

ICSE Chemistry: Model Paper 12

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*

Q - 1 [A] Answer the questions below relating your answers from the list of substances given below. [10]

Na, Ag, C_2H_5OH , CH_4 , Na_2CO_3 ,

SO_3 , H_2SO_4 , CS_2 , NH_4NO_3 , $FeCl_3$

- (i) An alcohol generally used for drinking purpose.
- (ii) A substance deliquescent in nature.
- (iii) A green house gas.
- (iv) An insoluble chloride
- (v) A substance on heating produce laughing gas
- (vi) A solvent for dissolving sulphur
- (vii) A hygroscopic substance.
- (viii) A substance efflorescent in nature.
- (ix) A silvery white soft metal which is kept in Kerosene oil.
- (x) A gas dissolves in water with hissing noise and produce an acid moist.

[B] State the property illustrated by each of the underline substance when they react as shown below.

Give a balanced equation for each of the reactions taking place. [10]

1. Copper (II) oxide and dilute hydrochloric acid.
2. Copper (II) oxide and concentrated hydrochloric acid.
3. Chlorine and slaked lime.
4. Bleaching powder and Cobalt chloride.
5. Concentrated sulphuric acid and common salt.

[C] Give one chemical test to distinguish between [5]

- i) Dilute sulphuric acid and dilute hydrochloric acid
- ii) Lead nitrate and copper nitrate.
- iii) Ammonium nitrate and zinc nitrate.
- iv) Lead oxide and copper oxide.

[D] (I) Distinguish between 'nascent chlorine' and 'available chlorine'. [2]

- ii) Name the alloy which contains - [3]
 1. Zinc and Copper
 2. Lead, Zinc and antimony
 3. Copper and Zinc

[E] I) State : a) Avogadro's Law b) Boyle's Law [2]
ii) Select the correct answers and show the working wherever needed. [8]

1. The volume of 20g of H_2 at s.t.p is : a) 224 litres b) 22.4 litres c) 2.24 litres d) 112 litres.

2. The volume of 6.4 g of SO_2 at s.t.p is : a) 22.4 litres b) 22.4 litres c) 2.24 litres.

3. When 200 ml of a gas at constant pressure is heated from $0^\circ C$ to $100^\circ C$ the volume must be multiplied by : a) 0\100 b) 100\0 c) 273\373 d) 373\273.

4. Under certain conditions N_2 and H_2 combine to form NH_3 . The volume of NH_3 liberated by 3 litres of N_2 is : a) 2 b) 3 c) 5 d) 6 e) 7.

Section II

Q -2 Give reasons for the following. [10]

i) Solid lead chloride is a poor conductor of electricity but in the molten state conducts electricity.

ii) It is dangerous to stand in a garage which is closed and has a car engine running.

iii) Alcohols are called hydroxy derivatives of alkanes.

iv) During electroplating of an article with a superior metal the article is always kept at the cathode.

v) Crude gold is purified by addition of conc. hydrochloric acid to it but crude copper is not purified by the same method.

vi) Addition of sodium to menthol serves us a test for alcohol in general.

vii) Acetylene is comparatively more reactive than ethylene

viii) Sulphur dioxide gaseous pollutant does not completely exit in the gaseous form for prolonged period of time in the atmosphere.

ix) Chlorine water stored in ordinary glass bottle shows evolution of bubbles but the same is not seen in a dark glass bottle.

x) Roasting is generally carried out on sulphides.

Q-3 a) Classify the following as saturated and unsaturated hydrocarbons. [2]

C_3H_4 , C_4H_{10} , C_2H_5 , C_4H_8 , C_7H_{16} , C_2H_4 , $C_{10}H_{22}$.

b) Give balanced equations to carry out the following conversions. [8]

SULPHURIC ACID SULPHUR TRIOXIDE

Q- 4 Explain briefly. [10]

1. In the reduction of zinc oxide to zinc in the fire-clay retorts the temperature of the furnace is maintained by external heating.
2. Solder is used in fuse wire.
3. Copper is added to gold for making jewelry.
4. Limestone is added to blast furnace in the extracting of iron from its roasted ore.
5. The slag formed in the blast furnace is a useful waste.

Q-5 I) Explain the role of carbon dioxide in the green house effect. [2]

ii) State the role of the following bacteria in the soil. [6]

- a) Ammonifying bacteria
- b) Denitrifying bacteria
- c) Nitrosifying bacteria

iii) Ammonium hydroxide can be used to distinguish between Zn^{++} and Pb^{++} but sodium hydroxide can not be used. Explain. [2]

Q -6 Choose the correct alternative and give a reason for your choice. [10]

1. The following loses weight when left exposed to air.

- a. $MgCl_2 \cdot 6H_2O$
- b. $CaCl_2 \cdot 6H_2O$
- c. $Cu(NO_3)_2 \cdot 3H_2O$
- d. $Na_2SO_4 \cdot 10H_2O$
- e. None

2. Hydrolysis will give an acid reaction when water is added to -

- a. Na_2SO_4
- b. K_2SO_4
- c. $NaNO_3$
- d. $Cu(NO_3)_2$
- e. None

3. A salt derived from a strong based and a weak acid will give a salt that is

- a. Acidic
- b. Boric
- c. Neutral
- d. Volatile
- e. None

4. Potassium hydroxide can react with

- a. NaOH
- b. Ca(OH)_2
- c. Zn(OH)_2
- d. Mg(OH)_2
- e. None

5. An acid can react with

- a. AgCl
- b. BaCO_3
- c. PbSO_4
- d. Na_2SO_4
- e. None

Q -7 I) State two differences between the following . [4]

- a. Electroplating and electrorefining
- b. Electrolysis of aqueous copper sulphate using platinum electrodes and electrolysis of aqueous copper sulphate using copper electrodes.

ii) Define or explain the meaning of the following terms. [4]

- a. Acid
- b. PH scale
- c. Catalyst
- d. Electrolysis

iii) How much energy in joules must be needed to convert all the atoms of sodium to sodium ions present in 2-3 mg of sodium vapours ? Ionisation energy of sodium is 495 KJ mol^{-1} [2]