

VIBGYOR HIGH

First Preliminary Examination

AY 2019-2020

CHEMISTRY (Science paper-2)

Grade: X

Max. Marks : 80

Date : 11/12/2019

Time Allowed: 2 hour

INSTRUCTIONS:

- 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.
- The intended marks for the questions or parts of questions are given alongside the questions.

Section A is compulsory. Attempt any four questions from Section B

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

This question paper consists of 9 printed pages.

SECTION I

(Attempt all questions from this section)

Q. 1 a. Choose the correct answers:

[5]

- i. Ionisation potential increases over a period from left to right because the:
 - a. Atomic radius increases and nuclear charge increases.
 - b. Atomic radius decreases and nuclear charge decreases.
 - c. Atomic radius increase and nuclear charge decreases.
 - d. Atomic radius decreases and nuclear charge increases.
- ii. The vapour density of carbon dioxide [C= 12, O = 16] is :
 - a. 12

b. 16

c. 44

d. 22

III The IUPAC name of acetylene is:

a. Propane

b. Propyne

c. Ethene

d. Ethyne

iv An unwanted earthly material associated with ore as impurity is known as:

a. Gangue

b. Iron pyrite

c. Froth

d. None of these.

v. Select the acid which contains four hydrogen atoms in it.

a. Formic acid

b. Sulphuric acid

c. Nitric acid

d. Acetic acid

b. Name the following:

[5]

i. The most metallic element in the third period.

ii. A gas which is diatomic, inactive and contain triple bond.

iii A dibasic acid which contain sulphur.

- iv A suitable cathode used in the electro refining of copper.
- v. A black coloured substance formed when sugar is dehydrated.

c. Write the equation for the following reactions.

[5]

- i. When Zinc oxide dissolves in Sodium hydroxide.
- ii. Laboratory preparation of Zinc carbonate from Zinc nitrate.
- iii Action of Aluminium oxide and Potassium hydroxide
- iv Roasting of Zinc blende.
- v. Catalytic oxidation of Ammonia

d. Draw the structural formula for the following.

[5]

- i Methanoic acid
- ii. 1,2 dichloroethane
- iii But-2-yne
- iv Marsh gas
- v. Propanal

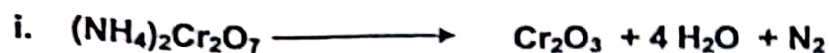
e. State your observation for the following reaction.

[5]

- i. Ammonium hydroxide is added to Iron (II) sulphate solution.
- ii. Hydrogen chloride comes in contact with Ammonia solution.
- iii Concentrated sulphuric acid is added to blue vitriol.
- iv Ethyne is bubbled through a solution of bromine in carbon tetra chloride.
- v. Ethene is burnt in excess of Oxygen

f. Solve the following:

[5]



Calculate:

- a) The volume of nitrogen at S.T.P evolved when 63g of ammonium dichromate is heated.
 - b) The mass of chromium (II) oxide (Cr_2O_3) formed at the same time.
(N= 14, H=1, O= 16, Cr = 52)
- ii. The reaction $4\text{N}_2\text{O} + \text{CH}_4 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O} + 4\text{N}_2$ takes place in the gaseous state. If all volumes are measured at the same temperature and pressure, calculate the volume of dinitrogen oxide (N_2O) required to give 150cm^3 of steam. Name the gas law applied above.

g. Answer the following:

[5]

- i. Gas B has pungent smell and turns moist red litmus paper blue.
 - a) What is the name of gas B?
 - b) Write the equation for the reaction that takes place when gas B is passed over heated copper oxide.
- ii. Give two reaction to show that concentrated nitric acid is an oxidizing agent
- iii. Name the gas formed when dil. Nitric acid reacts with metal Copper.

h. Fill in the blanks:

[5]

- i. The amount of energy required in the reaction $\text{X} + \text{energy} \longrightarrow \text{X}^+ + \text{e}^-$ is known as the _____ of the element X.
- ii. pH value of lemon juice is _____ than 7.
- iii. In covalent compounds, the bond is formed due to the _____ of electrons.

- iv A chemical reaction between hydronium ion of an acid and OH^- ions of a base to form unionized water is called _____.
- v. The _____ salt is formed by the partial replacement of the replaceable hydrogen ion of an acid by a basic radical.

SECTION II

(Attempt any four questions from this section)

Q.2

[10]

a. Answer the following

[3]

- Which two gases are combined during contact process?
- Write the equation for the reaction between Sulphur and the final product of the Contact process.
- Name the product formed when sulphur trioxide dissolves in concentrated sulphuric acid.

b. With the help of electron dot structure explain the formation of Hydronium ion.

