

CHAPTER-1: CHEMICAL REACTIONS AND EQUATIONS**Additional Questions :**

- Hydrogen being a highly inflammable gas and oxygen being a supporter of combustion, yet water which is a compound made up of hydrogen and oxygen is used to extinguish fire. Why?
- Write two characteristics associated with rancid food.
- 2 g of ferrous sulphate crystals are heated in a dry boiling tube.
 - List any two observations.
 - Name the type of chemical reaction taking place.
 - Write the chemical equation.
- A zinc plate was put in a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After a few days, when zinc plate was taken out of the solution, a number of holes were observed on it.
 - State the reasons for changes observed on the zinc plate.
 - Write the chemical equation for the reaction involved.
- Consider the chemical equation.
$$X + \text{Barium Chloride} \longrightarrow Y (\text{White ppt}) + \text{Sodium Chloride}$$
 - Identify X and Y.
 - Name the type of reaction.
- A reddish brown coloured metal, used in electrical wires, when produced and heated strongly in an open china dish, its colour turns black. When hydrogen gas is passed over this black substance, it regains its original colour. Based on the above information answer the following questions.
 - Name the metal and the black coloured substance formed.
 - Write balanced chemical equations for both the reactions.
- Grapes hanging on the plant do not ferment but after being plucked from the plant can be fermented. Under what conditions do these grapes ferment? Is it a chemical or a physical change?
- A substance 'X', which is an oxide of group 2 element is used extensively in the cement industry'. This element is present in bones also. On treatment with water, it forms a solution which turns red litmus blue. Identify 'X' and also write the chemical reactions involved.
- Why do we store silver chloride in dark coloured bottles?
- A silver article turns black when kept in open for few days. The article when rubbed with tooth paste starts shining again.
 - Why do silver articles turn black when kept in open for a few days? Name the phenomenon involved.
 - Name the black substance formed and give its chemical formula.
- Give the characteristic tests for the following gases.
 - CO₂
 - H₂
 - O₂

Paragraph Based Questions:**I. Read the paragraph and answer the following questions:**

Ranjana while moving through market observed some jars of fruit-cream. She is very fond of fruit cream and bought two jars of it. After reaching home, she opened one jar and tasted the fruit cream. She found it very delicious. She forgot to close the lid of the jar and moved out of the room. Next day she came into room and tasted the fruit-cream but its taste was not good. Moreover it had bad smell. Then, she opened the second jar and tasted the fruit-cream. She found it delicious and tasty. She discussed the incident with her chemistry teacher who told her about rancidity of fatty substances.

- What happened to fruit cream in the opened jar after one day?
- Why did fruit cream remain fresh in closed jar?

3. What do you know about rancidity?

II. Read the paragraph and answer the following questions:

Rohan's chemistry teacher performed an experiment. He taught practically the effect of heat on ferrous sulphate crystals in a boiling tube. The colour of the ferrous sulphate crystals changed. The heating also liberated the gas having the smell of burning Sulphur.

1. What changes occur in the colour of ferrous sulphate?
2. Which gas evolved during heating?
3. What is the colour of the gas evolved?

III. Read the paragraph and answer the following questions:

Rajan was performing an experiment in chemistry lab. He bought copper sulphate, a beaker, water and iron nail. He dissolved copper sulphate in water to make a blue solution. Then he put iron nail in this beaker containing copper sulphate solution. Rajon left this beaker undistributed for few hours. After few hours, he observed that colour of solution has changed. He discussed this matter with his teacher. His teacher told him about displacement reactions. Help Rajan in finding out following questions.

1. What is displacement reaction?
2. What is change in the colour of copper sulphate solution?
3. Write the chemical equation involved in it?

IV. Read the paragraph and answer the following questions:

All chemical changes are accompanied by chemical reactions. These reactions are described in sentence form with the help of chemical equations in terms of symbols and formula of the substances involved. Initially the equation is in skeletal form which is then balanced so that the total number of the reactant species is the same as that of the product species.

1. Why should a chemical equation be balanced?
2. Can a chemical formula be changed during the balancing of the equation?
3. Why are some chemical reactions exothermic while some other are endothermic in nature?
4. Why should chemical equation be made molecular?

V. Read the paragraph and answer the following questions:

All combustion reactions are always exothermic which occur in the presence of excess air or oxygen. Substances acting as fuels undergo combustion when heated. It is not necessary that a particular substance undergoing combustion may burn also. Human body is just like a furnace or machine in which various food stuffs that we eat undergo combustion. They provide the desired energy needed for the body function.

1. What are the main constituents of L.P.G.?
2. Why is L.P.G. preferred to coke as a fuel?
3. Which is the major source of energy to the human body?
4. Is combustion harmful also? Give an example.

VI. Read the paragraph and answer the following questions:

Cooked food and curd etc. start giving foul smell when kept in open for few days. This is known as rancidity. It is more common in summer and rainy season than in winter. It is always suggested that cooked food such as cooked vegetables, dough, milk, curd etc. must be kept in refrigerator to prevent rancidity. Generally, chips manufacturers flush bags of chips with nitrogen to check rancidity.

