Gujarat Research Society's
JASUDBEN M.L.SCHOOL, KHAR
PRELIMS 2018 - 19

Std: X A/B/C
Sub: CHEMISTRY

Date:5.12.18
Time: 2 hrs
Marks:80



**Note:** All questions from Section A are compulsory. Attempt any four questions from Section B.

## SECTION A (40 Marks)

**Q1 a)** Name the following: (5)

i) The element which has the highest ionization potential.
ii) A non-metal which is conductor of electricity.
iii) The amount of energy released while converting a neutral gaseous isolated atom into an anion.
iv) A salt formed by an incomplete neutralization of an acid by a base.
v) Electrolytic deposition of a superior metal on a baser metal.

b) Choose the most appropriate option for the following: (10)

i) The gas law which relates the volume of a gas to moles of the gas is:
A) Boyle's Law B) Charles' Law C) Avogadro's Law C) Gay Lussacs Law

ii) Formation of chloroform from methane and chlorine is an example of which reaction?
A) Addition B) Dehydration C) Substitution D) Elimination

iii) The element with the highest electron affinity in the periodic table is:
A) F B) Cl C) I D) Na

iv) On moving from top to bottom in a group, the metallic character,
A) Increases B) Decreases
C) First increases and then decreases D) Remains the same.

v) Which of the following methods is used for the dressing of sulphide ores:
A) Hydrolytic method B) Froth floatation
C) Leaching D) Calcination

vi) The most electronegative element amongst the following is:
A) Sodium B) Fluorine C) Chlorine D) Iodine

vii) 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) Hydrogen is released at cathode

viii) Duralumin is an alloy of:
A) Copper and tin B) Copper and zinc
C) Aluminium and Copper D) Aluminium and tin

ix) A salt which in solution gives a reddish brown precipitate with NaOH solution and a white precipitate with Barium chloride solution is:
A) $FeSO_4$ B) $Fe_2(SO_4)_3$ C) $CuSO_4$ D) $CuCl_2$

x) The element having smallest size in the periodic table:
A) He B) H C) F D) Ne

c) Name the gas in the following cases. (5)

i) Used for welding purposes.
ii) The gas produced by the action of dilute nitric acid on Copper.
iii) An organic green house gas.
iv) Having an irritating smell and turns acidified ferrous sulphate solution brown.
v) A gas formed with suffocating odour when a match stick is burnt which decolourises pink colour of $KMnO_4$.

d) State appropriate observation for each of the following: (5)

i) Concentrated sulphuric acid is added drop wise to a crystal of hydrated copper sulphate.
ii) Copper sulphide is treated with dilute hydrochloric acid.
iii) Bromine vapours are passed into a solution of ethyne in $CCl_4$.
iv) Excess of Chlorine gas is reacted with ammonia gas.
v) Moist starch iodide paper is introduced into chlorine gas.



e) Name the following: (5)

i) The second member of ketone series.
ii) Second member of the homologous series of alkenes.
iii) Fourth member of the alcohol series.
iv) Third member of carboxylic acids.
v) First member of aldehyde series.

f) The following statements are correct only under certain conditions. Rewrite each statement including appropriate conditions underlined in your answer. (5)

i) Ammonia turns red litmus paper blue.
ii) Hydrogen chloride is a polar covalent compound.
iii) Magnesium reacts with nitrogen to form Magnesium nitride.
iv) Sulphuric acid is the least volatile acid.
v) Electrolysis of water using platinum electrodes releases $H_2$ gas at cathode and $O_2$ at anode.

g) Give suitable tests to distinguish between the following pairs of compounds: (5)

i) Sodium carbonate and sodium sulphate.
ii) Ethane and ethene.
iii) Calcium chloride and zinc chloride
iv) Lead nitrate and Zinc nitrate
v) Iron(II) chloride and Iron(III) chloride.

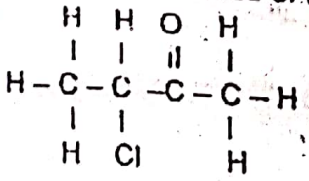
h) Calculate the empirical and molecular formula of the compound having the following percentage composition: C = 26.59%; H = 2.22%; O = 71.19%. Its vapour density is 45. (5)
( Atomic weight of C = 12; H = 1; O = 16 ).

## SECTION B (40Marks)
(Attempt any four questions)

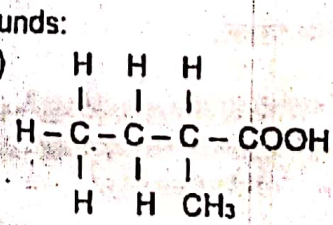
**Question2:**

a) Give the IUPAC names of the following compounds: (3)

i)



ii)



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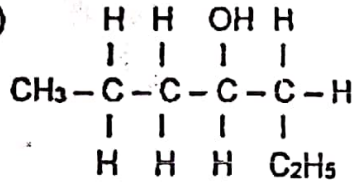


**b)** Write the structure of the following organic compounds: (2)

i) But-1-yne ii) 4-methyl, pentan-1-al

**c)** Find the total percentage of sodium in washing soda crystals. (2)

( Na = 23; C = 12; O = 16; H = 1 )

**di)** Name the ore from which Aluminium is extracted. (3)

ii) Name the process used for the purification of the above ore.

iii) Give reasons why Alumina cannot be extracted by the reduction of its ores by carbon.

iv) Give the formula of cryolite.

