

Question Bank for Class 10th (Science)

Chapter 1: Chemical Reactions and Equations

Q.1. 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

Q.2. The chemical formula of lead sulphate is

- (a) Pb_2SO_4
- (b) $\text{Pb}(\text{SO}_4)_2$
- (c) PbSO_4
- (d) $\text{Pb}_2(\text{SO}_4)_3$

Q.3. 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

Q.4. Which information is not conveyed by a balanced chemical equation?

- (a) Physical states of reactants and products
- (b) Symbols and formulae of all the substances involved in a particular reaction
- (c) Number of atoms/molecules of the reactants and products formed
- (d) Whether a particular reaction is actually feasible or not

Q.5. 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) $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) > 2\text{H}_2\text{O}(\text{g})$

Q.6. Chemically rust is

- (a) hydrated ferrous oxide
- (b) only ferric oxide
- (c) hydrated ferric oxide
- (d) none of these

Q.7. 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.

Q.8. Both CO_2 and H_2 gases are

- (a) heavier than air
- (b) colourless
- (c) acidic in nature
- (d) soluble in water

Q.9. $\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$

The above reaction is an example of:

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

Q.10. Which of the following gases can be used for storage of fresh sample of an oil for a long time?

- (a) Carbon dioxide or oxygen
- (b) Nitrogen or helium
- (c) Helium or oxygen
- (d) Nitrogen or oxygen

Q.11. 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

Q.12. The electrolytic decomposition of water gives H_2 and O_2 in the ratio of

- (a) 1 : 2 by volume
- (b) 2 : 1 by volume
- (c) 8 : 1 by mass
- (d) 1 : 2 by mass

Q.13. 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

Q.14. In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Q.15. 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

Q.16. Fatty foods become rancid due to the process of

- (a) oxidation
- (b) corrosion
- (c) reduction
- (d) hydrogenation

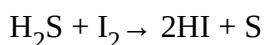
Q.17. A substance added to food containing fats and oils is called:

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

Q.18. We store silver chloride in a dark coloured bottle because it is

- (a) a white solid
- (b) undergoes redox reaction
- (c) to avoid action by sunlight
- (d) none of the above

Q.19. Select the oxidising agent for the following reaction:



- (a) I₂
- (b) H₂S
- (c) HI
- (d) S

Q.20. Silver article turns black when kept in the open for a few days due to formation of

- (a) H₂S
- (b) AgS
- (c) AgSO₄
- (d) Ag₂S

Q.21. What type of chemical reactions take place when electricity is passed through water?

- (a) Displacement
- (b) Combination

- (c) Decomposition
- (d) Double displacement

Q.22. When crystals of lead nitrate are heated strongly in a dry test tube

- (a) crystals immediately melt
- (b) a brown residue is left
- (c) white fumes appear in the tube
- (d) a yellow residue is left

Q.23. 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

Q.24. Dilute hydrochloric acid is added to granulated zinc taken in a test tube. The following observations are recorded. Point out the correct observation.

- (a) The surface of metal becomes shining
- (b) The reaction mixture turns milky
- (c) Odour of a pungent smelling gas is recorded
- (d) A colourless and odourless gas is evolved

Q.25. 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

Q.26. 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

Q.27. When carbon dioxide is passed through lime water,

- (a) calcium hydroxide is formed
- (b) white precipitate of CaO is formed
- (c) lime water turns milky
- (d) colour of lime water disappears.

Q.28. 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)

Q.29. In which of the following, heat energy will be evolved?

- (a) Electrolysis of water
- (b) Dissolution of NH_4Cl in water
- (c) Burning of L.P.G.
- (d) Decomposition of AgBr in the presence of sunlight

Q.30. When a magnesium ribbon is burnt in air, the ash formed is

- (a) black
- (b) white
- (c) yellow
- (d) pink

Q.31. Rancidity can be prevented by

- (a) adding antioxidants
- (b) storing food away from light
- (c) keeping food in refrigerator
- (d) all of these

Q.32. The reaction of H_2 gas with oxygen gas to form water is an example of

- (a) combination reaction
- (b) redox reaction
- (c) exothermic reaction
- (d) all of these reactions

Q.33. The reaction in which two compounds exchange their ions to form two new compounds is called

- (a) displacement reaction
- (b) combination reaction
- (c) double displacement reaction
- (d) redox reaction

Q.34. On immersing an iron nail in CuSO_4 solution for few minutes, you will observe

- (a) no reaction takes place
- (b) the colour of solution fades away
- (c) the surface of iron nails acquire a black coating
- (d) the colour of solution changes to green

Q.35. An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substance X and Y are

- (a) $\text{X} = \text{Fe}$, $\text{Y} = \text{Fe}_2\text{O}_3$
- (b) $\text{X} = \text{Ag}$, $\text{Y} = \text{Ag}_2\text{S}$
- (c) $\text{X} = \text{Cu}$, $\text{Y} = \text{CuO}$
- (d) $\text{X} = \text{Al}$, $\text{Y} = \text{Al}_2\text{O}_3$

Assertion and Reason Type Questions

Directions: In the following questions, a state of assertion(A) is followed by a reason(R). Mark the following as :

- Both assertion(A) and reason(R) are true, and reason is the correct explanation of assertion
- Both assertion(A) and reason(R) are true, but reason is not the correct explanation of assertion.
- Assertion(A) is true but reason(R) is false.
- Reason(R) is true but assertion(A) is false.

