

Board – ICSE

Class – 10th

Topic – Full Portion Test

Max. Marks – 80

Time – 2.00 Hrs.

Section – I

[40 marks]

Question 1

1. Choose the correct answer from the options given below: [5]
- (i) The salt solution which does not react with ammonium hydroxide is:
- (a) Calcium nitrate (b) Zinc nitrate
(c) Lead nitrate (d) Copper nitrate
- (ii) The organic compound which undergoes substitution reaction is:
- (a) C₂H₂ (b) C₂H₄
(c) C₁₀H₁₈ (d) C₂H₆
- (iii) The electrolysis of acidified water is an example of:
- (a) Reduction (b) Oxidation
(c) Redox reaction (d) Synthesis
- (iv) The IUPAC name of dimethyl ether is:
- (a) Ethoxy methane (b) Methoxy methane
(c) Methoxy ethane (d) Ethoxy ethane
- (v) The catalyst used in the Contact Process is:
- (a) Copper (b) Iron
(c) Vanadium pentoxide (d) Manganese dioxide
2. Give one word or a phrase for the following statements: [5]
- (i) The energy released when an electron is added to a neutral gaseous isolated atom to form a negatively charged ion.
- (ii) Process of formation of ions from molecules which are not in ionic state.
- (iii) The tendency of an element to form chains of identical atoms.
- (iv) The property by which certain hydrated salts, when left exposed to atmosphere, lose their water of crystallization and crumble into powder.
- (v) The process by which sulphide ore is concentrated.
3. Write a balanced chemical equation for each of the following: [5]
- (i) Action of concentrated sulphuric acid on carbon.
- (ii) Reaction of sodium hydroxide solution with iron (III) chloride solution.
- (iii) Action of heat on aluminium hydroxide.

- (iv) Reaction of zinc with potassium hydroxide solution.
- (v) Action of dilute hydrochloric acid on magnesium sulphide.
4. (i) Give the IUPAC name for each of the following: [3]
- (a) $\begin{array}{c} \text{H}-\text{C}=\text{O} \\ | \\ \text{H} \end{array}$ (b) $\begin{array}{c} \text{H} & \text{H} & \text{H} \\ | & | & | \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{OH} \\ | & | & | \\ \text{H} & \text{H} & \text{H} \end{array}$ (c) $\begin{array}{c} \text{H} & \text{H} \\ | & | \\ \text{H}_3\text{C}-\text{C} & =\text{C}-\text{CH}_3 \end{array}$
- (ii) Write the structural formula of the two isomers of butane. [2]
5. State one relevant observation for each of the following reactions: [5]
- (i) Lead nitrates solutions is treated with sodium hydroxides solution drop wise till it is in excess.
- (ii) At the anode, when molten lead bromide is electrolyzed using graphite electrodes.
- (iii) Lead nitrate solution is mixed with dilute hydrochloric acid and heated.
- (iv) Anhydrous calcium chloride is exposed to air for some times.
- (v) Barium chloride solution is slowly added to sodium sulphate solution.
6. Give a reason for each of the following: [5]
- (i) Ionic compounds have a high melting point.
- (ii) Inert gases do not form ions.
- (iii) Ionisation potential increases across a period, from left to right.
- (iv) Alkali metals are good reducing agents. ^
- (v) Conductivity of dilute hydrochloric acid is greater than that of acetic acid.
7. Name the gas that is produced in each of the following cases: [5]
- (i) Sulphur is oxidized by concentrated nitric acid.
- (ii) Action of dilute hydrochloric acid on sodium sulphide.
- (iii) Action of cold and dilute nitric acid on copper.
- (iv) At the anode during the electrolysis of acidified water.
- (v) Reaction of ethanol and sodium.
8. Fill up the blanks with the correct choice given in brackets: [5]
- (i) Ionic or electrovalent compounds do not conduct electricity in their _____ state, (fused/solid)
- (ii) Electrolysis of aqueous sodium chloride solution will form _____ at the cathode. (hydrogen gas/sodium metal)
- (iii) Dry hydrogen chloride gas can be collected by _____ displacement of air. (downward/upward)
- (iv) The most common ore of iron is _____ (calamine/hematite)

- (v) The salt prepared by the method of direct combination is _____ (iron (II) chloride/iron (III) chloride).

Section – II [40 marks]

Attempt any four questions from them.

