SECOND PRELIM EXAM 18-19

Std: X
Date: 10/01/19 **Subject: Chemistry**
Marks: 80
Dur. : 2 Hrs

Section A

Attempt all the questions from this section

Q1. Answer the following questions: 10

(a) Name the following:

(i) The element in period 3 which does not form an oxide.

(ii) An aqueous salt solution used for testing sulphate radical.

(iii) Electrolytic deposition of a superior metal on a baser metal.

(iv) A metal which reacts reversibly with steam.

(v) A polar covalent compound which on dissolving in water produces ions.

(vi) A solution which gives brown colouration with ammonium salts.

(vii) The catalyst used during hydrogenation of alkene.

(viii) The type of reactions alkene undergoes.

(ix) Two acids other than sulphuric acid which can be prepared by using sulphuric acid.

(x) A gaseous hydrocarbon commonly used for welding purposes.

(b) Give balanced equations: 6

(i) Ethene with chlorine.

(ii) Esterification reaction.

(iii) Catalytic oxidation of ammonia.

(iv) Copper reacts with conc. nitric aid.

(v) Copper sulphate reacts with ammonium hydroxide in drops and then in excess.

(c) Give reason: 5

(i) Ionisation potential increases as we move across the period.

(ii) Silver nitrate solution is not used as an electrolyte in electroplating of an article with silver.

(iii) Hydrogen chloride gas fumes in moist air.

(iv) The yellow colour of nitric acid obtained in the laboratory is removed by bubbling air through it.

(v) Isomers belonging to the same homologous series may differ in physical properties but not in chemical properties.

(d) Choose the correct appropriate answer:

(i) Hydroxide sparingly soluble in water:

(a) Magnesium hydroxide

(b) Ferrous hydroxide

(c) Ferric hydroxide

(d) Calcium hydroxide

(ii) The weak electrolyte from the following:

(a) NaCl solution

(b) Dil. HCl solution

(c)Dil. H_2SO_4

(d) Aqueous acetic acid.

(iii) The property of carbon to form rings and chain is called:

(a)Catenation

(b)Polymerisation

(c)Cracking

(d)Hydrogenation

(iv) Which of the following is a tribasic acid:

(a)HCl

(b)H_2SO_4

(c)$H3PO_4$

(d)HNO_3

(v) Metal oxide which can react with acid as well as alkali is:

(a) Silver oxide

(b) Copper (II) oxide

(c) Aluminium oxide

(d) Calcium oxide

(e) Give observation: 5

(i) Conc. Sulphuric acid is added to sugar crystals.

(ii) Burning of ammonia in the presence of oxygen.

(iii) Dilute HCl is added to sodium carbonate solution. HCl Na_2CO_3

(iv) Ammonium hydroxide is added to zinc sulphate solution first little and then in excess.

(v) Sulphur dioxide is passed through acidified potassium dichromate solution.

(f) Draw the branched structural formula of the following organic compounds: 5

(i) 3,3 dimethyl pentane.

(ii) Ethanoic acid.

(iii) 1,2,- dibromoethane.

(iv) Propan-2-ol.

(v) Pentanal.

(g) Solve the following:

(i) Calculate the empirical formula and ~~molecular formula~~ of the compound having following percentage composition: 4

H= 2.47%, P=38.25% , O= 59.28% (H=1, P=31, O=16).

SECTION-B

Attempt any 4 questions from this section

Q2.

(a) A white solid P, on strong heating, decomposes to give reddish brown gas R and a residue Q. The residue Q is yellow when hot and white when cold. The solution of white solid P in water gives white ppt S, with conc. NaOH. The white ppt dissolves in excess of NaOH solution to form colourless solution.

(i) Identify the solid P. 5

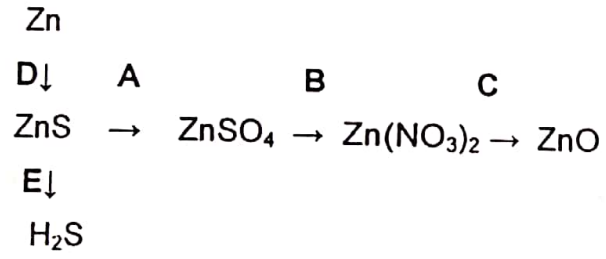
(ii) Name the residue Q.

(iii) Name the coloured gas R.

(iv) Name the white ppt. S.

(v) Name the salt formed when S dissolves in excess of NaOH.

(b) Give balanced chemical equations for the following conversion: 5



Q3.

(a) Select the correct answer from the list given in brackets; 5

(i) The ion which could be discharged most readily during electrolysis.
[Fe^{2+}, Cu^{2+}, Pb^{2+}, H^+].

(ii) The metallic electrode which does not take part in an electrolytic reaction.
[Cu, Ag, Pt, Ni]

(iii) The ion which is ~~discharged~~ formed at the anode during electrolysis of copper sulphate solutions using copper electrodes as anode and cathode.

