1. **What is combination reaction?**

When two or more substances combine to form a single product, the reactions are called combination reactions.

1. **What is meant by a chemical reaction?**

A process in which two or more substances react to form some other new substances with new set of properties is called a chemical reaction.

1. **Which one is a chemical change–rusting of iron or melting of iron?**

Rusting of iron.

1. **State one basic difference between a physical change and a chemical change.**

In a physical change, no new substance is formed. In a chemical change, new substance is formed.

1. **What happens when quick lime is added to water?**

Quick lime reacts with water vigorously to produce slaked lime and a large amount of heat is released.

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1. **What happens when ZnCO3 is heated in the absence of air? Give the relevant equation.**

ZnO(s) and CO2(g) are formed.

Chemical Equation:

ZnCO3 → ZnO + CO2

1. **Is burning of a candle, a physical change or a chemical change? [NCERT Exemplar]**

Both, chemical change and physical change.

1. **Write a balanced chemical equation**

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1. **Name the brown fumes liberated when lead nitrate is heated. Write the balanced chemical equation for this reaction.**

Nitrogen dioxide (NO2)

2Pb(NO3)2 → 2PbO + 4NO2 + O2

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**.

Test-tube B containing silver nitrate solution. Because copper being more reactive than silver, displaces silver from silver nitrate solution. (Model Answer, 2018)

1. **List four observations that help us to determine whether a chemical reaction has taken place.**
2. Evolution of a gas
3. Change in temperature
4. Change in state
5. Change in colour.
6. **A copper plate was dipped into a solution of silver nitrate. After some time, a black layer was observed on the surface of copper plate. State the reason for it and write chemical equation of the reaction involved.**

Black layer was deposited due to coating of silver, because copper being more reactive than silver, displaced silver from silver nitrate solution.

2AgNO3(aq) + Cu → Cu (NO3)2(aq) + 2Ag(s) 2

1. **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.**

Blue colour of the solution changes to light green. Reddish brown deposit is formed on the iron nail.

Fe(s) + CuSO4(aq) → FeSO4(aq) + Cu(s)

1. **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?**
2. CuO(s) + H2(g) → Cu(s) + H2O(g)
3. Redox reaction.
4. **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. [NCERT Exemplar]**

1. 4H2S + 2SO2 → 6S + 4H2O
2. CH4 + 2O2 → CO2 + 2H2O
3. **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.’**

Magnesium combines with atmospheric oxygen to form magnesium oxide.

2Mg + O2 → 2MgO

1. **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 in this reaction.**

When zinc granules are heated with NaOH solution, sodium zincate is formed with the evolution of hydrogen gas.



The main product formed in this reaction is H2 gas.

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

In a decomposition reaction, a single reactant breaks down into two or more simpler products. When a decomposition reaction is carried out by heating, it is called thermal decomposition reaction.

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When a decomposition reaction is carried out with the help of electric current, the process is called electrolysis.

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1. **Write the steps for balancing the chemical equation for the formation of ammonia by the combination of nitrogen and hydrogen**.
2. Examine the number of atoms of different elements present in the unbalanced equation.
3. In the above reaction, N and H of both the sides are unbalanced.
4. To balance hydrogen, H2 is multiplied by 3. It makes 6H-atoms on the left hand side.
5. Now to balance hydrogen atoms on the right hand side, NH3 should be multiplied by 2. It makes 6H-atoms on this side.
6. Now to balance nitrogen atoms, they are counted separately for both the sides and we will find that, nitrogen atoms are 2 on both the sides.
7. Balanced chemical equation will be:

N2 + 3H2 → 2NH3

1. **Mention the four-information given by an equation**.

