ICSE Board
Class X Chemistry
Sample Paper - 12

Time: 2 hrs **Total Marks: 80**

General Instructions:

- Answers to this paper must be written on the paper provided separately.
- You will not be allowed to write during the first 15 minutes.
- This time is to be spent in reading the question paper.
- The time given at the head of this paper is the time allowed for writing the answers.

Section I is compulsory.
Attempt any four questions from **Section II**.
The intended marks for questions or parts of questions are given in brackets [ ].

SECTION I (40 Marks)

Attempt **all** questions from this section.

Question 1

(a) [5]

i. Explain why copper though a good conductor of electricity is a non-electrolyte.
ii. Name the gas released at the anode during the electrolysis of acidified water.
iii. Explain why solid sodium chloride does not allow electricity to pass through.
iv. Fill in the blanks:
   a. As we descend through the electrochemical series containing cations, the tendency of cations to get_____ (oxidised/reduced) at the cathode increases.
   b. The (higher/lower)_____ the concentration of an ion in a solution, the greater the probability of it being discharged at the appropriate electrode.

(b) For each of the salts A to E, suggest a suitable method for its preparation. [5]

i. A is an insoluble salt.
ii. B is a soluble salt of copper.
iii. C is a soluble salt of zinc.
iv. D is a soluble salt of calcium.
v. E is a sodium salt.

(c) [5]

i. Duralumin is an alloy of
   a. Al and Cu
   b. Cu and Sn
   c. Al and Ag
   d. Al and Fe

ii. Hydrogen chloride can be obtained by adding concentrated sulphuric acid to
   a. NaCl
   b. Na_2SO_4
   c. Na_2CO_3
   d. $NaNO_3$

iii. Which of the following reactions gives copper as a product:
   a. Passing dry ammonia over heated copper oxide
   b. Adding dilute hydrochloric acid to copper oxide
   c. Heating copper oxide
   d. Passing oxygen over heated copper oxide

iv. Formation of chloroform from methane and chlorine is an example of
   a. Addition
   b. Dehydration
   c. Substitution
   d. Elimination

v. The element with the highest ionisation potential in the periodic table is
   a. He
   b. Ne
   c. Ar
   d. Xe

(d) [5]

i. Give one test to distinguish between
   a. Alkane and alkene
   b. Alkene and alkyne

ii. Give reasons for the following:
   a. Salts of lead are not tested for the flame test.
   b. Aluminium alloys are used to make aircraft.
   c. Electrolysis of molten compounds is not carried out in glass apparatus.

(e) Name the following: [5]

i. Dibasic strong acid.
ii. Two alkalis which are weak electrolytes.
iii. An electrolyte used for gold plating.
iv. A hydrocarbon used as LPG.
v. The chemical in which gold can be dissolved.

(f) Write balanced equations for each of the following: [5]

i. A gas used to prepare a metal.
ii. An acid used to prepare another acid.
iii. A salt used to prepare another salt.
iv. A base used to prepare another base.
v. A neutral gas used to prepare an acidic gas.

(g) [5]

i. Name:
   a. A metal
   b. A non-metal
   c. A metalloid in Period 3 of the modern periodic table.

ii. What single term expresses the energy in each of the following:
   d. Atom + Energy $\rightarrow$ Ion (+ve) + Electron
   e. Atom (gas) + Electron $\rightarrow$ Anion + Energy

(h) Answer the following questions: [5]

i. Name a metal which is found abundantly in the Earth's crust.
ii. What is the difference between calcination and roasting?
iii. Name the process used for the enrichment of sulphide ore.
iv. Write the chemical formula of one main ore of iron and aluminium.
v. Write the constituents of electrolyte for the extraction of aluminium.

SECTION II (40 Marks)

Attempt any four questions from this section.

Question 2

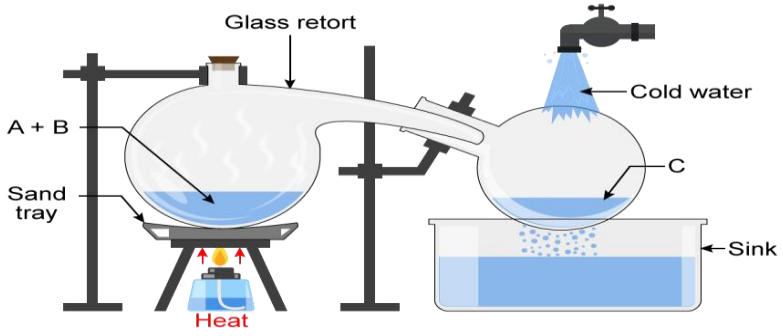
(a) [3]

i. Of the two gases, ammonia and hydrogen chloride, which is more dense? Name the method of collection of this gas.
ii. Give one example of a reaction between the above two gases which produce a solid compound.