[Cu^{2+}, OH^-, SO_4^{2-}, H^+]

(iv) When dilute sodium chloride is electrolysed using graphite electrodes, the cation discharged at the cathode most readily.

[Na^+, OH^-, H^+, Cl^-]

(v) During silver plating of an article using potassium argentocyanide as an electrolyte, the anode material should be.

[Cu, Ag, Pt, Fe]

(b) Give balanced chemical equations for the following : 5

(i) Bromoethane is hydrolysed with aqueous KOH.

(ii) A mixture of soda lime and sodium acetate is heated.

(iii) Ehtanol under high pressure and low temperature is treated with acidified potassium dichromate.

(iv) Water is added to calcium carbide.

(v) Ethanol reacts with sodium at room temperature.

Q4.

(a) Give balanced chemical equations for the following conversions and write down the test to identify the gas (A). 5

Sal ammoniac + slaked lime → A gas (A) + Cl_2 → Gas (B) + Red hot Mg → (C) + water

↓

Gas (D) + (E)

(b) Draw the electron dot structure of Ammonium ion and Methane and state the type of bond formed in Hydronium ion. [H= 1,C= 6, N= 7,] 5

Q5.

(a)

(b) (i) Name the solution used to react with Bauxite as a first step in obtaining pure aluminium Oxide, in the Baeyers process.

(ii) Write the equation for the reaction where the aluminium oxide for the electrolytic extraction of aluminium is obtained by heating aluminium hydroxide.

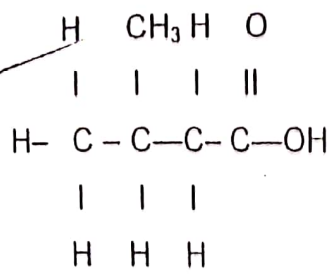
(iii) Name the compound added to pure alumina to lower the fusion temperature during the electrolytic reduction of alumuna.

(iv) Write the equation for the reactiuon that ocuurs at the cathode during the extraction of aluminium by electrolysis

(v) Explain why it is preferable to use a number of graphite rods as anode instead of a single electrode during the above electrolysis.

(b) Write the IUPAC names of the following: 5

(i)



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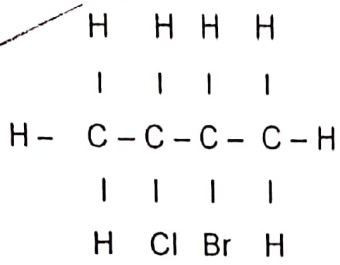

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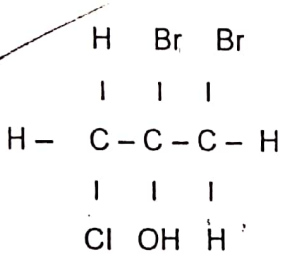

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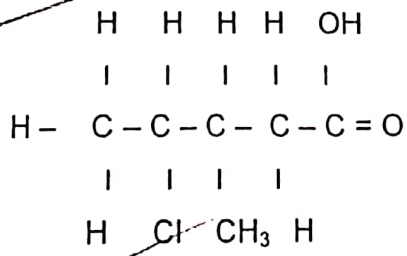

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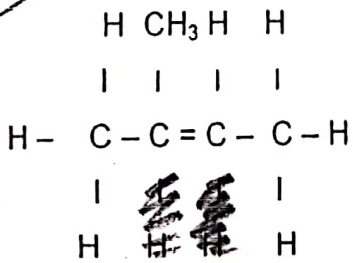

Q6.

(a) Give the balanced chemical equation for the following conversion: 5

(i) Hydrochloric acid to chlorine.

(ii) HCl to ferrous chloride.

(iii) Silver nitrate to silver chloride.

(iv) Ammonia to ammonium chloride.

(v) Sodium thiosulphate to sulphur.

(b) Write down the balanced chemical equation for the preparation of the following from nitric acid: 3

(i) Sodium nitrate .

(ii) Carbon dioxide.

(iii) Sulphuric acid.

(c) Write down the observation of thermal decomposition of the following: 2

(i) Copper nitrate.

(ii) Ammonium nitrate.

Q7.

(a) Give a chemical test to distinguish between: 2

(i) Ethane and Ethyne

(ii) Zinc carbonate and zinc nitrate.

(b) Name the following: 3

(i) When moist starch iodide paper is introduced in to chlorine gas. colour

(ii) The pH of blood is around 7.4, of saliva is 6.5 and of acid rain is around 4.5. The solution which is slightly alkaline of the three.

(iii) A coloured metallic hydroxide insoluble in excess of NaOH, but soluble in excess of NH_4OH.

(c)

(i) Calculate the number of moles and the number of molecules present in 1.4g of ethylene (C_2H_4) gas. What is the volume occupied by the same amount of ethylene? 3

(ii) Calculate the percentage of iron in $K_3[Fe(CN)_6]$. (K= 39, Fe= 56, C= 12, N= 14) 2