

GRADE 10TH SCIENCE
CHAPTER 1

Chemical Reactions and Equations

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Question 1. Which of the following is a displacement reaction?

- (a) $\text{MgCO}_3 \longrightarrow \text{MgO} + \text{CO}_2$
- (b) $2\text{Na} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{H}_2$
- (c) $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$
- (d) $2\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{Heat}} 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$

Question 2. Magnesium ribbon is rubbed before burning because it has a coating of

- (a) basic magnesium carbonate
- (b) basic magnesium oxide
- (c) basic magnesium sulphide
- (d) basic magnesium chloride

Question 3. Which of the following statements about the given reaction are correct?



- (i) Iron metal is getting oxidised
- (ii) Water is getting reduced
- (iii) Water is acting as reducing agent
- (iv) Water is acting as oxidising agent

- (a) (i), (ii) and (iii)
- (b) (ii) and (iv)
- (c) (i), (ii) and (iv)
- (d) (ii) and (iv)

Question 4. Which of the following are exothermic processes?

- (i) Reaction of water with quick lime

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- (ii) Dilution of an acid
- (iii) Evaporation of water
- (iv) Sublimation of camphor (crystals)

- (a) (i) and (ii)
- (b) (ii) and (iii)
- (c) (i) and (iv)
- (d) (ii) and (iv)

Question 5. Oxidation is a process which involves

- (a) addition of oxygen
- (b) addition of hydrogen
- (c) removal of oxygen
- (d) removal of hydrogen

Question 6. The process of reduction involves

- (a) addition of oxygen
- (b) addition of hydrogen
- (c) removal of oxygen
- (d) removal of hydrogen

Question 7. Three beakers labelled as A, B and C each containing 25 ml of water were taken. A small amount of NaOH, anhydrous CuSO_4 and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in the temperature of the solution contained in beakers A and B, whereas in case of beaker C, the temperature of the solution falls. Which one of the following statement(s) is (are) correct?

- (i) In beakers A and B, exothermic process has occurred.
- (ii) In beakers A and B, endothermic process has occurred.
- (iii) In beaker C exothermic process has occurred.
- (iv) In beaker C endothermic process has occurred.

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- (a) (i) only
- (b) (ii) only
- (c) (i) and (iv)
- (d) (iv), (ii) and (iii)

Question 8. Give the ratio in which hydrogen and oxygen are present in water by volume.

- (a) 1:2
- (b) 1:1
- (c) 2:1
- (d) 1:8

Question 9. Which among the following statement(s) is (are) true? Exposure of silver chloride to sunlight for a long duration turns grey due to

- (i) the formation of silver by decomposition of silver chloride
- (ii) sublimation of silver chloride
- (iii) decomposition of chlorine gas from silver chloride
- (iv) oxidation of silver chloride

- (a) (i) only
- (b) (i) and (iii)
- (c) (ii) and (iii)
- (d) (iv) only

Question 10. $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$
Identify the substance oxidized in the above . equation.

- (a) MnCl_2
- (b) HCl

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- (c) H_2O
- (d) MnO_2

Question 11. A substance 'X' is used in white-washing and is obtained by heating limestone in the absence of air. Identify 'X'.

- (a) $CaOCl_2$
- (b) $Ca(OH)_2$
- (c) CaO
- (d) $CaCO_3$

Question 12. 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

Question 13. Which of the following is an endothermic process?

- (a) Dilution of sulphuric acid
- (b) Sublimation of dry ice
- (c) Condensation of water vapours
- (d) Respiration in human beings

Question 14. 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

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Question 15. What type of chemical reactions take place when electricity is passed through water?

