox reaction ? Identify the substance oxidised and the substance reduced in the above reaction.

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3. Identify the type of reaction from the following equation and define it.



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4. Why does the colour of copper sulphate solution change when an iron nail is dipped in it ? Write chemical equation for the reaction involved.

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5. (i) List any two changes which take place when oily food gets oxidized.
- (ii) Mention a measure which prevents or slows down its oxidation.

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6. A student prepares aqueous solutions of the following salts:

Copper sulphate, ferrous sulphate, sodium sulphate, barium chloride.

Write the colour of each solution thus formed.

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7. Mention the colour of  $FeSO_4 \cdot 7H_2O$  crystals . How does this colour change upon heating ? Give balanced chemical equation for the change.

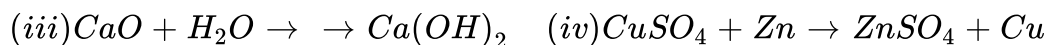
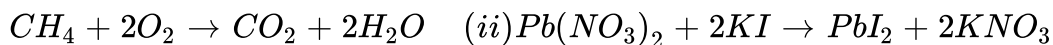
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8. Write balanced equation for the reaction between magnesium and hydrochloric acid. Name the product obtained, identify the type of reaction.

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9. Identify the type of reaction from the following equations:

(i)



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10. Barium chloride reacts with aluminium sulphate to give aluminium chloride and barium sulphate.

(i) State the two types in which the above reaction can be classified.

(ii) Translate the above statement into a chemical equation .

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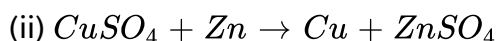
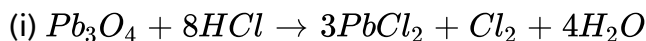
11. When hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation for this reaction and state (i) the substance oxidised and (ii) the substance reduced in the reaction.

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12. Write the balanced chemical equation for the following reaction and identify the type of reaction and define it. Iron III oxide reacts with aluminium and gives molten iron and aluminium oxide'.

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13. Identify the oxidising agents (oxidants ) in the following reactions:





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14. A silver article generally turns black when kept in the open for a few days. The articles when rubbed with toothpaste again starts shining.

(i) Why do they turn black ? Name the phenomenon involved.

(ii) Name the black substance formed and write its formula.



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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Short Answer Type Question Ii

1. What is rancidity ? Mention any two ways by which rancidity can be prevented.



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2. Name the term used to indicate the development of unpleasant smell and taste in fat and oil containing food due to oxidation . What are anti-oxidants ? Why are they added to fat and oil containing food.

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3. A solution of copper sulphate was kept in an iron pot. After few days, the iron pot was found to have a number of holes in it. Explain the reaction with the help of a chemical equation.

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4. Some articles made of silver, copper and iron get coloured coating over them when they are exposed to air . Identify the colour and chemical name of the substance of coating in each case.

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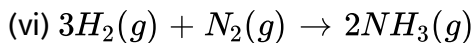
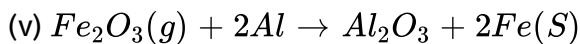
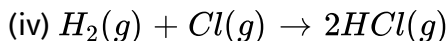
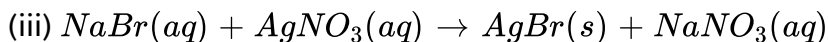
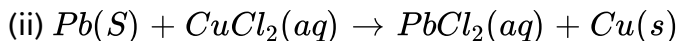
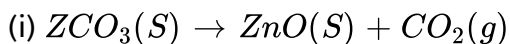
5. Write balanced equation for the following reactions and also name the type of chemical reaction in each case :

(i) Magnesium ribbon is burnt in air .

(ii) Lime stone is heated.

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6. Select (i) Combination reaction (ii) decomposition reaction and (iii) displacement reaction from the following chemical equations:



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7. State the kind of chemical reactions in the following examples:

(i) Digestion of food in stomach

(ii) Combustion of coal in air

(iii) Heating of limestone.