[2]

c. Match the Column A with column B

[5]

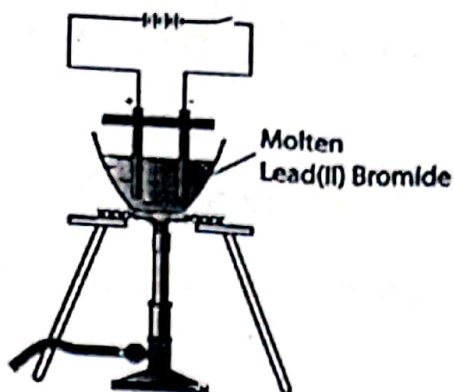
Column A	Column B
i. Chlorine	Anion which forms white ppt. with AgNO_3
ii. Completed shell	Non-volatile in nature
iii. Chloride ion	White ppt. insoluble in excess Sodium hydroxide
iv. Sulphuric acid	Halogen
v. Calcium ion	Noble gases

Q.3

[10]

a. Study the given figure and answer the following questions.

[5]



- Why is silica crucible used in the above process?
- Which anode is preferred and why?
- Why is crucible heated?
- Write the equation for the reaction that takes place at the anode.

b. Answer the following questions

[3]

- How will you dry HCl gas?
- Give one test for hydrogen chloride.
- Name an acidic and an alkaline gas which combine to form white solid?

c. Fill in the Blanks:

[2]

With platinum electrodes, hydrogen is liberated at the _____ and oxygen at the _____ during the electrolysis of acidified water.

Q.4

[10]

a. Give a balanced equation:

[4]

- Zinc is treated with dilute sulphuric acid.

- ii. Write the balanced chemical equation for the steps involved in Baeyer's process.

b Answer the following

[3]

- How can you distinguish dilute sulphuric acid from dilute HCl and dilute HNO_3 ?
- Determine the percentage of oxygen in ammonium nitrate. [N=14, H=1, O=16]

- c. Vapour density of a gas Z is 23. Calculate: (i) number of moles, (ii) weight in grams and (iii) number of molecules in 6.72dm^3 of gas S.T.P.

[3]

Q.5

[10]

- a. Some methods used for the laboratory preparation of salts are:

[2]

A: titration

B: Precipitation

C: Direct combination

Copy and complete the following table

Salt	Method of preparation
Ammonium sulphate	
Iron (III) chloride	

b.

[5]

- Which compound should be heated with sodalime to obtain ethane gas in the laboratory?
- Write the equation for the reaction in (i) above.
- Write a balanced equation for the complete combustion of ethane.
- Name a compound used with ethanol to prepare ethylene by dehydration process.
- Ethylene forms an addition product with chlorine. Name the addition product and write its structural formula.

- c. Distinguish between Lead nitrate and Zinc nitrate by using suitable

[2]

reagent.

- d. Name the type of ore concentrated by the principle of preferential wetting. [1]

Q.6

- a. Write the balanced chemical equation for the following: [10]

- Monochloroethane is hydrolysed with aqueous KOH.
- Reaction to obtain an unsaturated hydrocarbon from alcohol.
- Reaction between ethyl alcohol and acetic acid.
- Preparation of ethyne from Calcium Carbide.

- b. An organic compound contains 4.8% of carbon and 95.2% of bromine by mass. The vapour density of this compound is 252. [4]

(i) Calculate the Empirical formula.

(ii) Calculate the molecular formula of the compound. [C=12, Br=80]

- c. Identify the compound. [2]

- A chloride which is insoluble in cold water and soluble in hot water.
- A compound formed when nitre reacts with Conc. Sulphuric Acid below 200°C. [1]

Q.7 [10]

- a. In the portion of the periodic table given below, the letters A,B ,..... represent the elements in periods 2 and 3 and groups 1,2,13,14,15,16,17 and 18 which are not the actual symbols of the elements. [5]

	1	2	13	14	15	16	17	18
Period 2	A	B	C	D	E	F	G	H
Period 3	I	J	K	L	M	N	O	P

Study the table and name the following(in the given alphabets only):

- i. Which is the most electropositive element?
- ii. Which elements are noble gases?
- iii. Which element has a valency of 4?
- iv. Which is more metallic, I or J?
- v. Identify the elements represented by the letters N and O.

b. Answer the following questions

- i. What must be added to sodium chloride to obtain hydrogen chloride? [1]
- ii. Write the balanced equation for the reaction which takes place in the reaction mentioned above (i). [1]
- iii. Name the experiment which demonstrates that hydrogen chloride is highly soluble in water. [1]

c. Differentiate between electrolytic dissociation and ionisation [2]
