GOKULDHAM HIGH SCHOOL & JUNIOR COLLEGE
SECOND PRELIMINARY EXAMINATION 2015-2016
SUBJECT : SCIENCE PAPER II (CHEMISTRY)

STD: X | TIME: 2 HOURS

DATE: 08.01.2016 | MARKS: 80

- *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 II is compulsory. Attempt any two 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

Question 1

a) Name the gas evolved in each case (formula is not acceptable)

i) The gas produced by the action of conc. sulphuric acid on potassium chloride.

ii) The gas produced by the action of dilute nitric acid on hydrogen sulphide.

iii) The gas produced by the action of barium sulphite on hydrochloric acid.

iv) The gas produced when a metallic oxide is reduced by thermal decomposition.

v) The gas produced by the action of very dilute nitric acid on magnesium. [5]

b) State one observation for the following.

i) Bromine vapours are passed into a solution of ethyne in carbontetrachloride.

ii) Moist blue litmus paper is introduced into the jar of hydrogen chloride gas.

iii) Excess ammonium hydroxide solution is added to ferric chloride solution.

iv) Observation in electrolyte during the electrolysis of copper sulphate solution using copper electrodes.

v) Carbon monoxide is passed over heated copper oxide. [5]

c) For each question c-(i) to (x), select the correct answer from the choice A, B, C, D and write only the letter corresponding to the correct answer:

i) Select the acid which contains four hydrogen atoms in it.

A. formic acid

B. acetic acid

C. nitric acid

D. sulphurous acid

ii) The coloured tinge of nitric acid can be removed by warming the acid to temperature around

A. 60-80°C

B. 80-100°C.

C. 40-60°C

D. Above 100°C

iii) In a periodic table, the element which is diagonally placed with the period of the next group of Lithium is

A. Sodium

B. Aluminium

C. Silicon

D. Magnesium

iv) On moving across a period, the electronegativity of an element

A. remains the same

B. decreased

C. increases

D. none of the

v) Brass is an alloy of

A. copper and tin

B. zinc and lead

C. lead and tin

D. copper and zinc

vi) Which of the following pairs of metals are extracted only by electrolysis?

A. Na , Pb

B. Ca , Cu

C. Na , Ca

D. Ag , K

vii) The most metallic element in its respective group is placed:

A. at the top

B. at the bottom

C. in the middle

D. both A and B

viii) Compound 'X' consists of molecules. In the liquid state, X will

A. become ionic

B. be an electrolyte

C. conduct electricity

D. not conduct electricity

ix) When a metal atom becomes an ion ,

A. it loses electrons and is oxidized

B. gains electrons and is reduced

C. gains electrons and is oxidizes

D. loses electrons and is reduced

x) A metal article is to be electroplated with silver. The preferred electrolyte selected is

A. sodium silver cyanide

B. silver nitrate

C. nickel sulphate

D. copper sulphate [10]

d i)The compound $Na_2B_4O_7.10H_2O$ is commonly known as borax. Calculate the percentage of Boron in borax. (H=1 , Na=23 , B=11 ,O=16). Answer correct to one decimal place.

ii) What volume of Oxygen would be required for complete combustion of 100 litres of ethane? [5]

e) Draw the structural formula for the following.

i) ethanoic acid

ii) pentan-2-ol

iii) neo pentane [3]

f) Draw an electron dot diagram for the formation of magnesium chloride. [2]

g) Write a balanced equation for each of the following.

i) Preparation of methane from anhydrous sodium ethanoate

ii) Calcium nitrate is heated

iii) Lead nitrate is added to aqueous solution of sodium chloride

iv) Conc. hydrochloric acid is added to red lead

v) Copper oxide reacts with ammonia [5]

b) Answer the following questions.

i) Which property of conc. sulphuric acid allows it to be used in the preparation of hydrogen chloride and nitric acid?

ii) Name the catalyst used in Haber's process to manufacture ammonia.

iii) Which compound is electrolysed to produce lead at the cathode?

iv) What happens to the atomic size of elements on moving from top to bottom of a group ?

v) State the type of bonds present in hydronium ion. [5]

SECTION II (40 Marks)

Attempt any four questions from this Section

Question 2

a) Correct the following statements and rewrite them by changing the underlined word(s).

i) Sodium bisulphate is an example of a <u>mixed salt</u>.