1. How do potato chips develop foul smell?
2. Why are these bags flushed with nitrogen?
3. How does refrigeration help in checking rancidity?
4. Give full form of BHT which acts as an anti-oxidant.

VII. Read the paragraph and answer the following questions:

Two metals X and Y form the salts XSO_4 and Y_2SO_4 , respectively. The solution of salt XSO_4 is blue in colour whereas that of Y_2SO_4 is colourless. When barium chloride solution is added to XSO_4 solution, a white precipitate Z is formed along with a salt which turns the solution green. When barium chloride solution is added to Y_2SO_4 solution, then the same white precipitate Z is formed along with a colourless common salt solution.

1. What could the metals X and Y be?
2. Write the name and formula of salt XSO_4 .
3. Write the name and formula of salt Y_2SO_4 .
4. What is the name and formula of white precipitate Z? Which colour is acquired by the solution?
- 5.

Assertion and Reason type questions:

For the following questions two statements are given—one labelled as Assertion(A) and the other labelled as Reason(R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- (i) Both A and R are true and R is the correct explanation of the assertion.
 - (ii) Both A and R are true but R is not the correct explanation of the assertion.
 - (iii) A is true but R is false
 - (iv) A is false but R is true.
1. **Assertion:** Combination reaction is formation of single product from two or more reactants.
Reason: Combustion of hydrogen in the presence of O_2 to form water is a combination reaction.
 2. **Assertion:** Decomposition involves breakdown of single reactant to produce two or more products.
Reason: Both decomposition and combination reactions are opposite to one another.
 3. **Assertion:** More active element can displace the less reactive element from its compound.
Reason: Double displacement involves displacement of two elements by a single element.
 4. **Assertion:** Formation of soluble products from insoluble ones is called precipitation.
Reason: Precipitation involves formation of insoluble products from soluble ones.
 5. **Assertion:** Oxidation is gain of oxygen.
Reason: Reduction involves loss of oxygen.
 6. **Assertion:** A reddish brown layer is formed over iron when exposed to air and moisture.
Reason: This deterioration of iron surface is also called rusting.
 7. **Assertion:** Fats and oil containing food items generally undergo oxidation after some time.
Reason: Oxidation of oils and fat containing food is called rancidity.
 8. **Assertion:** Burning of magnesium ribbon produce whitish powder called magnesium oxide.
Reason: Magnesium is generally cleaned by rubbing it on sand paper.
 9. **Assertion:** A balanced chemical equation has equal number of atoms on both right and left sides of equation.
Reason: An unbalanced chemical equation may contain equal number of atoms on both right and left side of equation.
 10. **Assertion:** Corrosion is a beneficial process for metals.
Reason: Galvanising and electroplating of metals prevent corrosion.
 11. **Assertion:** Stoichiometric coefficient 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.

12. **Assertion:** When zinc rod is dipped into aqueous solution of copper sulphate, the colour of the solution changes.
Reason: Zinc being more reactive displace less reactive. Copper from its aqueous solution resulting in the formation of zinc sulphate which is colourless.
13. **Assertion:** Heat is required for the decomposition of lead nitrate.
Reason: Decomposition reactions are endothermic.
14. **Assertion:** During double displacement reactions, precipitates are usually formed.
Reason: Precipitation reactions produce insoluble salt.
15. **Assertion:** Reactions also involve the gain or loss of oxygen or hydrogen by substances.
Reason: Oxidation is the gain of oxygen or loss of hydrogen while reduction is the loss of oxygen or gain of hydrogen.
16. **Assertion:** In a chemical reaction, the total mass of the products remains as the total mass of the reactants.
Reason: A chemical reaction involves simply exchange of partners and no new species are formed.
17. **Assertion:** Copper can displace silver from aqueous silver nitrate solution.
Reason: Silver is placed above copper in the reactivity series.
18. **Assertion:** A piece of sodium metal catches fire when thrown in water.
Reason: Sodium is a very reactive metal.
19. **Assertion:** Chemical combination always takes place between two elements.
Reason: A single substance is formed in a combination reaction.
20. **Assertion:** Quick lime reacts with water to form slaked lime.
Reason: It is a slow chemical reaction.
21. **Assertion:** A chemical equation is made molecular.
Reason: It is necessary requirement for the law of mass action.
22. **Assertion:** In a neutralisation reaction an acid combines with a base to form salt and water.
Reason: In all neutralisation reactions H^+ ions of the acid combine with OH^- ions of the base to form H_2O .
23. **Assertion:** Chlorine can displace iodide ions from KI solution.
Reason: It is an example of displacement reaction.
24. **Assertion:** In a redox reaction, electron releasing species acts as an oxidising agent.
Reason: In a redox reaction, oxidation and reduction reactions proceed side by side.
25. **Assertion:** Decoration pieces made of silver lose their shine after some time.
Reason: This is due to the presence of traces of SO_2 present in air.