R. I. S. B.
SECOND ASSESSMENT EXAMINATION 2019-20

STD. : X **MARKS: 80**

SUB. : CHEMISTRY **TIME: 2 HRS.**

- *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 I. A. Choose the most appropriate answer: **[5]**

1. Ammonium hydroxide will produce a reddish brown precipitate when added to a solution of:

   a. $CuSO_4$
   b. $Zn(NO_3)_2$
   c. $FeSO_4$
   d. $FeCl_3$

2. The gas law which relates the volume of a gas to moles of the gas is:

   a. Avogadro's Law
   b. Gay-Lussac's Law
   c. Boyle's Law
   d. Charle's Law

3. During the electrolysis of acidified water which of the following takes place:

   a. Oxygen is released at cathode.
   b. Oxygen is released at anode.
   c. Hydrogen is released at anode.
   d. Sulphur dioxide is released at anode.

4. Nitric acid can be obtained by adding concentrated Sulphuric acid to:

   e. $NaCl$
   f. Na_2SO_4
   g. Na_2CO_3
   h. $NaNO_3$

5. Acid salt is not formed from

   i. Carbonic acid
   j. Phosphoric acid
   k. Sulphuric acid
   l. Hydrochloric acid

B. State the relevant observation. [5]

1. Methyl orange indicator is added to sodium hydroxide solution.
2. Dilute Sulphuric acid is reacting with active metal
3. A filter paper soaked in potassium dichromate solution was brought in contact with SO2 gas.
4. Black colour salt reacting with coke.
5. Thermal decomposition of zinc carbonate.

C. Give reasons for the following: [5]

1. In electrolysis of acidified water, dilute sulphuric acid is preferred to dilute nitric acid.
2. Sulphurous acid forms two types of salts on reaction with an alkali.
3. Graphite anode is preferred to the other electrode during electrolysis of molten lead bromide.
4. During lab preparation of nitric acid temp is used below 200°C.
5. Electrical conductivity of acetic acid is less compare to in comparison to that of dil sulphuric acid.

D. Answer the following questions:

1. Define Mole. [1]

2. How is the molecular weight related to the vapour density? Calculate the vapour Density of Butane gas (C_4H_{10}). [C=12,H=1] [2]

3. 2.8 dm3 of carbon di oxide is formed at STP on the complete combustion of ethyne gas .What is the Volume of ethyne gas required at STP?

$$2C_2H_2 + 5O_2 \rightarrow 4CO_2 + 2H_2O$$ [2]

E. Write the balanced equation for each of the following: [5]

1. Roasting of Zinc blende.
2. Copper reacting with dilute nitric acid.
3. Action of conc.H2SO 4 on carbon.
4. Amphoteric oxide reacting with hot conc.alkali.
5. Sodium sulphite with dilsulphuric acid.

F. Match the conversions in column 'X' using sulphuricacid,with the type chemical property of sulphuric acid A to E it represents in column 'Y' [5]

X	Y
1. Nitre-→Nitric acid	A: As an oxidizing agent
2. Copper(II)oxide--→Copper(II)sulphate	B: As a dibasic acid
3. Copper -→copper(II)sulphate	C: As an acid when dilute
4. Sugar --→sugarcharcoal	D: As a least or non volatile acid
5. sodium hydroxide---→sodium bisulphate and Sodium sulphate	E:As a dehydrating agent

G. Name the following: [5]

1. Catalyst used in Ostwald process.
2. Electrolyte used during electroplating of an article with Nickel.
3. A deliqscent salt reacting with alkali gives reddish brown precipitation.
4. An ore which is calcinated
5. Basicity of phosphoric acid.

H. Fill in the blanks: [5]

1. The substance added to the ore to get rid of the matrix resulting in the formation of a fusible compound called _____
2. Electrolysis of Molten Lead bromide is a _____ reaction.
3. Molecular formula =n X _____
4. An Example of active electrode is _____
5. An example of an Acid salt is _____

Section –II

Any 4

Q II.