Q.36. Assertion (A): Respiration is an exothermic reaction

Reason (R): Respiration results in oxidation of glucose that produces heat energy

Q.37. 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

Q.38. Assertion (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 precipitate of lead iodide and the reaction is double displacement as well as precipitation reaction

Q.39. Assertion (A): Photosynthesis is considered an endothermic reaction

Reason (R): Energy gets released in the process of photosynthesis

Q.40. Assertion (A): Iron particles are painted so as to prevent 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

Q.41. Assertion (A): Chips manufacturers usually flush bags of chips with a gas such as nitrogen to prevent chips from getting oxidised

Reason (R): This increases the taste of chips and help in their digestion

Q.42. Assertion (A): When calcium carbonate is heated it decomposes to give calcium oxide and carbon dioxide

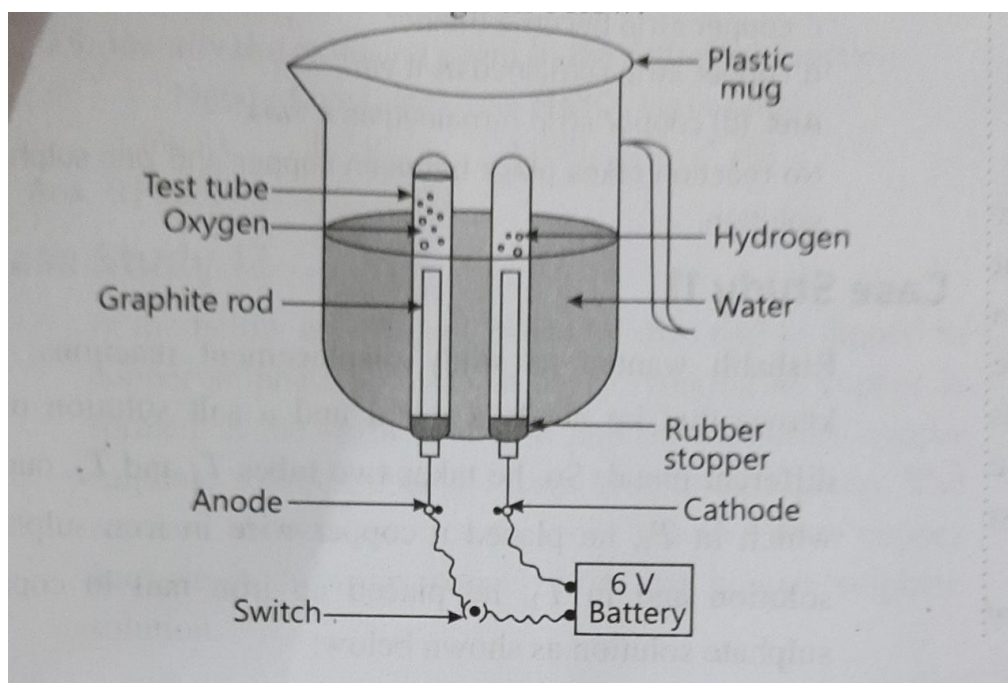
Reason (R): The decomposition reaction takes place on application of heat therefore it is an endothermic reaction

Q.43. Assertion(A): Silver bromide decomposes into silver and bromine by light

Reason(R): Silver bromide is used in black and white photography

Case Study 1: Electrolysis of water is a popular method used for different applications in various industries. The electrolysis of water is mainly carried out to yield pure oxygen and hydrogen gases. It involves passing an electric current through the water which results in the decomposition of water into hydrogen and oxygen.

Pure water is a poor conductor of electricity. Sulphuric acid is added to the water so that conductance of water increases which makes the reaction faster. The setup for electrolysis is given below:



The number of hydrogen molecules produced in electrolysis is twice the number of oxygen molecules, also hydrogen is double in volume than oxygen.

Read the above passage carefully and answer the following questions:

Q.1. Which gas is evolved at anode

- (a) Oxygen
- (b) Ozone
- (c) Hydrogen
- (d) Carbon Monoxide

Q.2. Which gas is evolved at cathode

- (a) Oxygen
- (b) Ozone
- (c) Hydrogen
- (d) Oxygen Peroxide

Q.3. A few drops of sulphuric acid are added to pure water because:

- (a) It does not conduct electricity
- (b) Pure water is a bad conductor of electricity
- (c) It makes the reaction faster
- (d) Both (b) and (c)

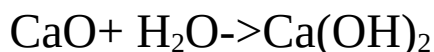
Q.4. The gas evolved at anode is tested by

- (a) Bringing a burning splinter close to the mouth of the anode
- (b) Bringing a glowing splinter close to the mouth of the anode
- (c) Passing the gas through lime water
- (d) None of the above

Q.5. The number of hydrogen molecules is ___ the number of oxygen molecules

- (a) half
- (b) thrice
- (c) same as
- (d) twice

Case Study 2: In a combination reaction, two or more reactants react to produce a single product, for example



In the above reaction, calcium oxide reacts with water and forms calcium hydroxide. This reaction is highly exothermic and produces large amount of heat. Calcium hydroxide produced in the above reaction is used as white wash on the wall. Calcium hydroxide reacts slowly with the air of the atmosphere and gives a shiny appearance to the wall.

Read the above passage carefully and answer the following questions:

Q.1. The reactant in the above reaction is

- (a) quicklime
- (b) slaked lime
- (c) gypsum
- (d) plaster of paris

Q.1. The product in the above reaction is

- (a) quicklime
- (b) slaked lime
- (c) gypsum
- (d) plaster of paris

Q.3. Calcium hydroxide reacts with ___ gas of the atmosphere

- (a) oxygen
- (b) nitrogen
- (c) carbon dioxide
- (d) carbon monoxide

Q.4. The shiny appearance of the wall after the white wash of the calcium hydroxide solution is

- (a) calcium carbonate
- (b) calcium oxide
- (c) calcium chloride
- (d) calcium hydroxide

Q.5. When carbon dioxide is passed through lime water

- (a) calcium hydroxide is formed
- (b) calcium oxide is formed
- (c) lime water turns milky
- (d) lime water turns green in colour