CLASS: X
DATE: 24/10/2016

FIRST TERM EXAM 2016-17
Subject: Chemistry

Marks: 80
Dur : 2Hrs

Section A (40 Marks)
Attempt all the questions

Q1 **A** **Name the following :** 3

1. The gas produced by the action of strong alkali on an amphoteric metal.
2. Least reactive metal of Group II A.
3. A non-metal which forms a gaseous neutral oxide and a coloured acidic oxide.
4. A non-metal which oxidises into its own acid.
5. An insoluble metallic chloride soluble in ammonical liquor.
6. A gas that has an irritating smell and turns Potassium iodide paper brown.
7. A black coloured solid which on reacting with sulphuric acid produces a blue solution.
8. A salt whose aqueous solution give a white precipitate with either dilute hydrochloric acid or dilute sulphuric acid.

B **Correct the following statements by supplying words** 3

1. Oxidation of ammonia produces a neutral gas which on further oxidation gives reddish brown fumes.
2. Under the same condition of temperature and pressure, all gasses contain same number of molecules.
3. Aluminium reacts with water to give a pungent smelling gas.

C **Choose the correct alternative from the following** 5

1. The radioactive element in Group I A is
   a) Sodium b) Rubidium c) Francinium d) Casium
2. A nitrate which produces laughing gas on decomposition
   a) Ammonium nitrate b) Calcium nitrate c) Sodium nitrate d) Ferric nitrate
3. A gas cylinder of capacity 60dm^3 filled with gas Y, the mass of which is 30g. When the same cylinder is filled with hydrogen gas at the same temperature and pressure the mass of hydrogen is 6g. Hence the relative molecular mass of the gas is_.
   a) 5 b) 10 c) 15 d) 12
4. The covalent compound having shared pair of electrons unequally distributed between its atom is_
   a) Nitrogen b) Chlorine c) Ammonia d) Methane
5. A metallic ion whose aqueous solution gives a white precipitate on reaction with ammonical liquor but insoluble in excess.
   a) Zn^{+2} b) Pb^{+2} c) Ca^{+2} d) Ag^{+2}

D **Write down the balanced chemical equation for the following** 8

1. Dilute hydro chloric acid reacts with sodium thio sulphate
2. Ammonia oxidises in air
3. Zinc nitrate crystals are heated strongly
4. Sodium chloride reacts with silver nitrate followed by excess of ammonium hydroxide
5. Lead carbonate to lead sulphate (2 steps)
6. Sulphur with concentrated sulphuric acid

E Give reasons
1. Ferric chloride is stored in air tight bottles
2. Aqueous solution of sodium acetate is alkaline in nature
3. Ionisation potential decreases down the group
4. Ammonium sulphate and potassium sulphate can be distinguished by using an alkali
5. Planks of wooden shelves stains black where concentrated sulphuric acid has accidentally fallen

F Write down the observation for the following
1. Dilute hydrochloric acid is added to lead nitrate crystals and the solution is heated
2. Concentrated sulphuric acid is added to sugar solution
3. Manganese dioxide reacts with concentrated hydro chloric acid and the gas evolved is passed on the moist litmus paper
4. Zinc sulphide reacts with dilute sulphuric acid and the gas is passed through acidified potassium permanganate solution
5. Water is added to the product formed, when aluminium is burnt in a jar of nitrogen gas

G Identify the following substance
1. A metal which gives hydrogen gas on reacting with both acid as well as an alkali.
2. A pale green solid which turns reddish brown on heating. Its aqueous solution gives a white precipitate with barium chloride solution. The precipitate is insoluble in mineral acid.

H A compound has the following percentage composition by mass, Carbon 14.4%, Hydrogen 1.2% and Chlorine 84.5%. Determine the empirical formula of this compound. Work correct to 1 decimal place. The relative molecular mass of this compound is 168, so what is its molecular formula? [C = 12; H = 1; Cl = 35.5] 4

Section B (40 Marks)

Attempt Any Four questions from this Section

Q2 A With reference to the lab method of preparation of hydrogen chloride gas 4
1. Write down the equation involved.
2. Why calcium oxide is not used as a drying agent?
3. How is hydrochloric acid is prepared in laboratory?
4. What do you observe when the aqueous solution of this gas passes into Sodium thio sulphate solution.

B Draw the electron dot structure of hydronium ion

C Explain
1. Copper sulphate solution is not stored in iron vessel.
2. Liquid ammonia is used as a refrigerant in ice plants.
3. Concentrated sulphuric acid acts as a dehydrating agent.
4. Optimum temperature of 450^{0}C is used in Haber's process.