1. Complete the following table which refers to two practical application of electrolysis. [4]

	Anode	Electrolyte	Cathode
Silver plating of spoon		Sodium Argento cyanide	
Purification of copper			Pure strip of copper

2. Select the correct answer from the list in bracket: [3]
   a. An aqueous electrolyte consists of ions mention in the list. The ion which could be discharged most readily during electrolysis.[Fe^{2+}, CU^{2+}, H^{1+}]
   b. The electrode at which anions donate excess electrons and are oxidized to neutral atom in the (cathode, anode)
   c. The ion which is discharged at the anode during electrolysis of copper sulphate solution using copper electrodes anode and cathode. [$CU^{2+}, OH^{1-}, SO_4^{2-}, H^{1+}$]
3. Write the balanced equation for the following: [3]
   a. Hydrated copper sulphate passed over conc. suphuric acid
   b. Carbon with hot concentrated nitric acid.
   c. Sodium nitrate reacting with conc. Sulphuric acid.

4. 2500cc of Oxygen was brunt with 600c.c of ethane[C_2H_6]. Calculate the volume of unused oxygen and the carbon dioxide formed. [3]

Q VI.

1. Write balanced equation for the following: [5]
   a. Active metal with dil. acid.
   b. Preparation of $PbSO_4$ from $PbCO_3$.
   c. Calcium chloride reacting with sodium carbonate.
   d. Zinc sulphate is reacting with less volatile base.
   e. Copper sulphate treated with excess ammonium hydroxide.
2. Compare between Cu and $CuSO_4$. [3]
3. Name any two ore of Aluminum. [2]

Q VII.

1. Classify the following substance under three headings: [3]

   Acetic acid, Ammonium Chloride, Ammonium Hydroxide, carbon tetra chloride, Dil HCl, Sodium acetate, Dil sulphuric acid.
   a. Strong electrolyte
   b. Weak electrolyte
   c. Non electrolyte
2. Give reasons electrolysis of acidulated water is consider to be an example of catalysis. [1]
3. During the electrolysis of Molten lead bromide [3x2=6]
   a. Write the reaction taking place at both the electrode.
   b. Sate the type of reaction at each electrode.
   c. What will be observation at both the electrode?

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Q III.

1. Give the balanced equation for the following conversions A to E: [5]

   Copper ---A--→Copper nitrate ---B--→copper oxide---C-→copper sulphate
   Sulphur---D---→sulphuric acid<---E--- sulphur di oxide

2. Answer the following questions in reference to nitric acid lab preparation: [5]

   a. Why conc. HCl is not used as reactant.

   b. Name the type of apparatus used in lab preparation of nitric acid.

   c. State why a yellow colour appears in conc. nitric acid when left standing in an ordinary glass bottle.

   d. Mention the collection procedure of nitric acid in lab.

   e. Write the balanced equation for the above preparation from Nitre?

Q IV.

1. A compound has the following percentage composition by mass: Carbon- 54.55%, Hydrogen – 9.09% and Oxygen – 36.26%. Its vapour density is 44. Find the Empirical and Molecular formula of the compound. (H = 1; C = 12; O = 16) [5]

2. Define Gay-Lussac Law. [2]

3. Complete the table: [3]

Name of process	Inputs	Catalyst	Equation for catalyzed reaction	Output
Contact process	$SO_2 + O_2$			

Q V.

1. Define Avogadro law. [1]

2. How much calcium oxide is formed when 82g of calcium nitrate is heated? Also find the volume of nitrogen dioxide evolved. [4]

   $2Ca(NO_3)_2 \text{---------} \rightarrow 2CaO + 4NO_2 + O_2$ [Ca=40, N=14, O=16]

3. Calculate the percentage of water of crystallization in hydrated copper sulphate $[CUSO_4.5H_2O]$ [Cu=63.5, S=32, O=16, H=1] [2]