

STD: X  
SUB: CHEM.  
TIME: 1 ½ HR  
DATE: 14.12.07

LEARNERS' ACADEMY  
BANDRA (WEST) - MUMBAI - 400050.  
PRELIMINARY EXAM 2007-2008.

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CHEMISTRY

M.M. 80

NOTE:- This question paper is divided into two sections:-

**Section I** - Contains one question with parts (a) to (h) ;  
All eight parts are to be answered.

**Section II** - Contains six questions numbered 2 to 7  
You are to answer any four of these questions.

**SECTION I (40 MARKS)**

- Q1. a) A. Potassium nitrate (5)  
B. Lead nitrate  
C. Ammonium nitrate
- i) Choose the letter A, B or C to answer the following :-  
1) Leaves no residue]  
2) Gives oxygen as the only gas  
3) Produces nitrogen dioxide
- ii) Write equations for the following reactions:-  
1) Action of heat on sodium nitrate  
2) Formation of lead nitrate from lead II oxide.
- b. i) State Gay-Lussac's law of combining volumes (6)  
ii) State Avogadro's Law to explain Gay-Lussac's Law.  
iii) Calculate the atomicity of nitrogen molecule from the following information:-  
the vapour density of nitrogen is 14,  
relative atomic mass of nitrogen is 14.
- c. Write balanced equations:- (5)  
i) Burning of Candle in chlorine  
ii) Between nitrogen and oxygen when lightning strikes.  
iii) Calcium Carbide is heated in a current of nitrogen.  
iv) When ammonium nitrate is heated.  
v) Action of dilute HCL on Calcium bicarbonate
- d. i) A solution has a pH of 7. Explain how you would:- (6)  
1) increase its pH 2) decrease its pH  
ii) If a solution changes the colour of litmus from red to blue, what can you say about its pH.  
iii) When SO<sub>2</sub> is passed into a solution containing iron (III) , the colour of the solution changes from yellow to pale green. Which ion is responsible for green colour
- e) i) What is the mass of carbon in 4000 gm of potassium bicarbonate (KHCO<sub>3</sub>). (6)  
(K = 39 , H = 1 , C = 12 , O = 16)  
ii) Methane can be used to form formaldehyde:-  
1) Name the catalyst used.  
2) State suitable temperature  
3) Write the equation in the formation of formaldehyde

- f.) i) What is the common name of ethyl alcohol ? (6)  
 ii) How is ethyl alcohol prepared  
 iii) Name the elements in period I  
 iv) What happens to atomic size on moving from left to right in a Period?  
 v) Give the Names and Structural formula of  
 a) a saturated hydrocarbon  
 b) an unsaturated hydrocarbon with a triple bond.
- g) If a crop of wheat removes 21 kg of nitrogen per hectare of soil, what mass of fertilizer Calcium nitrate  $\text{Ca}(\text{NO}_3)_2$  would be required to replace the nitrogen in a 10 hectare field? (3)  
 (N = 14, O = 16, Ca = 40)
- h) i. Write the volume occupied by one mole of a gas at STP (3)  
 ii) 112  $\text{cm}^3$  (at S.T.P.) of a gaseous fluoride of phosphorus has a mass of 0.63 gm.. Calculate the RMM of fluoride. Find the Vapour Density.  
 iii) Name the alkene having pleasant odour.

**SECTION II (40 Marks)**

- Q2. a) Write the equation for  
 i) The preparation of HCL from NaCl and  $\text{H}_2\text{SO}_4$ .  
 ii)  $\text{NH}_3$  from  $\text{NH}_4\text{Cl}$  and  $\text{Ca}(\text{OH})_2$   
 iii)  $\text{NH}_4\text{NO}_3$  from  $\text{NH}_3$  and  $\text{HNO}_3$
- b) i) What happens when  $\text{NH}_3$  is oxidized with PbO  
 ii) Define hydrolysis of a salt. (10)
- Q3.a) When bauxite is treated with NaOH solution what happens to :-  
 i) The aluminium oxide  
 ii) The iron (III) oxide.
- b) i) Name the process used for purification of bauxite.  
 ii) Write the formula of cryolite.  
 iii) Why is so much graphite required for this electrolytic process. (10)
- Q4.a.i) What is meant by esterification?  
 ii) Write an equation to represent esterification.  
 iii) For what purpose does esterification is involved?
- b) i) State the odour of the following:-  
 Acetic acid, Methanol  
 ii) Define Galvanising. (10)
- Q5. A flask contains 3.2 gm of  $\text{SO}_2$ , Calculate.  
 a) i) The moles of  $\text{SO}_2$   
 ii) No. of molecules of  $\text{SO}_2$   
 iii) The volume occupied by 3.2 gm. of  $\text{SO}_2$   
 (S = 32, O = 16)
- b)  $2\text{KMnO}_4 + 10\text{FeSO}_4 + 8\text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 5\text{Fe}_2(\text{SO}_4)_3 + 8\text{H}_2\text{O}$   
 If 15.8 gm of  $\text{KMnO}_4$  was used in the above reaction calculate the Mass of  $\text{FeSO}_4$  used.  
 (K = 39, Mn = 55, Fe = 56, S = 32, O = 16).
- c) Fill in the blanks:-  
 Prismatic and plastic sulphur are two \_\_\_\_\_ of sulphur. Both are insoluble in water. Prismatic sulphur is soluble in a volatile liquid named \_\_\_\_\_ while plastic sulphur is insoluble in it. Prismatic sulphur is \_\_\_\_\_ in structure whereas plastic sulphur is \_\_\_\_\_. (10)

Contd: STD X Chemistry Prelim Paper Dec. 2007-Jan-2008

Q6.a) Compound X consists of molecules, choose the letter corresponding to the correct answer from the choices A,B,C and D given below:-

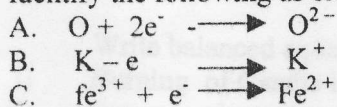
- i) The type of bonding in X will be
    - A. Ionic                      B. Co-valent
    - C. electrovalent      D. Molecular
  - ii) X is likely to have a:
    - A. low melting point and high boiling point
    - B. high melting point and low boiling point
    - C. low melting point and low boiling point
    - D. high melting point and high boiling point
  - iii) In the liquid state, X will:
    - A. become ionic
    - B. be an electrolyte
    - C. conduct electricity.
    - D. not conduct electricity.
- b) Electrons are getting added to an element Y.
- i) Is Y getting oxidized or reduced?
  - ii) What charge will Y have after the addition of electrons?
  - iii) Which electrode will Y migrate to during the process of electrolysis?
- c) Which of the following is a non-metal or a metal ?
- i)  ${}_{32}X^7$                       ii)  ${}_{17}Y^{35}$

d) In the formation of  $MgCl_2$  (by direct combination between Mg and  $Cl_2$ ), Name the substance that is oxidized and the substance that is reduced. (10)

Q7.a) Give reasons:-

- i)  $CO_2$  and  $SO_2$  cannot be distinguished using lime water.
- ii) A solution of silver nitrate is a good electrolyte but it is not used for electroplating an article with silver.
- iii)  $SO_2$  is used as an antichlor .

b) Identify the following as either oxidation or reduction:-



- c) i) Name the substance used for drying  $NH_3$ .
- ii) Write the equation showing Haber's process.

d) Show by means of balanced equations conversion of ethane into dichloroethane by chlorination. (10)