

**ICSE Board**  
**Class X Chemistry**  
**Sample Paper - 8 Solution**

**SECTION I**

**Answer 1**

**a.**

- i. Ammonia
- ii. Alkaline
- iii. Ammonium
- iv. Hydroxyl
- v. Dirty green

**b.**

- i. (b) Iron (III) chloride
- ii. (d) Lead (II) chloride
- iii. (a) Nitroso iron (II) sulphate
- iv. (e) Sodium chloride
- v. (c) Chromium sulphate

**c.**

- i. a (Weak acid)
- ii. d (Lead (II) bromide)
- iii. c (Ethyne)
- iv. a (Acetic acid)
- v. c (Mercury)

**d.**

- i. Sulphur dioxide turns moist blue litmus red and then bleaches it.
- ii. Sulphur dioxide bleaches rose petals only if moisture is present; otherwise, it remains red if dry.
- iii. It forms colourless manganese sulphate.
- iv. It burns with a yellowish flame.
- v. Dense white fumes are seen.

**e.**

Column A	Column B
i. Sodium chloride	Ionic bond
ii. Ammonium ion	Covalent and coordinate bond
iii. Electronegativity across the period	Increases
iv. Non-metallic character down the group	Decreases
v. Carbon tetrachloride	Covalent bond

**f.**

- i.  $2 C_xH_y (g) + y Cl_2 (g) \longrightarrow 2y HCl (g) + 2x C (s)$
- ii.  $N_2 + O_2 \xrightarrow[\text{Lighting}]{300^\circ C} 2NO - \Delta$
- iii.  $CaC_2 + N_2 \xrightarrow{1000^\circ C} CaCN_2 + C$
- iv.  $2NaNO_3 \xrightarrow{\Delta} 2NaNO_2 + O_2$
- v.  $2Al(OH)_3 \xrightarrow{\Delta} Al_2O_3 + 3H_2O$

**g.**

- i. Carbon (graphite and gas carbon)
- ii. Bromine
- iii. Zinc
- iv. Sulphur
- v. Monatomic

**h.**

- i. Hydrogen chloride gas
- ii. Nitric oxide
- iii. Oxygen
- iv. Ammonia
- v. Hydrogen sulphide

## SECTION II

### Answer 2

**a.**

- i. Haber process
- ii. Hydrogen and ammonia in the ratio 3:1
- iii. Finely divided iron
- iv.  $3H_2 + N_2 \rightleftharpoons 2NH_3 + \Delta$
- v.  $3CuO + 2NH_3 \rightarrow 3Cu + N_2 + 3H_2O$

**b.**

- i.  $Zn + 2NaOH \rightarrow Na_2ZnO_2 + H_2$
- ii.  $Zn + \text{dil. } H_2SO_4 \rightarrow ZnSO_4 + H_2$
- iii.  $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

**c.**

- i. Galvanisation
- ii. Iodine

**Answer 3**

**a.**

- i. Nickel sulphate solution ( $\text{NiSO}_4$ )
- ii. Keychain
- iii. Pure nickel block
- iv. At the cathode:  $\text{Ni}^{2+} + 2\text{e}^- \rightarrow \text{Ni}$
- v. At the anode:  $\text{Ni} - 2\text{e}^- \rightarrow \text{Ni}^{2+}$

**b.** Electroplating is a process in which a thin film of a metal such as gold, silver, nickel or chromium is deposited on another metallic article with the help of electricity.

Reasons for electroplating:

- i. To prevent rusting of iron and steel articles
- ii. To improve the appearance of articles

**c.**

- i. Hydrogen chloride
- ii. Sodium

**Answer 4**

**a.**

- i. A is conc.  $\text{H}_2\text{SO}_4$ , B is sodium chloride.
- ii.  $\text{NaCl} + \text{H}_2\text{SO}_4 \xrightarrow{<200^\circ\text{C}} \text{NaHSO}_4 + \text{HCl}$
- iii. In order to know whether the gas jar is full, bring a rod dipped in ammonium hydroxide near its mouth. Dense white fumes of ammonium chloride are produced, proving that the jar is full of hydrogen chloride gas.
- iv. Since it is heavier than air, HCl is collected by the upward displacement of air.

**b.**

- i. Hall's process
- ii. Bauxite
- iii. To lower the melting point of the electrolyte
- iv. Oxygen which is released at the anode reacts with the carbon anode to form carbon dioxide.
- v.  $3\text{Al}^{3+} + 9\text{e}^- \rightarrow 3\text{Al}$

**Answer 5**

**a.**

- i. Concentrated nitric acid
- ii. Steel
- iii. Electromagnetic separation

**b.**

- i.  $\text{C}_2\text{H}_5\text{Cl} + \text{KOH} \rightarrow \text{C}_2\text{H}_5\text{OH} + \text{KCl}$
- ii.  $\text{CH}_3\text{COONa} + \text{NaOH} \xrightarrow[300^\circ\text{C}]{\text{CaO}} \text{CH}_4 + \text{Na}_2\text{CO}_3$
- iii.  $2\text{C}_2\text{H}_5\text{OH} \xrightarrow[\text{[O]}]{\text{K}_2\text{Cr}_2\text{O}_7} 2\text{CH}_3\text{COOH}$
- iv.  $\text{CaC}_2 + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{C}_2\text{H}_2$
- v.  $2\text{C}_2\text{H}_5\text{OH} + 2\text{Na} \rightarrow 2\text{C}_2\text{H}_5\text{ONa}$

**c.** Washing soda  $[\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}]$  when exposed to air will lose its water of crystallisation. The phenomenon is known as efflorescence.

### Answer 6

**a.**

- i. Ethane
- ii. Methane
- iii. Ethene
- iv. Methanol
- v. Ethyne

**b.**

- i. It has a lower melting point.
- ii. It is light and strong.
- iii. It is strong and non-corrosive.
- iv. It is tough and non-corrosive.
- v. It is hard and resists corrosion.

### Answer 7

**a.**

- i. Ammonia ( $\text{NH}_3$ ) and hydrogen chloride ( $\text{HCl}$ )
- ii.  $\text{HCl}$  gas is highly soluble in water and acidic in nature. Ammonia is highly soluble in water and basic in nature.
- iii. Neutralisation reaction
- iv. Salt and water
- v. Double displacement reaction

**b.**

- i. Group IA = alkali metals, Group IIA = alkaline earth metals
- ii. They produce salt. Halogen means 'salt former', and the compounds containing halogens are called salts.
- iii. Zero
- iv. Helium (does not have an octet) and Radon (radioactive)
- v. Diagonal relationship (similar atomic size)