

Chemical Reaction and Equations

Long Answer Type Questions

Q1. Explain the type of reactions represented by the following equations

- (i) $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$
- (ii) $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$
- (iii) $\text{CuSO}_4 + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$
- (iv) $2\text{Na} + \text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
- (v) $\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$

Q2. What is the difference between displacement and double displacement reactions? Write equations for their reactions.

Q3. (a) Write a balanced chemical equation for the process of photosynthesis and the conditions of the reaction giving physical state of all the substances.

(b) Classify the following reactions as exothermic or endothermic.

- (i) Electrolysis of water.
- (ii) Burning of natural gas.
- (iii) Decomposition of Calcium Carbonate
- (iv) Burning of magnesium ribbon in air.

Q4. Write the balanced chemical equations for the following reactions.

- a. Calcium Hydroxide + Carbon Dioxide \rightarrow Calcium Carbonate + Water
- b. Barium Chloride + Aluminium Sulphate \rightarrow Barium Sulphate + Aluminium Chloride

Q5. Explain oxidation and reduction with two examples in each case.

Q6. a) Define corrosion.

- b) What is corrosion of iron called?
- c) How will you recognise the corrosion of iron.
- d) Why corrosion of iron is a serious problem ?
- e) How can we prevent corrosion?

Q7. What is Balanced Chemical Equation? Why should the chemical equation be balanced?

Q8. What is Rancidity? How can it be prevented?

Q9. Explain Redox reaction with suitable examples.

Q10. Balance the following chemical equations.

- a) $\text{Al}_2(\text{SO}_4)_3 + \text{NaOH} \rightarrow \text{Al}(\text{OH})_3 + \text{Na}_2\text{SO}_4$
- b) $\text{Mg}(\text{OH})_2 + \text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2\text{O}$
- c) $\text{Al}(\text{OH})_3 \rightarrow \text{Al}_2\text{O}_3 + \text{H}_2\text{O}$

- d) $\text{CaCO}_3 + \text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
e) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$

Very Short Answer Type Question

- Q1. What can be seen when a strip of copper metal is placed in a solution of silver nitrate?
Q2. State one industrial application of reduction process.
Q3. Why does the colour of Copper Sulphate solution change, when an iron nail is dipped in it?
Q4. What happens when water is added to quick lime? Is the reaction endothermic or exothermic?
Q5. On what basis is a chemical equation balanced? Name the oxidising and reducing agent in the following equation



- Q6. Why should a magnesium ribbon be cleaned before burning in air?
Q7. Which type of reaction produce insoluble salts?
Q8. How does food become rancid?
Q9. Which gas is filled in the chips packets to prevent rancidity? And Why?
Q10. Which one is a chemical change- Rusting of iron or melting of iron?

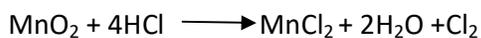
Multiple Choice Questions

- Oxidation is a process which involves
 - Addition of Oxygen
 - Addition of Hydrogen
 - Addition of Nitrogen
 - None of the above
- A substance added to food containing fats and oils is called
 - Oxidant
 - Rancid
 - Coolant
 - Antioxidant
- The correct formula of rust is
 - Fe_2O_3
 - Fe_3O_4
 - $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
 - $\text{Fe}_2\text{O}_4 \cdot x\text{H}_2\text{O}$
- $\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$
The above reaction is an example of
 - Combination

- b) Decomposition
 - c) Displacement
 - d) Double Displacement
5. The reaction of H₂ gas with oxygen gas to form water is an example of
- a) Combination reaction
 - b) Redox reaction
 - c) Endothermic reaction
 - d) All of these
6. $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$
The above reaction is an example of
- a) Oxidation
 - b) Reduction
 - c) Combination
 - d) Displacement
7. Burning of Coal is
- a) Exothermic Reaction
 - b) Endothermic Reaction
 - c) Oxidation Reaction
 - d) None of these
8. Rancidity occurs when oily foods are
- a) Oxidised
 - b) Reduction
 - c) Decomposed
 - d) All of these
9. It is necessary to balance a chemical equation in order to satisfy the law of
- a) Conservation of motion
 - b) Conservation of mass
 - c) Conservation of momentum
 - d) Conservation of energy
10. When a gas is passed through lime water it becomes milky, the gas may be:-
- a) NO₂
 - b) NH₃
 - c) CO₂
 - d) None of these