(i) Physical state of reactants and products. (ii) Conditions such as temperature, pressure, heat etc. (iii) Catalyst involved. (iv) Change in state

1. **When a copper wire was left in silver nitrate solution for some time, it was observed that the solution turned bluish green.**
2. **Explain the observation.**
3. **Write the balanced chemical equation to represent the change taking place.**
4. Copper is more reactive than silver. Hence, when copper wire is dipped in silver nitrate solution, it displaces silver from AgNO3 solution forming copper nitrate which is bluish green in colour.
5. Cu + 2AgNO3 → Cu(NO3)2 + 2Ag
6. **Ferrous sulphate crystals are heated in a dry boiling tube.**
7. **List any two observations.**
8. **Name the type of chemical reaction taking place.**
9. **Write the chemical equation of the reaction.**
10. Before heating, it is pale green. After heating, it is brown or reddish brown. Two observations are: (a) Change in state and colour. (b) Evolution of gas.
11. Decomposition reaction.
12. 2FeSO4(s) → Fe2O3(s) + SO2(g) + SO3(g)
13. **In the following reactions, name the reactants, which undergo oxidation and reduction:**
14. **CuO(s) + H2(g) → Cu(s) + H2O(g)**
15. **CuO(s) + Zn(s) → ZnO(s) + Cu(s).**
16. The reactants are copper oxide and hydrogen. Copper oxide undergoes reduction and hydrogen (H2) undergoes
17. The reactants are copper oxide and zinc. Zinc undergoes oxidation and copper oxide undergoes reduction.
18. **Write the chemical equations involved in the following chemical reactions: (i) White washing. (ii) Black and white photography.**
19. In whitewashing, quicklime reacts with water to form slaked lime.

CaO + H2O → Ca(OH)2 + Heat

1. Silver bromide, when exposed to light decomposes to silver and bromine.



1. **Ferrous sulphate crystals are heated in a boiling tube.**
2. **State the colour of ferrous sulphate crystals both before heating and after heating.**
3. **Name the gases produced during heating.**
4. **Write the chemical equation for the reaction.**

Before heating: Pale green After heating: Brown or reddish brown.

SO2 and SO3. 

1. **Why is photosynthesis considered an endothermic reaction?**

Because heat is absorbed in this process.

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

Electrolytic reduction.

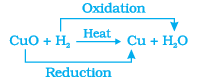
1. **Why is hydrogen peroxide kept in coloured bottles?**

Hydrogen peroxide decomposes into H2O and O2 in the presence of sunlight and hence to prevent decomposition, they are kept in coloured bottles.

1. **Give reasons why do chips manufacturers usually flush bags of chips with gas such as nitrogen?**

To prevent the oil and fats of the chips from being oxidized or become rancid.

1. **Identify the substance that is oxidized and substance that is reduced in the reaction. CuO(s) + H2 (g) → Cu(s) + H2O(l)**



Substance reduced = CuO

Substance oxidised = H2

1. **Identify the reducing agent in the following reaction:**

**Fe2O3 + 3CO → 2Fe + 3CO2 [NCERT Exemplar]**

CO i.e., carbon monoxide is the reducing agent in the given reaction, as it removes oxygen from Fe2O3 and causes its reduction.

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

The oxidation of oils or fats in a food resulting into bad smell and bad taste is called rancidity. It can be prevented by

1. adding antioxidants.
2. flushing with nitrogen gas.
3. **Name the term used to indicate the development of unpleasant smell and taste in fat and oil containing food due to oxidation. What are antioxidants? Why are they added to fat and oil containing food.**

Rancidity.

Antioxidants are substances that inhibit oxidation, especially one used to counter act the deterioration of stored food products.

Antioxidants are added to the food materials containing fats and oils to prevent their oxidation.

Oxidation of food materials containing fats and oils is known as rancidity because of which the food becomes unfit for consumption and develop bad odour.

1. **State the kind of chemical reactions in the following examples:**
2. **Digestion of food in stomach**
3. **Combustion of coal in air**
4. **Heating of limestone.**
5. Decomposition reaction and Exothermic
6. Combination reaction
7. Decomposition reaction
8. **The** **substance that is oxidised in the following chemical reaction.**

**MnO2 + 4HCl → MnCl2 + 2H2O + Cl2**

HCl

Explanation: A substance is oxidized when it gains oxygen and loses hydrogen. In this reaction, HCl gains oxygen to form H**2**O and loses hydrogen to form Cl2.