- (a) Displacement
- (b) Combination
- (c) Decomposition
- (d) Double displacement

Question 16. Select the oxidising agent for the following reaction:



- (a) I_2
- (b) H_2S
- (c) HI
- (d) S

Question 17. A substance added to food containing fats and oils is called:

- (a) Oxidant
- (b) Rancid
- (c) Coolant
- (d) Antioxidant

Question 18. The condition produced by aerial oxidation of fats and oils in foods marked by unpleasant smell and taste is called:

- (a) antioxidation
- (b) reduction
- (c) rancidity
- (d) corrosion

Question 19. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is:

- (a) 1 : 1

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- (b) 2:1
- (c) 4:1
- (d) 1:2

Question 20. When SO_2 gas is passed through saturated solution of H_2S , which of the following reaction occurs?

- (a) $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
- (b) $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + 3\text{S}$
- (c) $\text{SO}_2 + \text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + \text{S}$
- (d) $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{SO}_3 + \text{H}_2$

Question 21. Name the products formed when iron filings are heated with dilute hydrochloric acid

- (a) Fe (III) chloride and water
- (b) Fe (II) chloride and water
- (c) Fe (II) chloride and hydrogen gas
- (d) Fe (III) chloride and hydrogen gas

Question 22. $\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$

The above reaction is an example of:

- (a) combination
- (b) double displacement
- (c) decomposition
- (d) displacement

Question 23. Which of the following gases can be used for storage (a)

- Carbon dioxide or Oxygen
- (b) Nitrogen or Oxygen
- (c) Carbon dioxide or Helium
- (d) Helium or Nitrogen

Question 24. A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light

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purple colour of the solution fades and finally disappears. Which of the following is the correct explanation for the observation?

- (a) KMnO_4 is an oxidising agent, it oxidises FeSO_4 .
- (b) FeSO_4 acts as an oxidising agent and oxidises KMnO_4 .
- (c) The colour disappears due to dilution; no reaction is involved.
- (d) KMnO_4 is an unstable compound and de-composes in presence of FeSO_4 to a colourless compound.

Question 25. In which of the following chemical equations, the abbreviations represent the correct states of the reactants and products involved at reaction temperature?

- (a) $2\text{H}_2 (\text{l}) + \text{O}_2 (\text{l}) > 2\text{H}_2\text{O}(\text{g})$
- (b) $2\text{H}_2 (\text{g}) + \text{O}_2 (\text{l}) > 2\text{H}_2\text{O} (\text{l})$
- (c) $2\text{H}_2 (\text{g}) + \text{O}_2 (\text{g}) > 2\text{H}_2\text{O} (\text{l})$
- (d) $2\text{H}_2 (\text{g}) + \text{O}_2 (\text{g}) > 2\text{H}_2\text{O} (\text{g})$

Question 26. When green coloured ferrous sulphate crystals are heated, the colour of the crystal changes because

- (a) it is decomposed to ferric oxide
- (b) it loses water of crystallisation
- (c) it forms SO_2
- (d) it forms SO_3

Fill in the Blanks

1. The addition of oxygen to a substance is called
whereas removal of oxygen is called
2. The addition of hydrogen to a substance is called
whereas removal of hydrogen is called
3. Precipitation reactions produce insoluble
4. Reactions in which energy is given out are known as
5. Reaction in which an element displaces another element from its compound is called

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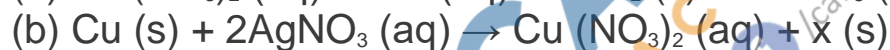
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6. Two antioxidants which are usually added to fat and oil containing foods to prevent rancidity, are,

7 is the process in which metals are eaten up gradually by the action of air, moisture or a chemical on their surface.



10. Complete the missing components/variables given as x and y in the following reactions:



Answers

1. oxidation, reduction
2. reduction, oxidation
3. salts
4. exothermic reactions
5. displacement reaction
6. BHA and BHT
7. Corrosion
8. SO_3
9. BaSO_4
10. (a) $\text{x} \rightarrow (\text{s}); \text{y} \rightarrow (\text{aq});$
(b) $\text{x} \rightarrow 2\text{Ag}$