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8. Name two metals which do not corrode easily . Give an example in each of the following case to support that :

(i) Corrosion of some metals is an advantage.

(ii) Corrosion of a metal is a serious problem .



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9. When is a chemical reaction considered a double displacement reaction ? Explain giving example. State a difference between displacement and double displacement reaction .



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10. Differentiate between a combination reaction and a decomposition reaction. Write one chemical equation each for these reactions.

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11. The following diagram displays a chemical reaction. Observe carefully and answer the following questions :



(i) Identify the type of chemical reaction that will take place and define it .

How will the colour of the salt change ?

(ii) Write the chemical equation of the reaction that takes place.

(iii) Mention one commercial use of this salt



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**12.** In the electrolysis of water:

- (i) Name the gas collected at the cathode and anode respectively .
- (ii) Why is the volume of one gas collected at one electrode is double than that at the other ? Name this gas .
- (iii) How will you test the evolved gases?



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**13.** Name the salts that are used in black and white photography. Give reactions when they are exposed to light . Define the type of chemical reaction taking place.



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**14.** A small amount of calcium oxide is taken in a beaker and water is added slowly to it.

- (i) Will there be any change in temperature of the contents ? Explain.
- (ii) Name and define the type of reaction taking place
- (iii) Write chemical equation for the above reaction .

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15. 2 g lead nitrate powder is taken in a boiling tube . The boiling tube is heated over a flame. Now answer the following :

- (i) State the colour of the fumes evolved and the residue left.
- (ii) Name the type of chemical reaction that has taken place, stating its balanced equation.

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16. When food containing fat or oil is not used and left for a long time, their smell and state changes. Name the process which is responsible for this change . List two methods to prevent or slow down the above change.

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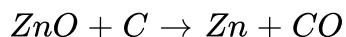
17. Differentiate between an exothermic reaction and an endothermic reaction . Write one example for each one of these reactions in the form of balanced chemical equation .

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18. 'Combination reaction is the reverse of decomposition reaction .' Justify this statement with the help of appropriate chemical equation of each.

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19. In the following chemical reaction "zinc oxide reacts with carbon to produce zinc metal and carbon monoxide."



(i) Identify the substance getting oxidised and the one getting reduced.

(ii) State the reason for choosing the substances in (i) .

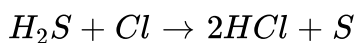
(iii) Name the type of reaction and give another example of similar type of reaction .



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20. (i) Give an example for an a combination reaction which is exothermic .

(ii) Identify the oxidising agen, reducing agent in the following reaction :



(iii) Name the phenomenon due to which the taste and smell of oily food changes when kept for a long time in open. Suggest one method to prevent it.



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21. Write balanced chemical equation for the reactions that take place during respiration . Identify the type of combination reaction that takes

place during this process and justify the name. Give one more example of this type of reaction .

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## Topic 2 Types Of Chemical Reactions Corrosion And Rancidity Long Answer Type Questions

1. (i) Define corrosion .

(ii) What is corrosion of iron called?

(iii) How will you recognise the corrosion of silver?

(iv) Why corrosion of iron is a serious problem ?

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2. (a) Name the type of chemical reaction responsible for causing rancidity and define the term rancidity.

(b) Write two methods for preventing rancidity of food.

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3. (a) Most of the metals acquire a dull surface when exposed to air .

Name the chemical phenomenon responsible for this process.

(b) State the conditions under which the iron articles get rusted . Design an activity to investigate the conditions necessary for rusting .

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4. (a) Write one equation each for decomposition reaction when energy is supplied in the form of :

(i) heat , (ii) light.

(b) Account for the following :

(i) Paint is applied on iron articles.

(ii) Oil and fat containing food items are flushed with nitrogen .

(iii) When an iron nail kept in copper sulphate solution, blue colour of the solution fades and iron nail becomes brownish .

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5. (i) Account for the following

(a) White silver chloride turns grey in sunlight .

