Std.: 10th ICSE

Sub: Chemistry

Rathi's Aspire Academy
Preparing You For Tomorrow

Pre- Board Test
Set-1

Marks : 80

Time : 2 Hrs.

Date : 30/12/2022

General Instructions:

(i) Answers to this Paper must be written on the paper provided separately.

(ii) You will not be allowed to write during first 15 minutes. This time is to be spent in reading the question paper.

(iii) The time given at the head of this Paper is the time allowed for writing the answers.

(iv) **Section A** is compulsory. Attempt **any four** questions from **Section B.**

(v) The intended marks for questions or parts of questions are given in brackets [ ].

SECTION - A

*(Attempt **all** questions from this Section.)*

1. Choose one correct answer to the questions from the given options: [15]

(i) The observation seen when fused Lead bromide is electrolysed:
- (a) A silver grey deposit at anode and a reddish brown deposit at cathode.
- (b) A silver grey deposit at cathode and a reddish brown deposit at anode.
- (c) A silver grey deposit at cathode and reddish brown fumes at anode.
- (d) Silver grey fumes at anode and reddish brown fumes at cathode.

(ii) An element in Period 3 whose electron affinity is zero:
- (a) Neon
- (b) Sulphur
- (c) Sodium
- (d) Argon

(iii) The alloy which contains copper and zinc is:
- (a) Duralumin
- (b) Brass
- (c) Bronze
- (d) Solder

(iv) Metals lose electrons during ionisation, this change is called as:
- (a) Oxidation
- (b) Reduction
- (c) Redox
- (d) Displacement

(v) Which of the following is an example of acid salt?
- (a) NaCl
- (b) Mg(OH)Cl
- (c) $NaHSO_4$
- (d) $CaOCl_2$

(vi) A metal which produces hydrogen when reacts with alkali as well as with acid:
- (a) Iron
- (b) Magnesium

(c) Zinc
(d) Copper

(vii) The molecular formula of an organic compound is CH_3COOH. Its empirical formula will be:
(a) CHO
(b) CH_2O
(c) $C_2H_2O_2$
(d) CHO_2

(viii) Hydrogen chloride gas being highly soluble in the water is dried by:
(a) Anhydrous Calcium chloride
(b) Phosphorus pentoxide
(c) Quick lime
(d) Conc. Sulphuric acid

(ix) Nitrogen gas can be obtained by heating:
(a) Ammonium nitrate
(b) Ammonium nitrite
(c) Magnesium nitrade
(d) Ammonium chloride

(x) Lead nitrate decomposes on heating to give:
(a) NO
(b) N_2O
(c) NO_2
(d) N_2O_5

(xi) The gas evolved when dilute Sulphuric acid reacts with Iron sulphide:
(a) Hydrogen sulphide
(b) Sulphur dioxide
(c) Sulphur trioxide
(d) Vapours of sulphuric acid

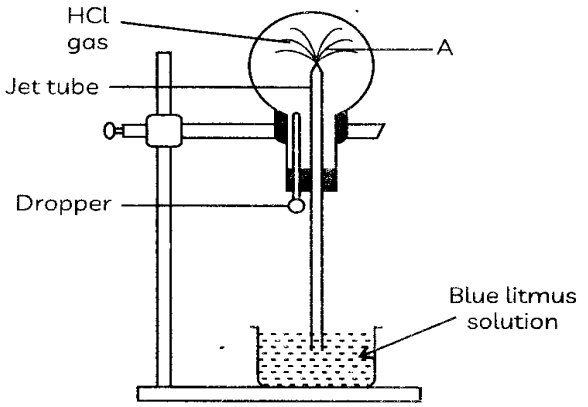
(xii) A hydrocarbon of the general formula C_nH_{2n+2} is:
(a) $C_{10}H_{20}$
(b) $C_{10}H_{18}$
(c) $C_{10}H_{22}$
(d) C_8H_{20}

(xiii) Ethyne gas is collected by the:
(a) upward displacement of water.
(b) downward displacement of water.
(c) upward displacement of air.
(d) downward displacement of air.

(xiv) Which of the following acts as an inert electrode?
(a) Copper
(b) Nickel
(c) Silver
(d) Graphite

(xv) Ionisation potential increases over a period from left to right because the:
(a) Atomic radius and nuclear charge increases.
(b) Atomic radius and nuclear charge decreases.
(c) Atomic radius increases and nuclear charge decreases.
(d) Atomic radius decreases and nuclear charge increases.

2. (i) The diagram below shows the set up for an experiment: [5]



(a) Name the experiment.
(b) What property of HCl gas does this experiment demonstrate?
(c) Name another gas which has the same property and can be demostrated through this experiment.
(d) What is the effect of HCl gas on blue litmus solution?
(e) What is the nature of HCl gas-acidic or basic?

(ii) Match the following Column A with Column B. [5]

Column A	Column B
(a) Alkane	1. —OH
(b) Alkene	2. C_nH_{2n-2}
(c) Alkyne	3. —CHO
(d) Alcohol	4. C_nH_{2n}
(e) Aldehyde	5. C_nH2_{n+2}

(iii) Complete the following by choosing the correct answers from the bracket: [5]
(a) Zinc reacts with dilute sulphuric acid to liberate ..... (hydrogen gas / Sulphur dioxide gas).
(b) ..... (Low / High) pressure favours the formation of ammonia.
(c) Cations are formed by ..... (loss / gain) of electrons.
(d) Solder is an alloy of lead and ..... (zinc / tin).
(e) ..... (Ammonia / Sulphur dioxide) gas produces dense white fumes when reacted with HCl gas.

(iv) Identify the following: [5]
(a) The catalyst used in the conversion of ethene into ethane.

