BOMBAY SCOTTISH SCHOOL, MAHIM
PRELIMINARY ASSESSMENT
CHEMISTRY
(SCIENCE PAPER 2)

Grade : 10
Date : ~~24.02.2022~~ 7·3·2022
Duration : 1 ½ Hours

Maximum Marks : 40
No. of Questions : 06
No. of pages : 07

Writing time: One and a half hours
Answers to this Paper must be written on the paper provided separately.
You will not be allowed to write during the first 10 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. Attempt **all** questions from **Section A** and **any three** questions from **Section B**.*
The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A

*(Attempt **all** questions)*

Question 1 **[10]**

Choose the correct answer to the questions from the given options. (Do not copy the question, write the correct answer only.)

(i) The curdy white precipitate formed when a few drops of silver nitrate solution is added to dilute hydrochloric acid is :
(a) Silver
(b) Silver chloride
(c) Silver oxide
(d) Silver hydroxide

(ii) Iron is mainly extracted from its chief ore which is:
(a) Iron pyrites
(b) Haematite
(c) Calamine
(d) Siderite

(iii) The aim of the Fountain Experiment is to prove that:
(a) HCl gas turns blue litmus red.
(b) HCl gas is denser than air
(c) HCl gas is highly soluble in water
(d) HCl gas fumes in moist air

(iv) When calcium hydroxide solution is added to salt 'X' and heated, a pungent smelling gas is evolved, which turns moist red litmus paper blue. Hence the cation in salt 'X' is:

(a) NH_4^+
(b) H^+
(c) NH_3
(d) NH_3^+

(v) A monovalent nonmetal present in fluorspar is .....

(a) Fluorine
(b) Oxygen
(c) Chlorine
(d) Iodine

(vi) The formation of hexachloroethane from ethane and chlorine is an example of:

(a) Addition reaction
(b) Substitution reaction
(c) Dehydration reaction
(d) Decomposition reaction

(vii) The gas which burns in air with a green flame is:

(a) Ammonia
(b) Hydrogen
(c) Hydrogen chloride gas
(d) Carbon dioxide gas

(viii) If the molecular formula of an organic compound is $C_{10}H_{18}$, it is:

(a) Alkene
(b) Alkane
(c) Alkyne
(d) Not a hydrocarbon

(ix) An ore of zinc containing its sulphide is:

(a) Zincite
(b) Zinc blende
(c) Calamine
(d) Magnetite

(x) The **solid** which is formed by the reaction of two gases, one of which is acidic and the other is basic, is:

(a) Calcium oxide
(b) Ammonium chloride
(c) Sodium chloride
(d) Ammonium sulphate.

SECTION B

*(Attempt **any three** questions from this section.)*

Question 2

(i) Define: [2]

(a) Catenation.
(b) Alloy

(ii) Answer the following with respect to the laboratory preparation of ammonia gas. [2]

(a) Why is the flask in which the reactants are heated kept at a slant?
(b) How is the gas collected in the laboratory?

(iii) Complete and balance the following chemical equations: [3]

(a) $Mg + \underset{\text{very dilute}}{HNO_3} \rightarrow$

(b) $Na_2S + \underset{\text{dilute}}{H_2SO_4} \rightarrow$

(c) $\underset{\text{salt solution}}{FeCl_3} + NH_4OH \rightarrow$

(iv) Name the gas evolved in each case: [3]

(a) Alumina undergoes electrolytic reduction.
(b) A few drops of concentrated hydrochloric acid is added to manganese dioxide.
(c) Dry ammonia gas is passed over heated lead monoxide.

Question 3

(i) Answer the following with respect to the laboratory preparation of nitric acid. [2]

(a) What is the special feature of the apparatus that is used in this preparation?

(b) Why should the temperature of the reaction mixture of nitric acid not be allowed to rise above 200 deg C?

(ii) Give a balanced chemical equation to illustrate the acidic nature of nitric acid. [1]

(iii) Choose the property of concentrated sulphuric acid from the brackets for the reactions a and b. [2]
(Dehydrating agent, Non-volatile acid, Oxidizing agent)

(a) When it reacts with potassium nitrate for the laboratory preparation of nitric acid.

(b) When it reacts with carbon.

(iv) Which property of sulphuric acid accounts for its use as a dehydrating agent? [1]

(v) Salts **L, M** and **N** undergo reactions (a), (b) and (c) respectively. Identify the anion present in these salts on the basis of the reactions given below. [3]

Tabulate your answers in the format given below.