(b) Brown coloured copper powder on heating in air turns into black coloured substance .

(ii) What do you mean by :

(a) Displacement reaction

(b) Reduction reaction

Write balanced chemical equation .



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6. (i) Solid calcium oxide was taken in a container and water was added slowly to it :

(a) Write the observation .

(b) Write the chemical formula of the product formed

(ii) What happens when carbon dioxide gas is bubbled through lime water :

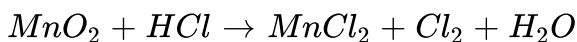
(a) In small amount ,

(b) In excess?

(iii) Why do you apply paint on iron articles ?

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7. (i) Balance the following chemical equation



(ii) What is decomposition reaction ? Explain it with suitable example.

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### Ncert Corner Intext Questions

1. Why should a magnesium ribbon be cleaned before burning in air ?

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2. Write down the balanced equations for the following reactions:

(i) Hydrogen + Chlorine  $\rightarrow$  Hydrogen chloride

(ii) Barium Chloride + Aluminium Sulphate  $\rightarrow$  Barium Sulphate  
+ Aluminium chloride

(iii) Sodium + Water  $\rightarrow$  Sodium hydroxide + Hydrogen



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

(i) Solutions of barium chloride and sodium sulphate in water react to give insoluble barium sulphate and solution of sodium chloride.

(ii) Sodium hydroxide solution (in water) reacts with hydrochloric acid solution (in water) to produce sodium chloride solution and water.



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4. A solution of a substance 'X' is used in whitewashing.

(i) Name the substance 'X' and write its formula.

(ii) Write the reaction of the substance 'X' named in (i) above with water

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5. Why is the amount of gas collected in one of the test tubes in activity 1.7 see tesxtbook double of the amount collected in the other ? Name this gas

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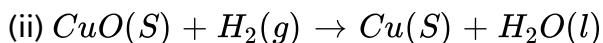
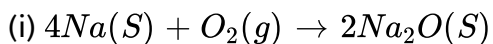
6. Why does the colour of copper sulphate solution change when an iron nail is dipped in it ?

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7. Give two example of a double displacement reaction

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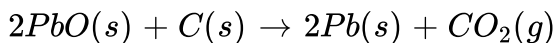
8. Identify the substance that are oxidised and the substances that are reduced in the following reactions.



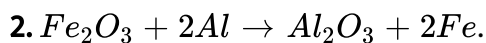
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### Ncert Corner Textbook Exercises

1. Which of the statements about the reaction below are incorrect ?



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The above reaction is an example of a

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3. What happens when dilute hydrochloric acid is added to iron fillings ?

Tick the correct answer.

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

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5. Translate the following statements into chemical equations and then balance them .

(a) Hydrogen gas combines with nitrogen to form ammonia .

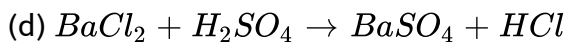
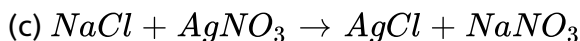
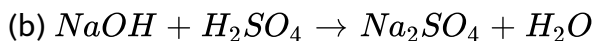
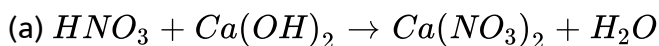
(b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.

(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 .

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6. Balance the following chemical equation.



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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

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**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)

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





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



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



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12. Write one equation for decomposition reactions where energy is supplied in the form of heat, light or electricity.



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13. What is the difference between displacement and double displacement reactions ? Write equations for these reactions.

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

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15. What do you mean by a precipitation reaction ? Explain by giving examples.

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16. Explain the following in terms of gain or loss of oxygen with two examples each .

(a) Oxidation (b) Reduction

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17. A shiny brown -coloured elemnt 'X' on heating in air becomes black in colour. Name the element 'X' and the black - coloured compound formed.

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18. Why do we apply paint on iron articles ?

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

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**20.** Explain the following terms with one example each .

(a) Corrosion

(b) Rancidity



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