Q. Read the following and answer any four questions:

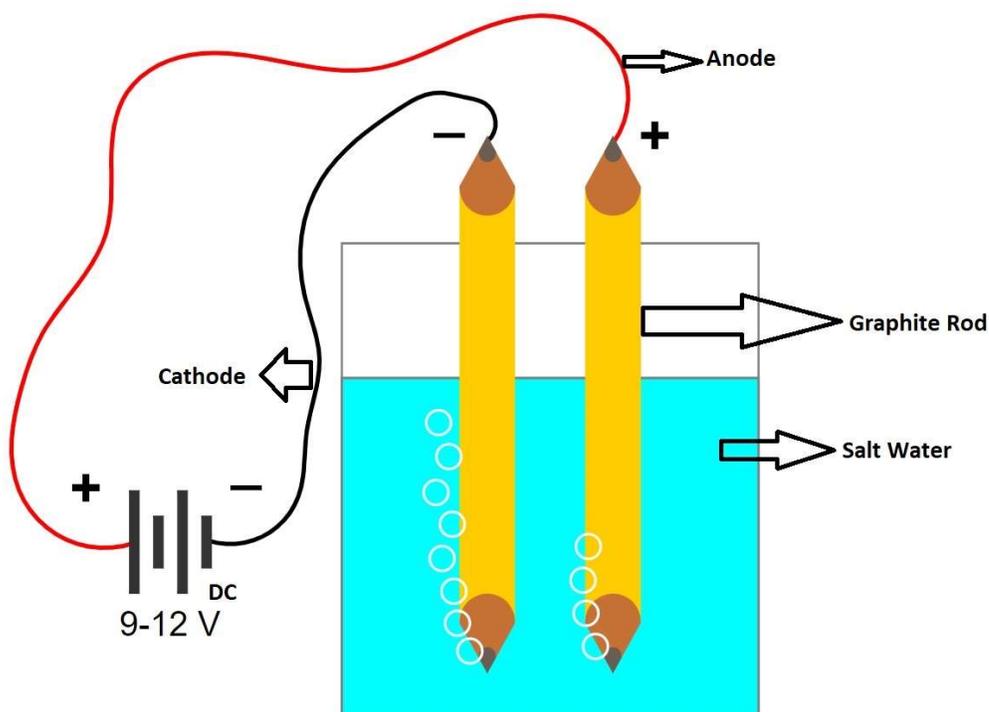
Oxidation is the gain of oxygen or loss of hydrogen. Reduction is the loss of oxygen or gain of hydrogen in the reaction.



- Name the compound oxidised.
- Name the compound reduced.
- Name the oxidising agent.
- Name the reducing agent.
- Define oxidation and reduction on its basis.

Q. Read the following and answer any four questions:

Electrolysis is a process of decomposition of an electrolyte by the passage of electricity through the aqueous solution or molten (fused) state. During the electrolysis of water as shown in the diagram given below:-



- Identify the gases evolved at anode and cathode.
- Why are the amounts of gases collected in the two test tubes are of not the same volume?
- What type of reaction is this?
- Why should we use salt water?
- Write the reaction involved.

Assertions and Reasoning Type Questions

Directions :- Two statements (Assertion-A and Reason- R) are given. Select the correct answer to these questions from codes a,b,c and d as given below.

- Both A and R are true, and R is the correct explanation of assertion.

- (b) Both A and R are true, but R is not the correct explanation of the assertion.
- (c) A is true but R is false.
- (d) A is false but R is true.

Q1. Assertion: Stoichiometric co-efficients are the numbers which are put before compounds or elements to balance the chemical equation.

Reason:- Chemical Equation is balanced to justify the law of conservation of mass.

Q2. Assertion: When Zinc rod is dipped into aqueous solution of copper sulphate, the colour of the solution changes.

Reason: Zinc being more reactive displaces less reactive copper from its aqueous solution resulting in the formation of Zinc sulphate which is colourless.

Q3. Assertion: Heat is required for the decomposition of lead nitrate.

Reason: Decomposition reactions are endothermic.

Q4. Assertion: During displacement reactions precipitates are usually formed.

Reason: Precipitation reaction produce insoluble salt.