(b) Write a balanced equation for a reaction in which ammonia is oxidised by [2]

i. A metal oxide
ii. A gas which is not oxygen

(c) The figure given below illustrates the apparatus used in the laboratory preparation of nitric acid. [5]



i. Name A (a liquid), B (a solid) and C (a liquid).
ii. Write an equation to show how nitric acid undergoes decomposition.
iii. Write an equation for the reaction in which copper is oxidised by concentrated nitric acid.

Question 3

(a) A compound X consists of 4.8% carbon and 95.2% bromine by mass. [5]

i. Determine the empirical formula of this compound, working correct to one decimal place (C = 12, Br = 80).
ii. If the vapour density of the compound is 252, what is the molecular formula of the compound?
iii. Name the type of chemical reaction by which X can be prepared from ethane.

(b) Salts A, B, C, D and E undergo reactions (i) to (v), respectively. Identify the anion present in these salts on the basis of these reactions. Tabulate your answers in the format given below: [5]

i. When silver nitrate solution is added to a solution A, a white precipitate, insoluble in dilute nitric acid, is formed.
ii. Addition of dilute hydrochloric acid to B produces a gas which turns lead acetate paper black.
iii. When a freshly prepared solution of ferrous sulphate is added to the solution of C and concentrated sulphuric acid is gently poured from the side of the test tube, a brown ring is formed.
iv. When dilute sulphuric acid is added to D, a gas is produced which turns acidified potassium dichromate solution from orange to green.
v. Addition of dilute hydrochloric acid to E produces effervescence. The gas produced turns lime water milky but does not affect acidified potassium dichromate solution.

Question 4

(a) Choose the correct word/phrase from within the brackets to complete the following sentences: [5]

i. The catalyst used for conversion of ethene to ethane is commonly _____ (nickel/iron/cobalt).
ii. When acetaldehyde is oxidised with acidified potassium dichromate, it forms _____ (ester/ethanol/acetic acid).
iii. Ethanoic acid reacts with ethanol in the presence of concentrated H_2S0_4 so as to form a compound and water. The chemical reaction which takes place is called_____ (dehydration/hydrogenation/esterification).
iv. Write the equation for the reaction taking place between 1,2-dibromo ethane and alcoholic potassium hydroxide.
v. The product formed when ethane gas reacts with water in the presence of sulphuric acid is_____ (ethanol/ethanal/ethanoic acid).

(b) Write balanced chemical equations for the following: [5]

i. Monochloroethane is hydrolysed with aqueous KOH.
ii. A mixture of soda lime and sodium acetate is heated.
iii. Ethanol under high pressure and low temperature is treated with acidified potassium dichromate.
iv. Water is added to calcium carbide.
v. Ethanol reacts with sodium at room temperature.

Question 5

(a) Calculate the following: [4]

i. Number of moles in 160 gm of sodium hydroxide (Na = 23, 0 = 16)
ii. Number of gram molecules present in 45 gm of water
iii. Volume occupied by all gases at STP is 22.4 dm^3 except one familiar compound. Name the compound.

(b) Complete and balance: [3]

i. $C + HNO_3$ (conc.) $\rightarrow$
ii. $ZnO + HNO_3 \rightarrow$
iii. $FeS + H_2SO_4 \rightarrow$

(c) Draw the structural formula of [3]

i. Ethene
ii. Ethanol
iii. Ethyne

Question 6

(a) The following alloys are used instead of the metal for certain reasons. Write the reason for each of the following: [4]

i. Solder is used instead of lead.
ii. Duralumin is used instead of aluminium.
iii. Stainless steel is used instead of iron.
iv. Brass is used instead of copper.
v. Aluminium bronze is used instead of gold.

(b) Name the type of oxide formed when each of the following elements are burnt in oxygen: [3]

i. Magnesium
ii. Hydrogen
iii. Phosphorus

(c) When concentrated sulphuric acid is added to sodium chloride, a gas is released. [3]

i. Name the gas and state whether it is acidic or basic.

ii. When manganese dioxide is added to the above mixture and heated, another gas is produced. Name the gas and give a balanced equation for the reaction.

Question 7

(a) The following questions refer to the periodic table: [4]

i. State the number of elements in Period 1, 2 and 3.

ii. What is the common feature of the electronic configuration of the elements at the end of Period 2 and Period 3?

iii. Are the elements in Group VII A metals or non-metals?

iv. What is the valency of elements in Group VI A?

(b) Name: [4]

i. An efflorescent compound

ii. A blue-coloured salt

iii. A deliquescent salt

iv. A hygroscopic liquid

v. Drying agent

(c) Name the metal which is common to both of the alloys. [2]

i. Bronze and brass

ii. Bell metal and German silver