PARLE TILAK VIDYALAYA (ICSE)

PRELIMINARY EXAMINATION
SCIENCE Paper- 2(CHEMISTRY)

Grade: X
Date : 09 .01.2018

Marks: 80
Time: 2 hours

Answer 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 answers.

This paper is divided into two sections.
*Attempt **all questions** from **Section I** and **any four** from **Section II.***
The intended marks for questions or parts of questions are given in brackets [ ]
This paper consists of five printed pages.
Nothing should be written on the question paper.

Section I (40 Marks)

*Attempt **all** the questions from this Section*

Question 1

a) Identify the gases based on the chemical test given. **[5]**

i) It turns colourless Nessler's reagent brown.
ii) The gas turns moist starch iodide paper bluish black.
iii) The colorless gas turns blue cobalt chloride paper pink.
iv) The colourless gas turns moist lead acetate paper shining black.
v) The gas released on heating sodium nitrate rekindles a glowing splinter .

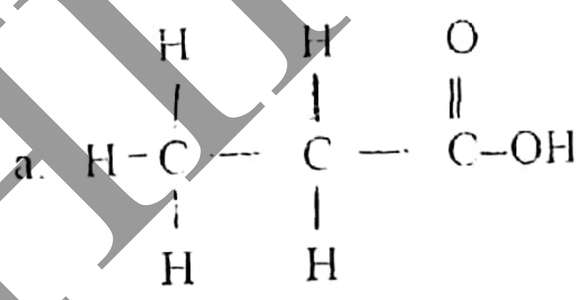
b) Distinguish between the following pairs of compound using a chemical test. **[3]**

i) Manganese dioxide and Copper oxide.
ii) Lead nitrate and Zinc nitrate.
iii) Zinc chloride and and Zinc sulphate.

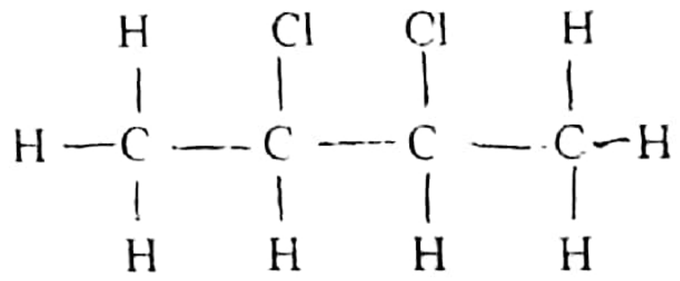
c) i) Write the structural formula of the isomers of pentane. **[3]**

ii) Give the IUPAC name of the following compounds. **[2]**

a.



b.



d) Some word/words are missing in the following statements. You are required to rewrite the statements in the correct form using the appropriate word/words: **[5]**

i) In the laboratory,hydrogen chloride gas is prepared by action of sulphuric acid on sodium chloride.
ii) Lead bromide is electrolyzed in a silica crucible.
iii) Ferrous sulphate solution is used for brown ring test of a nitrate salt.
iv) Sugar gets charred on adding sulphuric acid.
v) Nitrogen and hydrogen gas is used in Haber process.

e) Name the following. [5]

i) Organic acid that resembles ice crystals on cooling.
ii) The alcohol which can cause death on consumption.
iii) The alloy of copper and zinc .
iv) The metal oxide which can be reduced to its metal by coke only.
v) A nonmetal which is a good conductor of electricity.

f) Draw electron dot diagram of: [2]
i) Hydronium ion ii) Carbon tetrachloride

g) Choose the most appropriate answer from the choices A,B,C,D given. Write only the letter corresponding to the answer. [5]

i) Which of these is not the common characteristic of electrovalent compounds.
A) High melting point. B) Conduct electricity in molten state
C) Soluble in water. D) Consist of molecules.

ii) In Aluminothermy process Aluminium acts as a _____.
A) Oxidising agent B) Corrosion resistant
C) Reducing agent. D) Catalyst