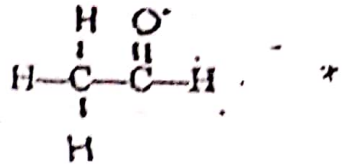
ii) <u>Chlorine</u> gas turns acidified potassium dichromate clear green.

iii) Electron affinity is highest for <u>alkali metals</u>.

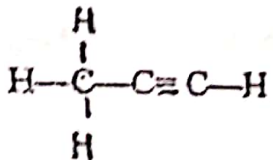
iv) The most common ore of iron is <u>Magnetite</u>. [4]

b) Write the correct IUPAC / common name for each of the following compounds.

i)



ii)



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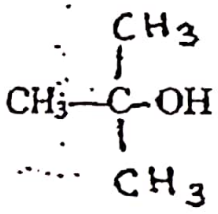
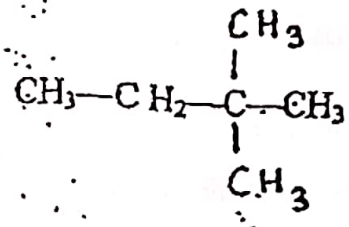


iv)



[4]

1c) Name the following.

i) This gaseous organic compound when mixed with oxygen produces a flame used for welding.

ii) The acid which renders Aluminium passive. [2]

Question 3

a. i) Write a chemical equation for the laboratory preparation of ethane. Also write the name of the reactant(s) used.

ii) What do you observe when nitric acid is added to saw dust? Which property of nitric acid is shown by the above observation?

iii) State the term used for condensation of an alcohol with an ~~asset~~ acet [5]

b. An organic compound having vapour density 94 contains C= 12.67%, H=2.13 % , Br=85.11 % Find its molecular formula. [Atm mass C=12 , H=1 ,Br=80] [5]

Question 4

a. i) Write the chemical equations for the laboratory preparation of hydrogen chloride when the reactants are below 200 °C and above 200 ° C

ii) Funnel arrangement is used to dissolve the hydrogen chloride gas in water. State two reasons for the above statement. [4]

b. Write the chemical equations for the following reactions.

i) Aluminium nitride and water

ii) Copper reacts with conc. nitric acid.

iii) Action of conc. hydrochloric acid with manganese dioxide.

iv) Phosphorus pentoxide with hydrochloric acid . [4]

c. Write any two differences between roasting and calcination. [2]

Question 5

a. i) Give balanced equation for the reaction of ammonia and oxygen in the presence of a catalyst.
ii) In the laboratory preparation of ammonia, which compound is normally used as a drying agent ?
iii) How is ammonia gas collected?
iv) Why is ammonia not collected over water? [4]

b. State one observation for each of the following.
i) Conc. sulphuric acid is added to sugar.
ii) Nitric acid combines with the protein of the skin.
iii) Alkaline phenolphthalein is added to calcium hydroxide.
iv) During electroplating an article with nickel , a block of nickel is placed at the anode. [4]

c. Give reasons: Hydrogen chloride is known as a polar covalent compound. [2]

Question 6

a. From the list given below , choose and write one in each case satisfying the given description.
($CuSO_4.5H_2O$, KNO_3 , NaCl, $NaHSO_4$, $Pb(NO_3)_2$, $ZnCO_3$, $ZnSO_4.7H_2O$, $K_2SO_4.Al_2(SO_4)_3.24H_2O$)
$CuCO_3$
i) an acid salt
ii) changes from blue to white on addition of conc. sulphuric acid
iii changes from green to black on heating
iv) an example of a double salt [4]

b. i) Name the chief ore of aluminium.
ii) Name the process used to concentrate the above mentioned ore.
iii) Why is cryolite and fluorspar added to the electrolytic mixture in the above process ?. [4]

c. i) Name the ion other than ammonium ion formed when ammonia dissolves in water.
ii) Acids dissolve in water to produce positively charged ions. Draw the structure of this ion. [2]

Question 7

a. i) Compare the compounds CCl_4 and NaCl with regard to its solubility and electrical conductivity.
ii) State two relevant observations when ammonium hydroxide is added to zinc nitrate solution first in little and then in excess amount. [4]

b) Fill in the blanks with the correct words from the brackets.

Alkenes are active members of _____ (analogous / homologous) series of _____ (saturated / unsaturated) hydrocarbons. They differ from alkanes due to the presence of_____ (double / single) bond/s. Alkenes mainly undergo _____ (addition / substitution) reactions. [4]

c) An acid 'X' when added to water gave an exothermic reaction. The solution forms a white precipitate on addition of barium chloride.

i) Identify 'X'.

ii) Give an equation to justify the above observation. [2]

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