



## Octahedral classes, kharadi

2nd floor, yashwant plaza, near bank of India,

### Class 10 - Science chemical equation

Maximum Marks: 105

Time Allowed: 2 hours

#### Section A

1. Predict whether gold can displace copper from copper sulphate solution. 3
2. Can a displacement reaction can be a redox reaction. Explain with the help of an example. 3
3. What is the relations between oxidation and oxidizing agent in a redox reaction? Give an example of a redox reaction showing the relationship between oxidation and oxidizing agent. 3
4. Balance the following equation. 3  
$$\text{Ba(OH)}_2 (\text{aq}) + \text{HBr}(\text{aq}) \rightarrow \text{BaBr}_2(\text{aq}) + \text{H}_2\text{O} (\text{l})$$
5. Balance the following chemical equations. Write the symbols of physical states of all the reactants and the products. 3
  - i.  $\text{Pb}_3\text{O}_4 + \text{HNO}_3 \rightarrow \text{Pb}(\text{NO}_3)_2 + \text{PbO}_2 + \text{H}_2\text{O}$
  - ii.  $\text{C}_2\text{H}_5\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Heat}$
  - iii.  $\text{Pb}_3\text{O}_4 + \text{HCl} \rightarrow \text{PbCl}_2 + \text{Cl}_2 + \text{H}_2\text{O}$
6. Why do we keep food in refrigerator ? 3
7. Aluminium is a reactive metal but is still used for packing food articles. Why? 3
8. During the reaction of some metals with dilute hydrochloric acid, following observations were made. 3
  - (i) The temperature of the reaction mixture rises when aluminium (Al) is added.
  - (ii) The reaction of sodium metal is found to be highly explosive.
  - (iii) Some bubbles of a gas are seen when lead (Pb) is reacted with the acid.Explain these observations giving suitable reasons.
9. i. Why iron corrodes but aluminium does not? 3
  - ii. Write the chemical name and the formula of the brown gas produced during thermal decomposition of lead nitrate.

- iii. What is the general name of the chemicals which are added to fat and oil-containing foods to prevent the development of rancidity?
10. Translate the following statement into chemical equation and then balance it. 3  
Aluminium metal replaces iron from ferric oxide giving aluminium oxide and iron.
11. Can a displacement reaction be a redox reaction. Explain with the help of an example. 3
12. What are the methods to prevent rusting. 3
13. In the reaction  $\text{PbS}(s) + 4\text{H}_2\text{O}_2(aq) \rightarrow \text{PbSO}_4(s) + 4\text{H}_2\text{O}(l)$ , which is oxidizing agent and which is reducing agent? 3
14. Identify the type of reaction in the following 3  
(a)  $\text{ZnCO}_3 + 2\text{HCl}(aq) \rightarrow \text{ZnCl}_2(aq) + \text{H}_2\text{CO}_3(aq)$   
(b)  $2\text{NaBr}(aq) + \text{Cl}_2(g) \rightarrow 2\text{NaCl}(aq) + \text{Br}_2(l)$   
(c)  $2\text{CuO}(s) \xrightarrow{\text{heat}} 2\text{Cu}(s) + \text{O}_2(g)$
15.  $4\text{HCl} + \text{O}_2 \rightarrow 2\text{H}_2\text{O} + 2\text{Cl}_2$ . How many moles of HCl are needed to form 0.35 mole of  $\text{Cl}_2$ ? 3
16. Why does the colour of copper sulphate solution changes, when an iron nail is dipped in it? 3
17. A metal 'X' acquires a green colour coating on its surface on exposure to air. 3  
i. Identify the metal 'X' and name the process involved in it.  
ii. Name and write chemical formula of the green coating formed.  
iii. List two important methods to prevent the process.
18. Write the balanced chemical equation for the following reaction and identify the type of reaction. 3  
Hydrogen (g) + Chlorine (g) → Hydrogen chloride (g)
19. Explain the process of getting energy from carbohydrates. 3
20. Explain why sodium acts as an oxidizing agent while chlorine acts as a reducing agent in the reaction, 3  
 $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$ .
21. Identify the substances that are oxidized and the substances that are reduced in the following reactions: 3  
(i)  $4\text{Na}(s) + \text{O}_2(g) \rightarrow 2\text{Na}_2\text{O}(s)$   
(ii)  $\text{CuO}(s) + \text{H}_2(g) \rightarrow \text{Cu}(s) + \text{H}_2\text{O}(l)$
22. Explain the following term with one example: Corrosion 3

23. Indicate the oxidizing and reducing agent in the reaction. 3  

$$\text{H}_2\text{S} + \text{Cl}_2 \rightarrow 2\text{HCl} + \text{S}$$
24. When solutions of silver nitrate and sodium chloride are mixed, white precipitate forms. The ionic equation for the reaction is 3  

$$\text{Ag}^+(\text{aq}) + \text{Cl}^- \rightarrow \text{AgCl}(\text{s})$$
  - i. a. What is the name of the white precipitate?
  - b. Is it a soluble or insoluble compound?
  - ii. Is the precipitation of silver chloride a redox reaction?
25. Explain the chemical reaction when a wall is white washed. 3
26. a. Define Rusting 3  
 b. Why do you apply paint on iron articles?
27. What are double displacement reaction? 3
28. Study the reactions given below: 3  
 Which of the following chemical reactions will occur. Give suitable reason for each.
- i.  $\text{Zn}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$
  - ii.  $\text{Fe}(\text{s}) + \text{ZnSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Zn}(\text{s})$
  - iii.  $\text{Zn}(\text{s}) + \text{FeSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe}(\text{s})$
29. Identify the substance oxidized and substance reduced in the following reaction. 3  
 reaction.  
 Write the ionic equation for the substance oxidized and reduced.  

$$\text{H}_2(\text{g}) + \text{CuO}(\text{s}) \rightarrow \text{Cu}(\text{s}) + \text{H}_2\text{O}(\text{l})$$
30. Using a suitable chemical equation, justify that some chemical reactions are determined by 3  
  - i. change in colour.
  - ii. change in temperature.
31. Which of the following statement is correct and why? 3  
  - i. Copper can displace silver from the solution of silver nitrate.
  - ii. Silver can displace copper from the solution of copper sulphate.
32. Indicate the oxidizing and reducing agent in the reaction. 3  

$$\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$$
33. Oil and fat containing food items are flushed with nitrogen ? Why ? 3
34. Write chemical equations for the reactions taking place when 3

i. Magnesium reacts with dilute  $\text{HNO}_3$

ii. Sodium reacts with Water.

iii. Zinc reacts with dilute hydrochloric acid.

35. Discuss oxidation and reduction according to electronic concept.

**3**