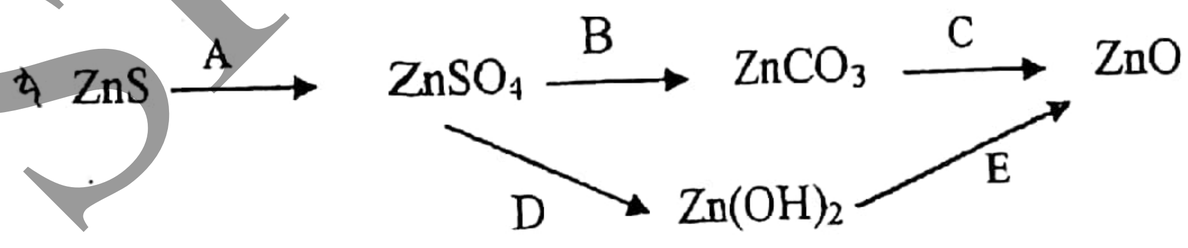
iii) Hydrogen chloride gas being highly soluble in water is dried by
A) Quick Lime B) Anhydrous Calcium chloride
C) Conc Sulphuric acid D) Sodalime

iv) The general formula of ether is _____.
A) R'-O-R B) R'-CO-R
C) R-CHO D) R-OH

v) The main ore of lead is _____.
A) Galena B) Cinnabar
C) Calamine D) Gypsum

h) From the equation $MnO_2 + 4\,HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$ [5]
0.04 moles of pure MnO_2 is heated with concentrated HCl.
Calculate : (Relative atomic masses of Mn =55 , H =1 ,Cl=35.5, O=16)
i) The mass of MnO_2 used.
ii) The moles of acid required.
iii) The volume of chlorine produced at S.T.P.
iv) The mass of the salt formed.
v) The number of molecules present in the volume of chlorine produced.

i) Write a balanced chemical equation for the following conversions A,B,C,D and E [5]

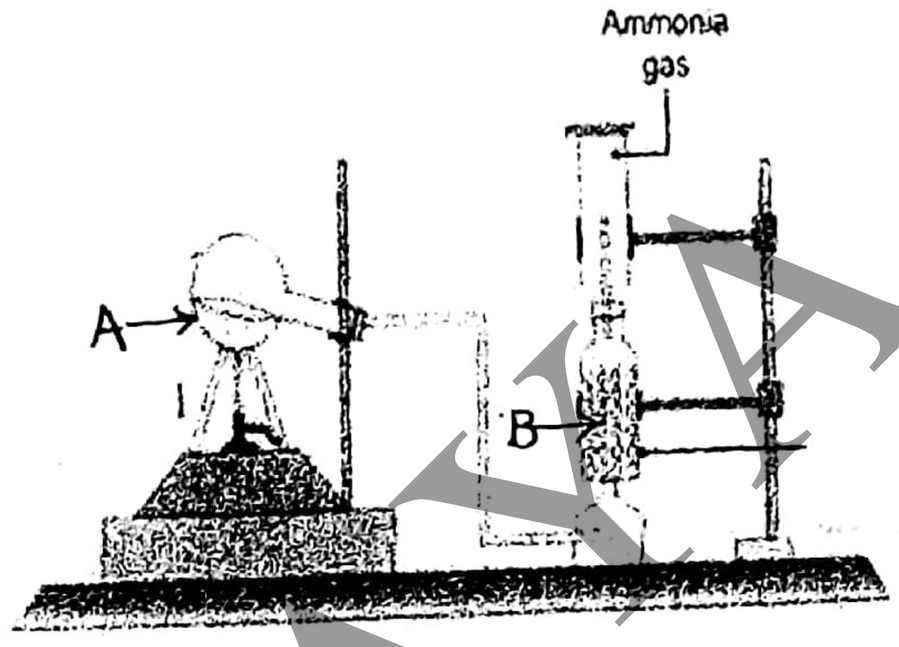


SECTION II (40 MARKS)
Attempt any four questions from this Section

Question 2 [10]

(a) The diagram shows an experimental setup for laboratory preparation of ammonia: (5)

i) Name the reactants in mixture A.
ii) How is the gas collected?
iii) Name the drying agent B used.
Why is this drying agent suitable to dry ammonia?
iv) Give balanced chemical equation for the reaction.
v) If the gas released,is introduced into a test tube containing copper sulphate solution, what will you observe?



