

CLASS : 10

TIME : 1HR. 30 MIN.

DATE : 05<sup>th</sup> January 2006.

MARKS : 80

Science Paper - II CHEMISTRY.

Section :- I Answer all the questions.

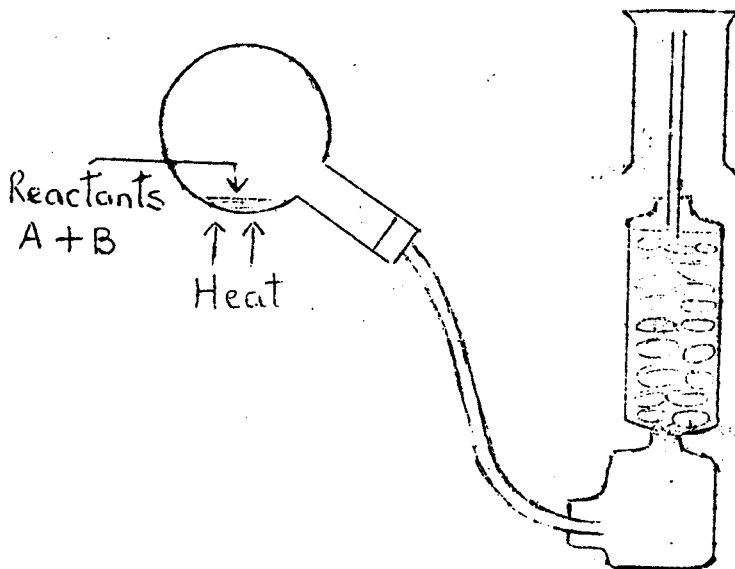
Q.1.

- a) Name the catalyst used in each case. 3
- i) In Haber's process
  - ii) For preparing nitric oxide from ammonia.
  - iii) For converting acid anhydride of sulphurous acid to acid anhydride of sulphuric acid.
- b) Write the IUPAC names of :- 3
- i) Formic acid
  - ii) Acetone
  - iii) Acetaldehyde
- c) Empirical formula of an organic compound is CH and its V.D. is 13. 13
- i) Find its molecular formula 1½
  - ii) Write its structural formula. 1
  - iii) State its odour. *स्टॉर्क* 1
  - iv) Name a reagent and how it would help to differentiate the organic compound from  $C_5H_{10}$ . 1½
- d) Write balanced chemical reactions to prepare : 5
- i) spirit of salts from sulphuric acid
  - ii) ethyne from water
  - iii) sulphuric acid from sulphur (in one step only)
  - iv) ferrous chloride from sulphur dioxide
  - v) nascent chlorine from nitric acid.
- e) Rewrite the complete statement filling in the right alternative. 4
- i) Reaction between bromine and ethane is an example of \_\_\_\_\_.  
(Addition / Substitution)
  - ii) \_\_\_\_\_ is an amphoteric oxide. ( $Fe_2O_3 / Al_2O_3$ )
  - iii) Hydrogen chloride behaves as \_\_\_\_\_ when dissolved in toluene.  
(a non electrolyte / an electrolyte)
  - iv) On heating sal ammoniac it undergoes \_\_\_\_\_. (Thermal dissociation / Thermal decomposition)
- f) i) 500 c.c of carbon monoxide at stp weighs 0.63 g. Find its molecular weight of CO if one litre of hydrogen weighs 0.09 g at stp. 2
- ii) How many gram atoms and gram molecules of hydrogen weigh 20g (H=1) 2
- iii) A gaseous mixture of hydrocarbons containing 40 ml of methane and 80 ml of acetylene undergoes complete combustion when burnt in 4.5 l of air. Write a balanced equation for each combustion and find the volume of oxygen used and unused. 6
- g) i) List the elements of period 3 using atomic symbols and answer the following : 1
- ii) State the element. 1½
    - 1) with least ionisation potential
    - 2) element besides zero group elements, which does not form an oxide
    - 3) showing allotropy
  - iii) Write the formula of the compound formed by elements from group II and group VII of period 3 and state the kind of compound formed. 1½

- iv) State the Modern Periodic Law. 1
- h) With reference to electroplating of an article with silver write : 1
- Dissociation reaction of the electrolyte. 1
  - Reactions taking place at the two electrode. 2
  - Explain - During electrolysis of aqueous copper sulphate solution using platinum electrodes, the blue colour of the solution slowly fades. 2

