



Chemical Reactions and Equations

Grade 10

Worksheet

Multiple Choice Questions

- Identify x and y in the following reaction:
$$\text{Cu} + x\text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + y\text{NO}_2 + 2\text{H}_2\text{O}$$

(a) 4 and 2 (b) 3 and 5
(c) 2 and 3 (d) 4 and 4
- Which of the following can be decomposed by the action of sunlight?
(a) Potassium bromide (b) Silver bromide
(c) Magnesium oxide (d) Sodium chloride
- The carbonate of lead is a white solid. It decomposes when heated to form carbon dioxide and a yellow solid oxide 'X'. What is X?
(a) Zinc oxide (b) Lead oxide
(c) Silver oxide (d) Magnesium oxide
- Identify the endothermic process from the following?
(a) $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{g})$
(b) $\text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Ca}(\text{OH})_2(\text{aq})$
(c) Combustion of methane
(d) Addition of conc. HCl to water
- Which of the following statements about the given reaction are correct?
$$2\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{l}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$$
 - Iron metal is getting oxidized.
 - Water is getting reduced.
 - Water is acting as a reducing agent.
 - Water acts as an oxidizing agent.

(a) 1, 2, and 3 (b) 3 and 4
(c) 1, 2 and 4 (d) 2 and 4
- When Ag is exposed to air it gets a black coating of
(a) AgNO_3 (b) Ag_2S
(c) Ag_2O (d) Ag_2CO_3
- $$\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$$

Identify the substance reduced in the above equation.
(a) MnCl_2

- (b) HCl
(c) H₂O
(d) MnO₂
8. Zinc reacts with silver nitrate to form which compounds?
(a) Zn (NO₃)₂ + Ag
(b) ZnNO₃ + Ag
(c) AgNO₃ + Zn (NO₃)₂
(d) Ag + Zn (NO₃)₃
9. In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate?
(a) Lead sulphate (insoluble) (b) Lead acetate
(c) Ammonium nitrate (d) Potassium sulphate
10. The brown gas evolved on heating of copper nitrate is
(a) O₂
(b) NO₂
(c) N₂
(d) NO
11. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is:
(a) 1: 1 (b) 2:1
(c) 4:1 (d) 1:2
12. A substance 'X' is used in whitewashing and is obtained by heating limestone in the absence of air. Identify 'X'.
(a) CaOCl₂ (b) Ca (OH)₂
(c) CaO (d) CaCO₃
13. $2\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + 2\text{H}_2\text{O}$; is an example of displacement reaction
(ii) double displacement reaction
(iii) neutralisation reaction
(iv) combination reaction.
- (a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)

14. A substance X which is a group 2 element is used intensively in the cement industry. This element is present in bones also. On treatment with water, it forms a solution that turns red litmus blue. Element X is

- (a) Cu (b) Ca (c) Na (d) Al

15. You are given the following chemical reaction:



This reaction represents:

- (a) Combination reaction as well as double displacement reaction
(b) Redox reaction as well as displacement reaction
(c) Double displacement reaction as well as redox reaction
(d) Decomposition reaction as well as displacement reaction

Answer the following questions:

16. What happens chemically when quicklime is added to water filled in a bucket?

17. On what basis is a chemical equation balanced?

18. What change in colour is observed when white silver chloride is left exposed to sunlight? State the type of chemical reaction in this change.

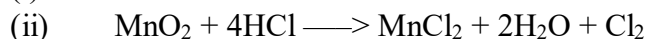
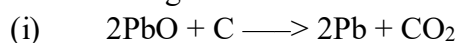
19. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction.

20. Translate the following statement into a chemical equation and then balance it.

Barium Chloride reacts with Aluminium sulphate to give Aluminium Chloride and a precipitate of Barium Sulphate. State the two types in which this reaction can be classified.

21. Why decomposition reactions are called the opposite of combination reactions? Write equations for these reactions.

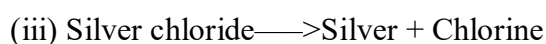
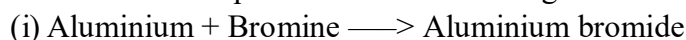
22. What is redox reaction? Identify the substance oxidized and the substance reduced in the following reactions.



23. Using a suitable chemical equation, justify that some chemical reactions are determined by:

- (i) change in colour,
(ii) change in temperature.

24. Write balanced equations for the following mentioning the type of reaction involved.



25. (a) Why is respiration considered as an exothermic reaction? (b) Define the terms oxidation and reduction. (c) Identify the substance that is oxidized and reduced in the following reaction. $\text{CuO (s)} + \text{Zn (s)} \rightarrow \text{Cu (s)} + \text{ZnO (s)}$
26. The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is
- Blue
 - Colourless
 - Dirty green
 - Reddish Brown
27. Mild non-corrosive basic salt is
- Ca (OH)_2
 - NaCl
 - NaOH
 - NaHCO_3