ICSE Board
Class X Chemistry
Sample Paper - 2

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. Name the following: [5]

i. An organic compound having –OH as the functional group.
ii. The flame used for welding and cutting of metals.
iii. A gas having rotten egg smell.
iv. The gas dissolved in nitric acid which gives a pale yellow colour.
v. An organic acid which is the major constituent of vinegar.

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

i. Calcium carbide is hydrolysed.
ii. Ferric oxide is reduced by aluminium.
iii. Sulphur dioxide is passed through acidified potassium dichromate solution.
iv. Dissolution of platinum in *aqua regia*.
v. Ethyl bromide reacts with alcoholic KOH.

c. [5]

i. How does the metallic character vary in group and period?
ii. Elements of Group 1 are called (1) _____ metals. These are good (2) _____ agents, whereas the elements of Group 17 are called (3) _____. These are good (4) _____ agents.
iii. The vertical columns are called (1) _____. The horizontal rows are called (2) _____.

d. Copy and complete the table. The table summarises the observation following the addition of barium chloride solution and lead nitrate solution to the solution of sodium salts. [5]

	Barium chloride solution	Lead nitrate solution
Sodium chloride solution		
Sodium nitrate solution		No reaction
Sodium sulphate solution		

e. Fill in the blanks. [5]

i. Concentrated sulphuric acid converts ethanol to _____ as it is a _____ agent.
ii. Sulphuric acid is commonly called _____.
iii. The salts of sulphuric acid are _____ and _____.
iv. Sulphuric acid is a _____ acid.
v. The catalyst used during the contact process is _____.

f. What is the expected pH of the following solutions? [5]

i. One which turns blue litmus red
ii. One which liberates ammonia from ammonium salts
iii. Pure water
iv. One which liberates carbon dioxide from metallic carbonate
v. Ferric chloride solution

g. Give the balanced chemical equations for the reaction of iron with [5]

i. Dil. HCl
ii. Dil. H_2SO_4
iii. Chlorine
iv. Copper sulphate
v. Sulphur

h. [5]

i. Name the most common ore of aluminium.
ii. Define mineral.
iii. Give the formula of bauxite.
iv. Which two chemical compounds are added to pure bauxite at the time of electrolytic reduction and why?

SECTION II (40 Marks)

Attempt any **four** questions from this section.

Question 2

a. [5]

i. What changes will you observe at the cathode, anode and in the electrolyte during the electrolysis of copper sulphate solution with copper electrodes?

ii. Give the equations taking place at the cathode and at the anode.

b. [5]

A to F below relate to the source and extraction of either zinc or aluminium.

A: Bauxite
B: Coke
C: Cryolite
D: Froth floatation
E: Sodium hydroxide solution
F: Zinc blende

i. Write the three letters each from the above list which are relevant to
   1. Zinc 2. Aluminium

ii. Fill in the blanks using the most appropriate words from A to F:
   1. The ore from which aluminium is extracted must first be treated with _____ so that pure aluminium oxide can be obtained.
   2. Pure aluminium oxide is dissolved in _____ to make a conducting solution.

iii. Write the formula of cryolite.

Question 3

a. What is the major purpose of subjecting concentrated ore to either roasting or calcination? [2]

b. Name the most common ore of aluminium, zinc and iron. Name the processes by which the named ores are concentrated. [3]

c. Give balanced chemical equations for the following: [3]

i. Aluminium hydroxide is heated.

ii. Zinc oxide is reduced.

iii. Formation of sodium aluminate on dissolving the most common ore of aluminium in a suitable alkali.

d. Name a metal which reacts with both acids and alkalis to liberate hydrogen. Give the balanced chemical equation also. [2]

Question 4

a. Draw different isomers having the following molecular formula: [3]

i. C_5H_{12} (chain)

ii. C_4H_8 (position)

b. What is denatured alcohol? [2]

c. Give two important uses of ethanol. [2]

d. Write equations for [3]

i. Preparation of ethanol by hydration of C_2H_4

ii. Preparation of acetic acid from ethanol

Question 5

a. Starting from lead nitrate, how will you prepare the following named salts in the laboratory? Write only the balanced chemical equations in support of your answer.

i. Lead chloride

ii. Lead sulphide [4]

b. The following table shows the tests a student performed on two aqueous solutions A and B. Write the observations (i) and (ii) which were made. [2]

Test	Observation	Conclusion
i. To Solution A, sodium hydroxide solution was added.	(i)	A contains Fe^{3+} ions
ii. To Solution B, ammonium hydroxide solution was added slowly till in excess.	(ii)	B contains Cu^{2+} ions

c. Answer the following: [4]

i. What do you observe when excess of ammonia is passed through an aqueous solution of lead nitrate?

ii. Name the substance used for drying ammonia.

iii. Write an equation to illustrate the reducing nature of ammonia.

iv. With reference to Haber's process for the preparation of ammonia, write the equation and the conditions required.

Question 6

a. Write equations for each of the following reactions: [2]

i. Chlorine is passed over heated iron.

ii. Copper sulphate solution is added to sodium hydroxide solution.

b. [3]

Element	Group numbers
B	I A or 1
H	VI A or 16
F	IV A or 14
J	VII A or 17
C	II A or 2
K	VII A or 17

i. Write the formula of the compound formed between B and H.

ii. In a compound between F and J, what type of bond will be formed?

iii. Draw the electron dot structure of the compound formed between C and K.

c. The elements of one short period of the periodic table are given below in the order from left to right. [5]

Li Be B C O F Ne

i. To which period do these elements belong?

ii. One element of this period is missing. Where should it be placed?

iii. Which element in this period shows the property of catenation?

iv. Place the three elements Fluorine, Beryllium and Nitrogen in the order of increasing electronegativity.

v. Which element belongs to the halogen series?

Question 7

a.

i. Who proposed the following law?
'Under the similar conditions of temperature and pressure, equal volumes of all gases contain equal number of molecules'. [1]

ii. An inorganic compound has the following percentage composition:
P = 22.45%, Cl = 77.45%. Deduce the empirical formula of the compound.
(P = 31, Cl = 35.5) [2]

iii. Calculate the percentage of iron in iron (III) oxide (Fe_2O_3).
(O = 16, Fe = 56) [2]

b. Write the equation for the following reactions: [5]

i. Aluminium nitride and water
ii. Calcium carbide and water
iii. Ethene and steam
iv. Sulphur dioxide and water
v. Bromoethane and an aqueous solution of sodium hydroxide