## Section - II (Answer any four)

- Q.II.a) Aluminium is extracted from bauxite.
- Write the chemical name of bauxite.  $\frac{1}{2}$
  - Name the liquid used in Baeyer's Process? Why is it used?  $1\frac{1}{2}$
  - Write the three reactions of Baeyer's Process? 3
- b)



- Name the gas prepared.  $\frac{1}{2}$
- Name the reactants heated. 2
- Write the common name of the drying agent.  $\frac{1}{2}$
- Why is the gas collected as shown in the figure? 2

## Q.III.

- a) Write a balanced chemical reaction to prepare sulphur -4-oxide from i) concentrated sulphuric acid ii) dilute sulphuric acid 2
- b) What happens :
- when copper sulphate crystals are dropped in concentrated sulphuric acid? 1
  - on adding excess of liquor ammonia to an aqueous solution of copper chloride? 2
  - On burning ammonia in oxygen? 1
  - On bubbling chlorine in potassium bromide solution? 1
- c) A, B, C are solutions of sodium chloride, sodium bi-carbonate and sodium bisulphate in water. Identify the solution whose pH is 3 less than 7 ii) more than 7. iii) equal to 7

## Q.IV.

- a). 10g of sodium nitrate and anhydrous sodium sulphate is dissolved in water. An excess of lead nitrate solution is added and 12.12 g of lead sulphate is precipitated according to the equation :
- $$\text{Na}_2\text{SO}_4 + \text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{NaNO}_3 + \text{PbSO}_4$$
- Calculate the percentage of sodium sulphate in the original mixture. 3
- b) 0.7 mole of hydrated sodium carbonate weighs 86.8 g at s.t.p.

- c) State the composition of stainless steel and give one use of the same. 2
- d) Give a reason for: 2
- 1) using zinc in copper alloys.
  - 2) using solder in an electrical fuse.
- Q.V.
- a) Name the product obtained: 2
- 1) when a molecule of bromine is added to ethane.
  - 2) on bubbling acetylene through cold and dilute potassium permanganate solution. 2
- b) Write reactions to prepare: 2
- 1) Methane from sodium hydroxide
  - 2) Ethanol from water.
- c) Write the structural formula of: 2.
- 1) the ppt. obtained on bubbling ethyne through ammoniacal silver nitrate solution
  - 2) the first member of the alkene series.
- d) State the colour of: 2
- 1) Hot zinc oxide
  - 2) the unstable compound formed on mixing aqua fortis, freshly prepared ferrous sulphate and concentrated sulphate acid.
  - 3) the solution obtained on adding a few drops of methyl orange to an aqueous solution of sulphur dioxide.
  - 4) the residue obtained on thermal decomposition of ammonium dichromate.
- e) Name a nitrate which: 2
- 1) liberates nitrous oxide on heating
  - 2) is used to detect sulphate radical.
- Q.VI.
- a) Choose your answers from: 4
- Ammonia, Hydrochloric acid, Nitric acid and Sulphuric acid.
- 1) Gives a coloured gas on thermal decomposition.
  - 2) Gives a coloured gas on thermal dissociation.
  - 3) Turns crystalline sugar black.
  - 4) Is a polar covalent compound with one lone pair of electrons.
  - 5) Gives an insoluble white ppt. with barium chloride solution.
  - 6) Gives a yellow compound with proteins.
  - 7) Its aqueous solution contains ions and molecules.
  - 8) Is sometimes coloured due to the presence of dissolved iron.
- b) Give an account for: 1½
- 1) Sodium chloride conducts electricity only in fused or aqueous state. 1½
  - 2) Absorption tower in Ostwald's Process is filled with layers of quartz. 1½
  - 3) Hydrochloric acid is prepared using the funnel and beaker arrangement. 2
  - 4) Hydrogen sulphide is used as an analytical reagent. 1
- Q.VII.
- a) Starting from iron prepare: 3
- 1) magnetic oxide of iron.
  - 2) ferrous chloride
  - 3) ferric chloride.
- b) Give an example of: 3
- 1) monobasic weak organic acid.
  - 2) triacidic coloured base.
  - 3) an alkali not a base.
- c) Write the formula of the salt formed by: 3
- 1) zinc chloride reacting with excess of liquor ammonia.
  - 2) dissolving massicot in sodium hydroxide solution.
  - 3) mixing concentrated hydrochloric and concentrated nitric acid in the ratio 3 : 1. 1