Q3 A With reference to Sulphuric acid, answer 5
1. Name the method for the manufacture of sulphuric acid
2. Sulphur trioxide is not converted to H_2SO_4 by adding water. Instead two step procedure is used. Write equation for the two steps
3. Which property of sulphuric acid is involved in the preparation of
   a. Sodium bi sulphate from sodium hydroxide

Copper sulphate from copper

B Give a chemical test to distinguish between
1. Sodium sulphate & Sodium chloride
2. Zinc nitrate & Lead nitrate
3. Copper oxide & Manganese dioxide
4. Calcium Sulphide & Calcium Sulphite

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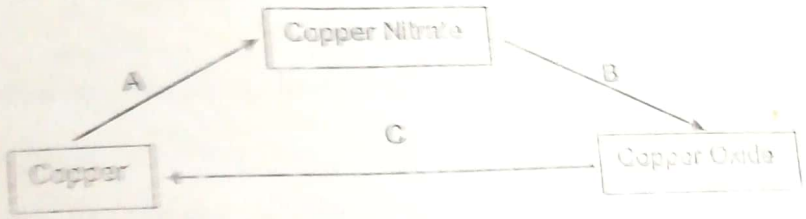
C State Guy Lussac's Law.

Q4 A Write down the balanced chemical equation for the following conversions



B An element A has four electrons in the outer most shell of its atom and combined with another element B, having seven electrons in its outer shell. The compound does not conduct electric current and fails to give white precipitate with a solution of $AgNO_3$.
1. What is the nature of the chemical bond in the compound?
2. Write down its electron dot structure

[6]

C With reference to the first three periods of periodic table
1. Which element has the biggest atomic size?
2. Which element has the highest I.P?
3. Which atomic size of Ne is slightly larger than fluorine?
4. Name the element which exists in its two chloride.
5. Why oxidising power increases as we move from left to right?

Q5 A When substance X is heated, a reddish brown gas is evolved along with a gas which relights the glowing wooden splinter. A yellow residue remains in the test tube.
1. Name the reddish brown gas.
2. Name the gas which relights the glowing wooden splinter.
3. On addition of ammonium hydroxide to a solution of X, a white precipitate is formed which is insoluble in excess. What is cation present in X?
4. Write balanced equation for the action of heat on substance X.
5. If dilute hydrochloric acid were added to a solution of X, what would you observe?

B In the given equation $CaCO_3 + 2HCl \longrightarrow CaCl_2 + H_2O + CO_2$. Calculate
1. The weight of Calcium chloride obtained from 10g of Calcium carbonate.
2. The volume of carbon dioxide produced at the same time.
3. What mass of hydrochloric acid will be consumed at the same time?

[Ca = 40; C = 12; O = 16; Cl = 35.5]

C Calculate the percentage of oxygen in ammonium nitrate. [N = 14; H

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Q6 A **Give balanced equation for the preparation of following salts. Also mention their method of preparation.** 6

1. Calcium carbonate
2. Copper sulphate
3. Ammonium chloride

B Burning magnesium ribbon is taken in a gas P, when it forms a salt R. The salt R dissolves in water and gives curdy white precipitate S, with silver nitrate solution. This precipitate is soluble in excess of ammonium hydroxide solution. Name the following. 4

1. Gas P.
2. Salt R.
3. Give balanced equation between aqueous solution of R and silver nitrate.
4. Balanced equation between S and excess of ammonium hydroxide.

Q7 A Identify the anions in the following

1. When Silver nitrate solution is added to A, a white precipitate insoluble in dilute nitric acid is obtained.
2. When dilute Hydrochloric acid is added to B, a gas is produced which turn acidified Potassium di chromate solution orange to green solution.
3. When Barium nitrate is added to the solution of C, a white precipitate is obtained insoluble in dilute nitric acid.

B **An element X, has the electronic configuration 2, 8, 18, 8, 1. Without identifying X,** 4

1. Predict the period and the group of the element.
2. Will X be oxidising or reducing agent? Why?

C Calculate the number of moles and number of molecules in 1.4g of ethylene gas (C_2H_4). What is the volume occupied by the same amount of ethylene? [C = 12; H = 1] 3

Blower
Pyrite Burners
Dusting Tower
Cooling pipes
Scrubbing tower
Drying tower

$4FeS_2 + 11O_2 \rightarrow 2Fe_2O_3 + 8SO_2$

$2SO_2 + O_2 \underset{450°-500°}{\overset{V_2O_5}{\rightleftharpoons}} 2SO_3$

$SO_3 + H_2SO_4 \rightarrow H_2S_2O_7$

$H_2S_2O_7 + H_2O \rightarrow 2H_2SO_4$

Q3 A · W

1. Name the m
2. Sulphur trio
   used. Write
3. Which prope
   a. Sodium b