(a) Addition of dilute hydrochloric acid to **L**, produces a gas which turns moist lead acetate paper shining black.

(b) When dilute sulphuric acid is added to **M**, a gas is produced which turns acidified potassium dichromate paper from orange to green.

(c) Addition of dilute hydrochloric acid to **N**, produces an effervescence. The gas produced turns lime water milky but does not affect acidified potassium dichromate solution.

SALTS	ANION PRESENT
L	
M	
N	

(vi) Name the constituent elements of the alloy Duralumin. [1]

Question 4

(i) Select the correct answer from the brackets to complete the following sentences: [3]

(a) The alloy magnalium is used for making ..... (aircrafts, electrodes, glass cutlery)

(b) The catalyst used in Ostwald's Process is ..... (nickel, finely divided iron, platinum)

(c) A nonmetal which reacts with concentrated nitric acid to form its own acid as one of the products is ..... (nitrogen, sulphur, oxygen)

(ii) Answer the following with respect to the extraction of aluminium. [3]

(a) Write the chemical formula of the most common ore of the metal aluminium from which the metal is extracted.

(b) During the extraction of aluminium by electrolysis, why is it advisable to use a number of graphite electrodes as anode, instead of a single electrode?

(c) Write the equation for the reaction that occurs at the cathode during the extraction of aluminium by electrolysis.

(iii) Answer the following questions based on the laboratory preparation of hydrogen chloride gas: [2]

(a) In this preparation, why is concentrated sulphuric acid used instead of concentrated nitric acid?

(b) Why are drying agents like phosphorus pentoxide not used to dry hydrogen chloride gas in the laboratory?

(iv) Answer the following. [2]

(a) Give the favourable temperature and name the catalyst used during manufacture of ammonia by Haber's Process?

(b) State the safety precaution taken during the laboratory preparation of hydrochloric acid from hydrogen chloride gas.

Question 5

(i) Give balanced chemical equations with the necessary conditions to show how you would obtain each of the following: [2]

(a) Nitric oxide using copper.

(b) Nitric oxide from ammonia.

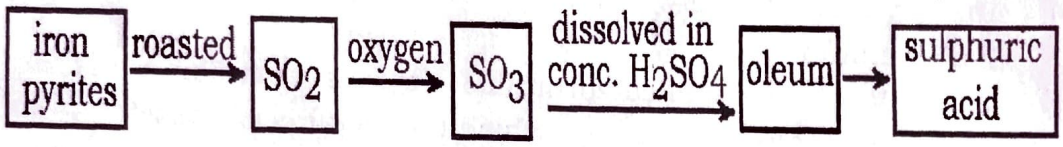
(ii) Give one chemical test to distinguish between the following pairs of substances. [3]

(a) Lead chloride and silver chloride.

(b) Sodium chloride and sodium nitrate (both solids)

(c) Lead nitrate solution and zinc nitrate solution.

(iii) The flowchart shows the steps in the Contact Process for the manufacture of sulphuric acid. [3]



Answer the following:

(a) Write a balanced chemical equation for the roasting of iron pyrites.

(b) State the conditions required for the conversion of SO_2 to SO_3.

(c) Write a balanced chemical equation to show the conversion of oleum to sulphuric acid.

(iv) Ethene is bubbled through bromine dissolved in carbon tetrachloride and the product formed is ethylene dibromide. [2]
Based on this reaction answer the following:

(a) What type of reaction has ethene undergone?

(b) Draw the structural formula of the product formed in this reaction and also give the I.U.P.A.C name of the product.

Question 6

(i) Give balanced chemical equations for the following reactions: [3

(a) Complete combustion of ethane.

(b) Concentrated nitric acid reacts with carbon.

(c) Concentrated sulphuric acid is added to sugar.

(ii) State a relevant observation in each case: [3]

(a) Dilute hydrochloric acid is added to a solution of lead nitrate and the mixture is heated.

(b) Excess chlorine gas is reacted with ammonia gas.

(c) A few drops of barium chloride solution is added to a solution of sodium sulphate and this is followed by the addition of excess dilute hydrochloric acid.

(iii) Give reasons for the following: [2]

(a) Hydrocarbons are excellent fuels.

(b) Hydrogen is not normally liberated when dilute nitric acid reacts with metals.

(iv) Draw the structural formula for: [1]
3-methyl-2-pentene.

(v) Name the organic compound with three carbon atoms, whose functional group is a carboxyl. [1]