## Question 3:

**a)** Show the formation of the stable positive ion formed when an acid dissolves in water. Also name the type of bond formed. (2)

**b)** An element X has atomic number 21. Answer the following questions: (4)

i) State the period and group to which Z belongs.

ii) Is X a metal or non-metal?

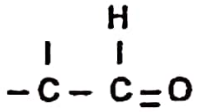
iii) State the formula of the compound formed between Z and Oxygen.

iv) State the kind of bond formed in the above compound.

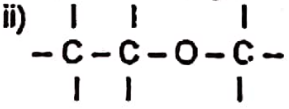
v) Draw the structure to show the formation of the above compound by electron dot diagram.

**c)** Circle and name the functional group in the following examples: (2)

i)



ii)



**d)** Give the name and the chemical formula of one main ore of: (2)

i) Zinc ii) Iron

## Question 4:

**a)** Write the fully balanced equation for each of the following reactions: (5)

i) Magnesium carbonate is treated with dilute sulphuric acid.

ii) Potassium sulphite is reacted with dilute hydrochloric acid.

iii) Aluminium nitride reacts with water.

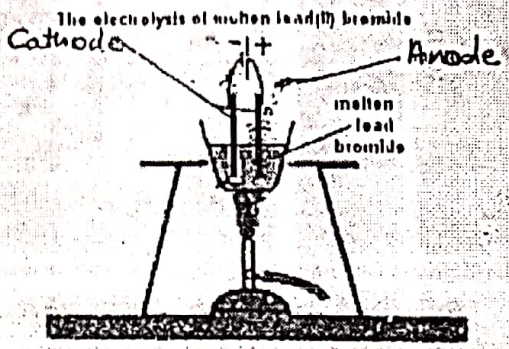
iv) Nitric acid is added to sulphur.

v) Sodium nitrate is heated.

**b)** Calculate the mass of 2.8 l of $CO_2$ at S.T.P. (2)

(Atomic mass of C = 12; O = 16)

c)




Observe the above diagram which shows the electrolysis of lead bromide and answer the questions given below: (3)

i) Name the electrode used in the above electrolysis.

ii) Give reason for using this electrode.

iii) What is the electrolytic cell made of? Give reason for using this cell.

**Question5:**

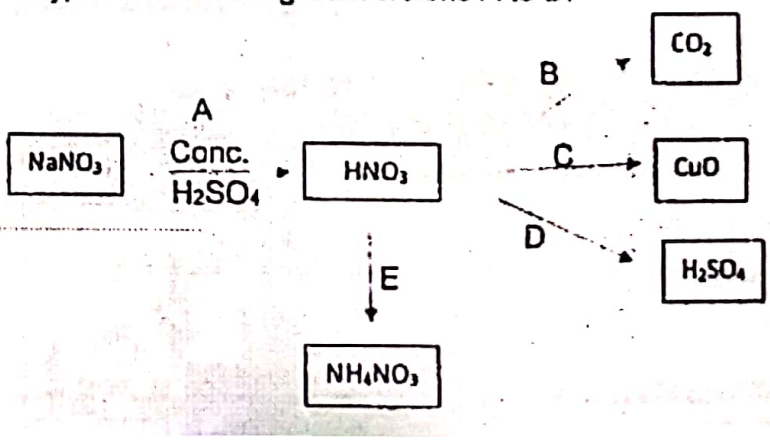
a) Give balanced chemical equations for the preparation of the following organic compounds: (5)

i) Ethanol from ethyl bromide.
ii) Ethane from Sodium propanoate.
iii) Acetylene from Calcium carbide.
iv) Ethyl ethanoate by esterification of ethanol.
v) Dehydrohalogenation of ethyl bromide.

b) Copy and complete the following table which refers to certain electrolytic reactions: (5)

| | | Anode | Cathode | Electrolyte | Reaction At Cathode | Reaction At Anode |
|---|---|---|---|---|---|---|
| i) | Electroplating with Nickel | | | | | |
| ii) | Electrolytic reduction of Alumina | | | | | |

Q6a) Refer to the flow chart given below and give balanced equations with conditions, if any, for the following conversions A to D: (5)



b) Calculate the number of atoms in 10 gms of chlorine, atomic mass of chlorine gas, atomic mass of chlorine being 35.5. (2)

c) Give one main difference between roasting and calcination (1)

d) Give the summary of Contact process for the preparation of Sulphuric acid. (2)

Q7a) Complete the following equations and also state whether oxidation or reduction is occurring in each reaction: (2)

i) $Fe^{3+} \rightarrow Fe^{2+}$

ii) $Cl \rightarrow Cl^-$

b) Indicate the trends for the following periodic properties: (2)

| | Periodic Property | Group | Period |
|---|---|---|---|
| 1) | Atomic size | | — |
| 2) | Ionisation energy | — | |
| 3) | Non-metallic character | | |

c) Aluminium carbide reacts as follows: (4)

$Al_4C_3 + 12H_2O \rightarrow 4Al(OH)_3 + 3CH_4$

i) What mass of Al(OH)3 is formed from 24 g of Aluminium carbide?

ii) What volume of methane is obtained from 24 g of Aluminium carbide?

( Atomic mass of Al = 27; C = 12; O = 16; H = 1)

d) Draw the different isomers of the organic compounds having the following molecular formula: (2)

i) $C_5H_{10}$ (Position)

ii) $C_4H_{10}$ (Chain)