(b) The product formed at anode during electrolysis of Copper sulphate solution using platinum electrodes.

(c) The tendency of an atom to attract the shared pair of electron.

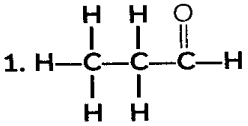
(d) Electrolyte used in Hall-Heroult's process.

(e) The bond formed between two atoms by sharing a pair of electrons, provided entirely by one of the combining atoms but shared by both.

(v) (a) Draw the structural formula for the following: [5]

1. Pentane
2. Bromo ethene
3. But-1-yne

(b) Name the following organic compounds in IUPAC system:



2. H—C≡C—H

SECTION - B

*(Attempt **any four** questions.)*

3. (i) Write a balanced equation for a reaction in which ammonia is oxidised by: [2]

(a) a metal oxide.

(b) a gas which is not oxygen.

(ii) Write the products and balance the equation: [2]

(a) $CaCO_3 + HCl \longrightarrow$

(b) $C + H_2SO_4 \longrightarrow$

(iii) Explain the following: [3]

(a) Cation is always smaller than the parent atom.

(b) Anion is always larger than the parent atom.

(c) The size of the atoms of inert gases are bigger.

(iv) Fill in the blanks selecting the appropriate word from the given choice: [3]

(a) The number of valence electrons in a calcium atom is ..... (2 / 3).

(b) The chemical bond that is formed between two combining atoms by mutual sharing of electrons is called ..... (ionic / covalent) bond.

(c) The ions in ionic compounds are held very strongly due to strong ..... (electromagnetic / electrostatic) forces.

4. (i) Name the constituents of: [2]

(a) Stainless steel

(b) Bronze

(ii) Calculate: [2]

(a) If 6 litres of hydrogen and 4 litres of chlorine are mixed and exploded and if water is added to the gases formed, find the volume of the residual gas.

(b) If the empirical formula of a compound is CH and its vapour density is 39. Find its molecular formula.

(iii) What do you observe when ammonium hydroxide is added to the aqueous solution of: [3]

(a) Iron (II) sulphate

(b) Iron (III) chloride

(c) Lead nitrate

(iv) (a) A dilute acid (B) does not normally give hydrogen when reacted with metals but does give a gas when reacts with copper. Identify B. [3]

(b) Write the equation of 'B' with copper.

(c) What is the property of nitric acid which allows it to react with copper.

5. (i) Copy and complete the following table: [2]

Name of Process	Inputs	Equation	Output
	Ammonia + Air		Nitric acid

(ii) Name the probable cation present based on the following observations: [2]

(a) White precipitate insoluble in NH_4OH but soluble in NaOH.

(b) Blue coloured solution.

(iii) Convert: [3]

(a) Methane into chloroform.

(b) An alkyne to an alkene.

(c) Ethene into ethane.

(iv) State one relevant observation for each of the following reactions: [3]

(a) Zinc nitrate crystals are strongly heated.

(b) Excess of chlorine gas is reacted with ammonia gas.
(c) Lead nitrate solution is mixed with dilute hydrochloric acid.

6. (i) Define: [2]
(a) Strong electrolytes
(b) Ionisation

(ii) Solve: [2]

200 cm^3 of CO_2 is collected at STP, when a mixture of acetylene and oxygen is ignited. Calculate the volume of acetylene and oxygen at STP in original mixture:

$$2C_2H_{2(g)} + 5O_{2(g)} \longrightarrow 4CO_{2(g)} + 2H_2O_{(l)}$$

(iii) Name: [3]
(a) a yellow monoxide that dissolves in hot and concentrated caustic alkali.
(b) a chloride which is soluble in excess of Ammonium hydroxide.
(c) A nitrate which on heating leaves no residue behind.

(iv) Give one equation each to show the following properties of sulphuric acid: [3]
(a) Dehydrating property
(b) Non-volatile nature
(c) Oxidising property

7. (i) A compound is found to possess C = 40%, H = 6.7% and O = 53.3%. Its molecular mass is 60. Find the molecular formula of the compound. [2]

(ii) How is ethene prepared by: [2]
(a) dehydrohalogenation reaction?
(b) dehydration reaction?
Give equations and name the products formed.

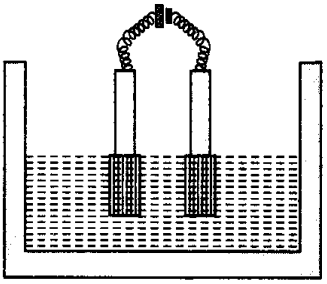
(iii) During the electrolysis of acidified water using platinum electrodes: [3]
(a) Name the electrolyte.
(b) Name the particles present in solution.
(c) Give the reaction that takes place at anode.

(iv) (a) A solution has a pH of 7. Explain how you would increase its pH? [3]
(b) If a solution changes the colour of litmus from red to blue, what can you say about its pH?
(c) What can you say about the pH of a solution, that librates Carbon dioxide from Sodium carbonate?

8. (i) Draw electron dot structure for the following: [2]
(a) Ammonium ion
(b) Hydroxyl ion

(ii) Identify the gas evolved when: [2]
(a) Potassium sulphite is treated with dilute hydrochloric acid.
(b) Concentrated hydrochloric acid is made to react with Manganese dioxide.

(iii) Copper sulphate solution is electrolysed using copper electrodes: [3]



(a) Which electrode to your left or right is known as the oxidising electrode and why?
(b) Write the equation representing the reaction that occurs.
(c) State one appropriate observation for the above electrolysis reaction.

(iv) The electronic configuration of an element is 2, 8, 8, 2: [3]
(a) What is the group number of element?
(b) Predict the period number of element.
(c) What is the valency of the element?