

MCQ Questions for Class 10 Science Chemical Reactions and Equations with Answers

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Class 10 Science MCQs Chapter 1 Chemical Reactions and Equations

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) $2\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{Heat}} 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$

Answer/ Explanation

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

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)

Answer

Answer: c

4. Which of the following are exothermic processes?

- (i) Reaction of water with quick lime
- (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)

Answer/ Explanation

Answer: a

Explanation: Reason: In both the cases, heat energy is evolved.

5. Oxidation is a process which involves

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

Answer

6. The process of reduction involves

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

Answer

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

Answer

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

Answer

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

Answer



Identify the substance oxidized in the above equation.

- (a) MnCl_2
- (b) HCl
- (c) H_2O
- (d) MnO_2

Answer/ Explanation

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) $\text{Ca}(\text{OH})_2$
- (c) CaO
- (d) CaCO_3

Answer/ Explanation

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

Answer

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

Answer

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

Answer

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

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

Answer/ Explanation

16. Select the oxidising agent for the following reaction:



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

Answer

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

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

Answer

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

Answer

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

Answer

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) $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{SO}_3 + \text{H}_2$

Answer

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

Answer/ Explanation

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

Answer

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

Answer

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

Answer

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) $2\text{H}_2 (\text{g}) + \text{O}_2 (\text{g}) > 2\text{H}_2\text{O} (\text{g})$

Answer

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
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.
8. $2 \text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \dots\dots\dots$
9. $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \dots\dots\dots + 2\text{NaCl}$
10. Complete the missing components/variables given as x and y in the following reactions:
(a) $\text{Pb}(\text{NO}_3)_2(\text{aq}) + 2\text{KI}(\text{aq}) \rightarrow \text{PbI}_2(\text{x}) + 2\text{KNO}_3(\text{y})$
(b) $\text{Cu}(\text{s}) + 2\text{AgNO}_3(\text{aq}) \rightarrow \text{Cu}(\text{NO}_3)_2(\text{aq}) + \text{x}(\text{s})$

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) $\text{x} \rightarrow 2\text{Ag}$

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

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

Q.1. Assertion (A) : Decomposition of vegetable matter into compost is an example of exothermic reactions.

Reason (R) : Exothermic reaction are those reactions in which heat is evolved.

Answer

Q.2. Assertion (A) : When HCl is added to zinc granules, a chemical reaction occurs.

Reason (R) : Evolution of a gas and change in colour indicate that the chemical reaction is taking place.

Answer

Q.3. Assertion (A) : Calcium carbonate when heated gives calcium oxide and water.

Reason (R) : On heating calcium carbonate, decomposition reaction takes place.

Answer

Q.4. Assertion (A) : Brown fumes are produced when lead nitrate is heated.

Reason (R) : Nitrogen dioxide gas is produced as a by product due to the decomposition of lead nitrate.

Answer

Q.5. Assertion (A) : White silver chloride turns grey in sunlight.

Reason (R) : Decomposition of silver chloride in presence of sunlight takes place to form silver metal and chlorine gas.

Answer

Q.6. Assertion (A): Pungent smelling gas is produced when sulphur burns in air.

Reason (R) : Sulphur trioxide is formed on reaction of sulphur with oxygen.

Answer

Q.7. Assertion (A) : In a reaction of copper with oxygen, copper serves as a reducing agent.

Reason (R) : The substance which gains oxygen in a chemical reaction acts as a reducing agent.

Answer

Q.8. Assertion (A) : In electrolysis of water, the volume of hydrogen liberated is twice the volume of oxygen formed.

Reason (R) : Water (H₂O) has hydrogen and oxygen in the ratio of 1:2 by volume.

Answer

Q.9. Assertion (A): Corrosion of iron is commonly known as rusting.

Reason (R) : Corrosion of iron occurs in presence of water and air.

Answer

Q.10. Assertion (A) : The balancing of chemical equations is based on law of conservation of mass.

Reason (R) : Total mass of reactants is equal to total mass of products.

Answer

Q.11. Assertion (A): In a balanced chemical equation, total mass of the reactants is equal to the total mass of the products.

Reason (R): Mass can neither be created nor destroyed during a chemical change.

Answer

Q.12. Assertion (A): Iron articles are painted so as to prevent them from rusting.

Reason (R): When the surface of iron is coated with paint, its surface does not come in contact with oxygen and moisture therefore rusting does not take place.

Answer

Q.13. Assertion (A) : Chemical reaction changes the physical and chemical state of a substance.

Reason (R) : When electric current is passed through water (liquid), it decomposes to produce hydrogen and oxygen gases.

Answer

Q.14. Assertion (A): When calcium carbonate is heated, it decomposes to give calcium oxide and carbon dioxide.

Reason (R): The decomposition reaction takes place on application of heat, therefore, it is an endothermic reaction.

Answer

Q.15. Assertion (A): Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas and it is a displacement reaction.

Reason (R): Zinc reacts with oxygen to form zinc oxide

Answer

Q.16. Assertion (A): Chips manufacturers usually flush bags of chips with gas such as nitrogen to prevent the chips from getting oxidised.

Reason (R): This increase the taste of the chips and helps in their digestion.

Answer

Q.17. Assertion (A): Exposure of silver chloride to sunlight for a long duration turns grey due to the formation of silver by decomposition of silver chloride.

Reason (R): In this process, sublimation of silver chloride takes place.

Answer

Q.18. Assertion (A): Rusting of iron metal is the most common form of corrosion.

Reason (R): The effect of rusting of iron can be reversed if they are left open in sunlight.

Answer

Q.19. Assertion (A): AgBr is used on photographic and X-ray film.

Reason (R): AgBr is photosensitive and changes to Ag and bromine in presence of sunlight and undergoes decomposition reaction.

Answer

Q.20. Assertion (A): Magnesium ribbon keeps on burning in atmosphere of nitrogen.

Reason (R) : Magnesium reacts with nitrogen to form magnesium nitride and this reaction is combination reaction.

Answer

Q.21. Assertion (A): A lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas.

Reason (R): Lead nitrate reacts with potassium iodide to form yellow ppt. of lead iodide and the reaction is double displacement as well as precipitation reaction.