MANECKJI COOPER EDUCATION TRUST SCHOOL

JUHU TARA ROAD, JUHU, MUMBAI 400 049

PRELIMINARY EXAMINATION- SEMESTER 2

STD: X DATE: 26-02-2022

SUBJECT: CHEMISTRY MARKS: 40

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 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.

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*Attempt **all** the questions from **Section A** and **any three** from **Section B**.*

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

SECTION A

(Attempt all questions from this section)

Question 1

Choose the correct answers to the questions from the given options. (Do not copy the question. Write the correct answer only) (10)

(i) Functional group present in acetic acid is

a. Ketonic
b. Hydroxyl
c. Aldehyde
d. Carboxyl

(ii) The brown ring test is used for detection of

a. Carbonate ion
b. Nitrate ion
c. Sulphite ion
d. Chloride ion

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

(iv) A hydrocarbon having molecular formula C_4H_8 is
a. Butane
b. Benzene
c. But-2- ene
d. Butanol

(v) Cold dilute nitric acid combines with copper to form
a. Hydrogen
b. Nitrogen dioxide
c. Nitric oxide
d. Oxygen

(vi) Marsh gas which contributes towards greenhouse effect is
a. Propane
b. Butane
c. Ethane
d. Methane

(vii) When dilute sulphuric acid reacts with ferrous sulphide, the gas evolved is
a. Hydrogen sulphide
b. Sulphur dioxide
c. Sulphur trioxide
d. Vapours of sulphuric acid

(viii) Concentrated nitric acid kept in plain glass bottles turns yellowish brown due to dissolved
a. Chlorine
b. Nitrogen monoxide
c. Nitrogen dioxide
d. None of the above

(ix) A compound X reacts with barium chloride to give a white precipitate that is insoluble in dilute HCl and dilute HNO_3. The anion present in X is
a. Sulphite
b. Nitrate

c. Sulphate
d. Sulphide

(x) IUPAC name of iso pentane is
a. 2- methyl propane
b. 2- methyl butane
c. 2- dimethyl propane
d. 2,2- dimethyl propane

SECTION B

(Attempt any 3 questions from this section)

Question 2

(i) Define: (2)
a. Isomerism
b. Constant boiling mixture

(ii) Name the compound/s formed when: (2)
a. Ethane reacts with excess chlorine.
b. Potassium nitrate reacts with concentrated sulphuric acid at less than 200℃

(iii) Draw the structural diagram of the following compounds: (3)
a. Propanoic acid
b. Butanal
c. 3-methyl pentane

(iv) Complete and balance the equations: (3)
a. $C_2H_4 + Cl_2$ ——————>
b. $NH_3 + H_2SO_4$ ——————>
c. $Pb(NO_3)_2 + HCl$ ——————>

Question 3

(i) Identify the anion present in the following compounds:
a. A compound reacts with dilute sulphuric acid and evolves a gas which turns moist lead acetate paper silvery black. (2)

b. A solution of compound M reacts with silver nitrate solution to give a white precipitate soluble in ammonium hydroxide and insoluble in dilute nitric acid. (2)

(ii) State the following:
a. Catalyst used to convert ethyne to ethene
b. Products formed when concentrated sulphuric acid reacts with carbon. (3)

(iii) Give the observations for the following:
a. Ferrous sulphate is added to a solution of sodium nitrate and then concentrated sulphuric acid is added to it.
b. Sodium hydroxide solution is added to ferric chloride solution.
c. Potassium chloride is subjected to a flame test. (3)

(iv) Write balanced equations for the following conversions:
a. Copper from copper oxide and ammonia
b. Sulphur dioxide from sulphur and concentrated sulphuric acid.
c. Nitric oxide by oxidation of ammonia.

Question 4

(i) Give reasons for the following: (2)
a. An inverted funnel arrangement is used to prepare hydrochloric acid.
b. Cryolite is added to the electrolyte for electrolytic reduction of alumina.

(ii) Give the components of the following alloys: (2)
a. Duralumin
b. Magnalium

(iii) Identify the terms: (3)
a. The property of an element to form long chains of identical atoms.
b. Minerals from which metals can be extracted profitably.
c. Type of reaction by which methane changes to carbon tetrachloride.

(iv) Complete the table: (3)

Gas	Complete balanced equation for lab preparation	Method of collection
Hydrogen chloride	a	Upward displacement of air
Ammonia	b	c

Question 5.

(i) Write the complete balanced equations to show the following conversions in Baeyer's Process: (2)

a. Conversion of sodium aluminate to aluminium hydroxide.
b. Conversion of aluminium hydroxide to pure alumina.

(ii) Write the correct answer: (2)

a. The drying agent used to dry HCl gas is _____ (conc. H_2SO_4 , CaO)
b. The electrode at which oxidation takes place is _____ (anode , cathode)

(iii) Name the organic compound: (3)

a. The common name of the first member of the series containing a triple bond between carbon atoms.
b. IUPAC name of the compound having two carbon atoms and hydroxylgroup.
c. IUPAC name of the compound having three carbon atoms and a double bond between the first and the second carbon atom.

(iv) Answer the following based on the industrial preparation of sulphuric acid: (3)

a. Write the complete reaction to prepare sulphur dioxide from iron pyrites.
b. Sulphur trioxide vapours are dissolved in conc. sulphuric acid and not directly in water to give sulphuric acid. Why?
c. Why is vanadium pentoxide preferred as a catalyst in this process?

Question 6

(i) Distinguish between the following: (2)

a. Hydrogen chloride gas and hydrogen sulphide gas (Chemical test)
b. Sodium carbonate and sodium sulphite (On adding dilute sulphuric acid)

(ii) Give one word for the following statements: (2)

a. The substance is prepared by adding other metals or nonmetals to a base metal in appropriate proportions.
b. The nature of concentrated sulphuric acid due to which it is kept in air tight bottles.

(iii) Complete the following table which relates to the homologous series of hydrocarbons: (3)

General formula	IUPAC name of the homologous series	Characteristic bond type	IUPAC name of the first member of the series
C_nH_{2n-2}	a	b	c
d	Alkane	e	f

(iv) With respect to electrolytic reduction of alumina, answer the following: (3)

a. Give the constituents of the electrolyte.
b. Write the reaction taking place at the cathode.
c. Why is it necessary to use a number of graphite electrodes as anode instead of a single electrode?
