**Time: 2 hrs**

**Class X CHEMISTRY Total Marks: 80**

**SECTION I (40 Marks)**

*Attempt* ***all*** *questions from this section.*

(8)

1. Choose the correct answer from the options A, B,-C or D and write the option

selected in your answer booklet. Copy the question, and then write the correct answer following the question

During the electrolysis of acidified water, which of the following takes place:

1. Oxygen is released at the cathode
2. Oxygen is released at the anode,
3. Hydrogen is released at the anode.
4. Sulphur dioxide is released at the anode

ii. A compound 'P' consists of only molecules. Hence ' P' will have:

1. crystalline hard structure
2. A low melting point and a low boiling point.
3. An ionic bond
4. A strong force of attraction between its molecules.

iii. Among the period 2 elements, the element which has high electron affinity:

1. Li b. C c. Cl d. F

iv. Decomposition of lead nitrate produces:

1. NO2 b. NO c. NO3  d. None of these

v) Which of the following will not produce an acid when made to react with water?

a. CO b. CO2 c.NO2  d. SO3

vi) An element in period 3 whose electron affinity is zero:

a .Neon b. Sodium c. Sulphur d. Argon

vii) Hydrogen chloride gas being highly soluble in water is dried by:

a. Anhydrous calcium chloride b. Quick lime c. Phosphorous pentoxide d. Concentrated sulphuric acid

viii) The number of C - H bonds in propane molecule are:

1. Four b. Six c. Eight d.Ten

b) Give scientific reason(s) for: (5)

i. Lead bromide is maintained in the molten state during electrolysis.

ii. Iron is rendered passive with fuming nitric acid.

iii. Oxidising power of elements increases on moving from left to right across a period in the periodic table.

iv. Hydrogen chloride is termed as a polar covalent molecule.

v. It is dangerous to burn methane in an insufficient supply of air.

C) Give suitable terms for the following: (5)

I. A bond formed by shared paired of electrons with both electrons coming from the same atom.

ii. Two metallic oxide which are reduced by ammonia.

iii. The industrial process by which ammonia is manufactured.

iv. Two gases which give dense fumes with ammonia.

v. A reaction in which hydrogen of an alkane is replaced by halogen.

d) Name the following: (5)

i. A green-coloured compound formed when an orange compound is heated.

ii. An insoluble salt obtained when sulphur dioxide is passed through lime water.

iii. Drying agent for ammonia.

iv. Essential product formed when hydrogen sulphide solution reacts with an oxidising agent.

v. The process by which a thin coating of zinc is made over the surface of iron

**e)** What do you observe when

i. Concentrated sulphuric acid is added to sugar crystals?

ii. Ammonia mixes with hydrogen chloride gas?

iii. Dilute hydrochloric acid is added to sodium carbonate solution?

iv. Ammonium hydroxide is added to zinc nitrate solution, first a little and then in excess?

v. Sulphur dioxide is passed through acidified potassium dichromate solution?

vi. Acetylene is bubbled through bromine water.

vii. Concentrated nitric acid is added to sulphur.

viii. Excess chlorine react with ammonia.

ix. Barium chloride solution is added to an aqueous solution of sodium sulphate.

x. Dilute nitric acid is added to copper turnings. [10]

f) What type of bonding takes place in the following compounds?

i. Sodium chloride

ii. Carbon tetrachloride

iii. Ammonia

iv. Methane

v. Calcium oxide

vi. Magnesium chloride

vii. Hydronium ion [7]

**SECTION II (40 Marks)**

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

**Question 2**

**a.**

i. During the electrolysis of silver over a copper spoon, the electrolyte used must contain (1)\_\_\_\_\_\_\_\_\_\_ ions. The (2) \_\_\_\_\_\_\_\_\_\_\_ hung at the cathode (3)\_\_\_\_\_\_\_\_\_\_ is made the anode. The anode is (4) \_\_\_\_\_\_\_\_\_\_\_ in nature.

ii. Give the equations taking place at the cathode and at the anode during the electroplating of silver over a copper spoon. (5)

1. Solution P has pH of 13,Solution Q has pH of 6 and R has pH of 2.
2. Which solution will liberate ammonium salt?
3. Which solution contain ions as well as molecules?
4. Which solution is a strong acid? (3)

1. A compound made up of two elements X and Y has an empirical formula X2Y. The compound has a vapour density of 25. Find the molecular formula. ( At masses: X=10, Y=5) (2)

**Question 3**

**a.**

i. How is sulphur dioxide obtained from sodium sulphite and copper chips? Give balanced chemical equations only.

ii. Name the acid formed when sulphur dioxide is dissolved in water.

iii. What are the salts of the above named acids called? [5]

**b.** The following questions are related to dilute hydrochloric acid:

i. What is the basicity of hydrochloric acid?

ii. Name two metallic nitrates which react with dilute hydrochloric acid to give white precipitate.

iii. Name the gas liberated when dilute hydrochloric acid reacts with active metals. [5]

**Question 4**

a.

Aluminium is extracted from its chief ore bauxite. The ore is first purified and then the metal is extracted from it by electrolytic reduction

. i.-- Which solution is used to react with bauxite as a first step in obtaining pure aluminium oxide and why? (1.5)

ii. Name the element which serves both as the anode and the cathode in the extraction of aluminium by electrolysis. (1)

iii. Write the f6rmula of cryolite and its any one function in the electrolytic process.(1.5)

b.

Compound 'X' is bubbled through bromine dissolved in carbon tetrachloride and the product is CHzBr - CHzBr: t3I

1. What type of reaction has 'X' undergone?

ii. What is your observation in the reaction?

iii. Name the compound formed when a water molecule gets added to 'X' in the presence of sulphuric acid.

c) Copy and complete the following statements by filling in the blanks: t3I

1. is the property of self linking of carbon atoms through covalent bonds due to which a number of organic compound exist.
2. is a salt which is soluble in hot water but insoluble in cold water.
3. Acids containing hydrogen and a non-metallic element other than oxygen are called acids.

**Question 5**

**a. Write balanced chemical equations for the following reactions:**

i. The laboratory preparation of methane from sodium acetate.

ii. The industrial preparation of methanol from water gas.

iii. The reaction of one mole of ethene with one mole of chlorine gas.

iv. The preparation of ethyne from 1, 2-dibromoethane. [4]

**b.** State how the following conversions can be carried out:

i. Ethyl chloride to ethyl alcohol

ii. Ethyl chloride to ethene

iii. Ethene to ethyl alcohol

iv. Ethyl alcohol to ethane [4]

**c.**

i. Define isomerism.

ii. Give the IUPAC name of the isomer C4H10 which has a branched chain. (2)

Question 6

(a) Name the method by which following compounds can be prepared:

Select the appropriate method from the following list Neutralization; direct

combination; precipitation; metal + acid – use a method only once.

(i) Sodium sulphate

(ii) Silver chloride

(iii) Iron sulphide. [3]

(b) How will you distinguish between following pairs of compounds using

NH4OH.

I)Copper sulphate and iron(II) sulphate

ii) Zinc nitrate and lead nitrate.

(iii) Iron(II) sulphate and iron(III) sulphate. [3]

(c) Name:

(i) A greenish yellow gas with pungent smell.

(ii) An oxide which is yellow when hot and white when cold.

(iii) A chemical used to deplete ozone layer.

(iv) A crystalline salt without water of crystallization. [4]