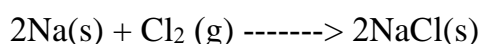




10th Chemical reaction and equation questions with solution 01

Q.1. Give reasons for the following:

- (i) Keeping food in air tight containers help in preventing rancidity.
- (ii) Moist air and acidic gases are not good for some metals.
- (iii) Manufactured chips usually flush bags of chips with nitrogen gas.
- (iv) Sodium acts as an oxidizing agent while chlorine acts as a reducing agent in the following reaction:



- (v) White colored silver chloride turns gray when kept in sunlight.

Answer: (i) It does not allow air (oxygen) to come in contact with the food and this prevents oxidation of food. Thus the food never become rancid and its smell and taste remains the same.

(ii) Moist air causes corrosion of iron while acidic gases causes corrosion of copper and silver.

(iii) Nitrogen being inert prevents oxidation of food.

(iv) Sodium loses electrons and gets oxidized while chlorine gains electrons and gets reduced. In this way sodium oxidizes itself and reduces chlorine and thus acts as oxidizing agent while chlorine acts as an reducing agent.

(v) This is due to the decomposition of silver chloride into silver and chlorine by light.

Q.2 When a green iron salt is heated strongly its colour finally changes to black and odour of burning sulphur is given out.

- (i) Name the iron salt.
- (ii) Name the type of reaction that take place.
- (iii) Name the compound which changes into Brownish black colour.
- (iv) Name the compound which is responsible for its odour.
- (v) Write the chemical equation of the above statement.

Ans: (i) Ferrous sulphate (FeSO_4)

(ii) Decompositon reaction.

(iii) Ferric oxide (Fe_2O_3)

(iv) Sulphur dioxide (SO_2)

(v) $2\text{FeSO}_4(\text{s}) \xrightarrow{\text{heat}} \text{Fe}_2\text{O}_3(\text{s}) + \text{SO}_2(\text{g}) + \text{SO}_2(\text{g})$





3. A chemical is heated in a test tube brown fumes come out and a black residue is left behind.

- (a) Name the chemical which gives brown fumes.
(b) Write the equation.
(c) Name the compound which gives black residue.

Ans:

- (a) Nitrogen dioxide (NO₂).
(b) $2\text{Pb}(\text{NO}_3)_2(\text{s}) \xrightarrow{\text{heat}} 2\text{PbO}(\text{s}) + 4\text{NO}_2(\text{g}) + \text{O}_2(\text{g})$
(c) Lead monoxide (PbO).

Q4. Give one example of decomposition reaction which is carried in the presence of

- (i) Electrical energy (ii) Sun light (iii) Heat energy

Answer:

- (i) $2\text{Al}_2\text{O}_3 \xrightarrow{\text{electricity}} 4\text{Al} + 3\text{O}_2$
(ii) $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{sunlight}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
(iii) $2\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{heat}} 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$



Q5. Give two examples of everyday life situations where redox reactions are taking place.

Ans.

- (i) Rusting of Iron $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$ is a redox reaction.

Fe is getting oxidized to Fe³⁺ ions whereas O₂ is getting reduced to O²⁻ ions.

- (ii) Combustion reaction: Burning of coal is a redox reaction. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

C is oxidized to C⁺⁴ ions in CO₂ whereas O₂ is getting reduced to O²⁻ ion in CO₂

Q6. Why does the blue colour of copper sulphate solution change when a piece of iron is dropped into it?

Ans: Copper sulphate solution is blue. When a piece of iron is dropped into it copper from copper sulphate solution gets deposited on the piece of iron and ferrous sulphate which is formed remains in solution.

Q7. State any two ways to prevent the rancidity of food containing fats and oil?

Ans: The two ways are:

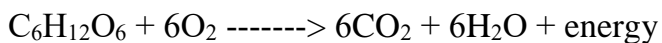
- (i) By keeping food materials in refrigerator. The food does not oxidize easily at low temperatures maintained inside refrigerator.



(ii) By packing food materials in an atmosphere of unreactive nitrogen gas. Nitrogen keeps food out of contact with oxygen.

Q.8 Why respiration is exothermic reaction?

Ans: Respiration is oxidation of food, during this process, energy is released as given in the following equation.



Thus, it is an exothermic reaction.



Q 9. Very short answers (1 mark)

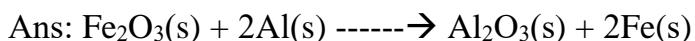
1. What type of reaction is represented by the digestion of food in our body ?

Ans: Decomposition reaction.

2. When ammonium hydroxide solution is added to aluminium chloride, a white ppt. of aluminium hydroxide is formed along with ammonium chloride solution what type of chemical reaction is stated in the above chemical change.

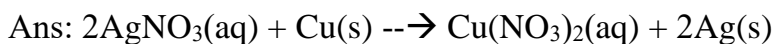
Ans: Double displacement reaction.

3. What is thermite reaction ? Mention its use



Use - To weld/join railway tracks.

4. In the refining of silver, the recovery of silver from silver nitrate solution involves displacement reaction with copper metal. Write down the chemical equation for the reaction.



5. What do you observe when a solution of lead nitrate and potassium iodide in water are mixed together.

Ans: A yellow precipitate of lead iodide is formed.

6. A white substance 'X' on exposure to sunlight turns grey. Name the substance 'X' and the grey product.

Ans: Substance 'X' is silver chloride. It decomposes in light to give grey coloured silver.



7. What would you observe when lead nitrate is heated?

Ans: Brown fumes of NO_2 are evolved.

8. When hydrogen gas is passed over a black substance 'X', the black coating turns brown due to (i) oxidation (ii) reduction.

Ans: Reduction of 'X' due to addition of hydrogen.

9. Define Rancidity.

Ans: The deterioration of oily foods due to oxidation producing unpleasant smell and taste.

10_ What are oxidising agents ?

Ans. The substance which oxidises the other substance.

Q 10. Write balanced equations with state of reactants and products

Ans:

I. Molten sodium chloride on passing current decomposes into sodium metal and chlorine gas

II. Magnesium metal and hydrochloric acid react to produce magnesium chloride and hydrogen.

III. Potassium chlorate on heating produces potassium chloride and oxygen gas.

IV. Solutions of barium chloride and sodium sulphate react to produce ppt of barium sulphate and sodium chloride.

V. Iron metal dissolves in copper sulphate solution forming iron sulphate and copper.

Ans: (i) $2\text{NaCl}(l) \xrightarrow{\text{Current}} 2\text{Na}(s) + \text{Cl}_2(g)$

(ii) $\text{Mg}(s) + 2\text{HCl}(aq) \longrightarrow \text{MgCl}_2(s) + \text{H}_2(g)$

(iii) $\text{KClO}_3(s) \xrightarrow{\text{heat}} \text{KCl}(s) + \text{O}_2(g)$

(IV) $\text{BaCl}_2(aq) + \text{Na}_2\text{SO}_4(aq) \longrightarrow \text{BaSO}_4(s) + 2\text{NaCl}(aq)$

(V) $\text{Fe}(s) + \text{CuSO}_4(aq) \longrightarrow \text{FeSO}_4(aq) + \text{Cu}(s)$