(b) Distinguish between the following on the basis of the given properties: (3)
i) Calcination and Roasting (reaction)
ii) Saturated Hydrocarbon and Unsaturated Hydrocarbon (Molecular Structure)
iii) Metals and Non-metals (Reaction with dilute acid)

(c) Define the following: (2)
i) Co-ordinate bond ii) Acid

[10]

Question 3 [10]

(a) Copy and complete the table given below: (6)

Process	Electrolyte used	Anode Used	Cathode used	Reaction at anode
Electro-plating of spoon with Silver		Pure silver		
Copper refining	Acidified copper sulphate solution			

(b) Element A and B has atomic number 9 and 19 respectively. (4)
i) Give the group and period of element B.
ii) Is element A ,a metal or a nonmetal ?
iii) Which of the element get oxidized?
iv) Write the formula of the oxide of element B.

Question 4

(a) Based on the flow chart given below, answer the following questions. [10]

Sulphur $\xrightarrow{\text{Step I}}$ Sulphur dioxide $\xrightarrow{\text{Step II}}$ Sulphur Trioxide $\xrightarrow{\text{Step III}}$ Sulphuric acid

i) Identify the process. (5)
ii) Give a balanced equation for Step I, II and III conversions.
iii) Why is sulphur trioxide not dissolved in water to convert to sulphuric acid?

(b) A first two periods of the modern periodic table with some elements (not the actual symbols) along with their atomic numbers are shown below. Answer the questions based on it. (5)

1							2
3 A	4 B	5	6	7 C	8	9 D	10

i. Identify the element A.
ii. Name the group in which element D is placed and what are the elements placed in this group called ?
iii. Give the valence electrons of the element C.
iv. Write the molecular formula of the compound formed by B and D.
v. Among A,B,C & D , which element has the highest ionization energy?

Question 5

(a) Based on the purification of Aluminuim ore , answer the following questions. [10]
i) Name the process. (5)
ii) Give the three equations for the three step reaction in this process.
iii) What is red mud that is left as residue in this process?

(b) 10L of a mixture of 60% of propane and 40% of butane is burnt . Find the total volume of carbon dioxide gas added to the atmosphere .Combustion reaction is as follows : (3)

$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

$2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$

(c) From the equation: (2)

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

Calculate the following when 30g of Iron pyrites is roasted:
(Relative atomic masses of Fe =56 ,S=32 ,,O=16)

i) The mass of Iron(III) oxide produced.
ii) The volume of Sulphur dioxide liberated at S.T.P by roasting of Iron pyrites.

Question 6 [10]

(a) Select the appropriate substance from the list given below, for the laboratory preparation of the following salts and write a balanced chemical equation for it. (5)

(Fe ,Pb ,Cl_2, $CuCO_3$, PbO ,$FeSO_4$, NaOH , dil HNO_3, dil H_2SO_4, conc H_2SO_4 ,dil.HCl)

i) Iron (III) Chloride
ii) Sodium Sulphate
iii) Copper Sulphate
iv) Lead Sulphate (two step reaction)

(b) An alkaline gas P is passed through a heated metallic oxide Q .It produces a colourless, odourless gas and leaves behind a reddish shining residue R. (5)

i) Identify P,Q and R.
ii) Write a balanced chemical equation for the above reaction.
iii) Which property of the gas P is shown by this reaction?

Question 7 [10]

(a) Write the balanced chemical equations for the preparation of the following organic compounds. (3)

i) Ethane from Sodium propionate
ii) Ethanol from Ethyl Chloride
iii) Ethyne from Calcium carbide

(b) Write a balanced equation for the following reaction. (4)

i) Dilute hydrochloric acid is added to sodium bisulphite.
ii) Reaction of acetic acid with ethanol.
iii) Reaction of concentrated nitric acid on sulphur.
iv) Sodium nitrate is heated with concentrated sulphuric acid, below 200°C.

(c) Name the gas evolved in the following reactions. (3)

i) Cold and dilute nitric acid is added to copper metal.
ii) Hydrochloric acid is heated with ferrous sulphide.
iii) Aluminium is treated with hot dilute caustic potash.

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