Question 2

- (i) What do you understand by a lone pair of electrons? [1]
 (ii) Draw the electron dot diagram of hydronium ion. (H = 1; O = 8) [2]
- In period 3 of the periodic table, element, choose the correct word from the brackets to complete the following statements: [3]
 - The element B would have (lower / higher) metallic character than A.
 - The element A would probably have (lesser / higher) electron affinity than B.
 - The element A would have (greater / smaller) atomic size than B.
- Copy and complete the following table which refers to the conversion of ions to neutral particles. [4]

Conversion	Ionic equation	Oxidation / Reduction
Chloride ion to chlorine molecule	(i) _____	(ii) _____
Lead (II) ion to lead	(iii) _____	(iv) _____

Question 3

- (i) Write the balanced chemical equation to prepare ammonia gas in the laboratory by using an alkali. [1]
 (ii) State why concentrated sulphuric acid is not used for drying ammonia gas. [1]
 (iii) Why is ammonia gas not collected over water? [1]
- (i) Name the acid used for the preparation of hydrogen chloride gas in the laboratory. Why is this particular acid preferred to other acids? [2]
 (ii) Write the balanced chemical equation for the laboratory preparation of hydrogen chloride gas [1]
- For the preparation of hydrochloric acid in the laboratory. [2]
 - Why is direct absorption of hydrogen chloride gas in water not feasible?
 - What arrangement is done to dissolve hydrogen chloride gas in water?

4. For the electro-refining of copper: [2]
- (i) What is the cathode made up of?
- (ii) Write the reaction that takes place at the anode.

Question 4

1. The percentage composition of a gas is: [2]
 Nitrogen 82.35%, Hydrogen 17.64%.
 Find the empirical formula of the gas. [N = 14, H = 1]
2. Aluminium carbide reacts with water according to the following equation:

$$\text{Al}_4\text{C}_3 + 12\text{H}_2\text{O} \rightarrow 4\text{Al}(\text{OH})_3 + 3\text{CH}_4$$
- (i) What mass of aluminium hydroxide is formed from 12g of aluminium carbide? [2]
- (ii) What volume of methane at s.t.p. is obtained from 12g of aluminium carbide [Relative molecular weight of $\text{Al}_4\text{C}_3 = 144$; $\text{Al}(\text{OH})_3 = 78$] [2]
3. (i) If 150 cc of gas A contains X molecules, how many molecules of gas B will be present in 75 cc of B? The gases A and B are under the same conditions of temperature and pressure. [1]
- (ii) Name the law on which the above problem is based. [1]
4. Name the main component of the following alloys: [2]
- (i) Brass
- (ii) Duralumin

Question 5

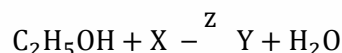
1. Complete the following table relates to the homologous series of hydrocarbons. [6]

General formula	IUPAC name of the homologous series	Characteristic bond type	IUPAC name of the first member of the series
$\text{C}_n\text{H}_{2n-2}$	(A) _____	(B) _____	(C) _____
$\text{C}_n\text{H}_{2n+2}$	(D) _____	(E) _____	(F) _____

2. (i) Name the most common ore of the metal aluminium from which the metal is extracted. Write the chemical formula of the ore. [2]
- (ii) Name the process by which impure ore of aluminium gets purified by using concentrated solution of an alkali. [1]
- (iii) Write the equation for the formation of aluminium at the cathode during the electrolysis of alumina. [1]

Questions 6

1. A compound X (having vinegar like smell) when treated with ethanol in the presence of the acid Z, gives a compound Y which has a fruity smell. The reaction is:



- (i) Identify Y and Z [2]
 (ii) Write the structural formula of X. [1]
 (iii) Name the above reaction. [1]
2. Ethane burns in oxygen to form CO₂ and H₂O according to the equation:
 $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
 If 1250 cc of oxygen is burnt with 300 cc of ethane.
 Calculate:
 (i) the volume of CO₂ formed. [2]
 (ii) the volume of unused O₂ [2]
3. Three solutions P, Q and R have pH value of 3.5, 5.2 and 12.2 respectively. Which one of these is a: [2]
 (i) Weak acid?
 (ii) Strong alkali?

Question 7

1. Give a chemical test to distinguish between the following pairs of chemicals:
 (i) Lead nitrate solution and zinc nitrate solution [1]
 (ii) Sodium chloride solution and sodium nitrate solution [1]
2. Write a balanced equation for the preparation of each of the following salts:
 (i) Copper sulphate from copper carbonate. [2]
 (ii) Zinc carbonate from zinc sulphate. [2]
3. (i) What is the type of salt formed when the reactants are heated at a suitable temperature for the preparation of nitric acid? [1]
 (ii) State why for the preparation of nitric acid, the complete apparatus is made up of glass. [1]
4. Which property of sulphuric acid is shown by the reaction of concentrated sulphuric acid with: [2]
 (i) Ethanol
 (ii) Carbon