**30.6.2 Chemistry Paper 2 (233/2)**

1. (a) (i) Biogas contains methane which is a fuel ***(1 mark)***

(ii) Pass a known volume of (V1) through NaOH or KOH or lime water CO2 will be absorbed. Collect all the gas that comes out of NaOH/KOH or lime water in a gas syringe (V2).

 % ***(3 marks)***

 (b) (i) Moles of methane in the

 Cylinder

  ***(4 marks)***

 (c) (i) Global warming

 (ii) I N2O=Ammonium fertilizer (nitrate)

 II CC*l*3F=Aerosals, Sprays, Propellants, Refrigerators ***(3 marks)***

2. (a) (i) 

 (ii)  ***(2 marks)***

(b) (i) ***Period 2*:** It’s electronic arrangement is 2, 3 and this means that it is the 2nd energy level being filled. Therefore it belongs to period 2. ***(2 marks)***

(ii) I. Across a period from left to right the nuclear charge increases exerting grater pull on the available electrons resulting in reduction of atomic radius. ***(2 marks)***

II. A4 gains an electron: The incoming electron is reppelled by other electrons in the atom. ***(2 marks)***

3. (a)

* Filtration of air.
* Passing through sodium hydroxide.
* Air cooled to become liquid.
* Liquid air is allowed to evaporate . ***(4 marks)***

(b) (i) Nitrogen (II) oxide ***(1 mark)***

(ii) Oxidation



 Reduction ***(2 marks)***

(iii)  ***(1 mark)***

(iv) Fertilizers making explosives. ***(1 mark)***

(c) (i) G or G2+ ***(1 mark)***

 (ii)  ***(1 mark)***

4. (a) (i) When a change is made to the conditions of a system is dynamic equilibrium the system moves so as to oppose that change. ***(1 mark)***

 (ii) Pressure has no effect on the position of the equilibrium since the number of moles of gaseous reactants is equal to number of moles of gaseous products.

 ***(2 marks)***

(iii) is Negative: Since lowering of temperature moves the equilibrium in the direction in which heat energy is absorbed. ***(2 marks)***

 (b) (i) MnO2 ***(1 mark)***

 (ii) Decomposition at 24 secs is 1.428 cm3/sec ***(2 marks)***

 (iii) The reactant has been used up after 50 secs ***(1 mark)***

5. (a) H

HC C  C H

H

or CH3CCH ***(1 mark)***

 (b) (i) Heat 700 – 900k ***(1 mark)***

Use of catalyst such alumina (AI2O3) or Selica (SiO2)

(ii) H – is ethane CH3CH3 or C2H ***(1 mark)***

 (iii) I. They pollute environment produces poisonous gases. ***(1 mark)***

* + 1. Hydration. ***(1 mark)***
		2. Ethyl Propanoate.

O

 CH3CH2 C CH2CH3

 O

(C2H4)n=16,800 ***(2 marks)***

 (iv)  ***(7 marks)***

 (c) (i) ***M***: is unsaturated hydrocarbon and hence it undergoes addition reaction.

 ***(2 marks)***

 (ii) ***N***: this because N is an acidic compound. ***(2 marks)***

6. (a) (i) Both and SOmigrate to the anode where OH- are preferentially discharged forming oxygen gas. ***(2 marks)***

 (ii) Copper anode would dissolve to give Cu2+ ions as less energy is required for this process. ***(2 marks)***

 (b) (i) Copper ore - Copper pyrites

 Copper glance

 Malachite ***(1 mark)***

 (ii)  ***(1 mark)***

 (iii) Q=IT

 

 1 mole of electronics deposits 1 mole of silver

 

 ***(3 marks)***

 (iv) Prevent rusting.

 Decoration/improve appearance. ***(2 marks)***

7. (a) (i) This is the heat change ( when one mole of a substance is formed from its constituent elements under standard conditions. ***(1 mark)***

 (b) (i) Heat of combustion of hydrogen.

 Heat of formation of water. ***(2 marks)***

 (ii)

 C2H6(g)+7/2O2(g)

 1560KJmoI-1

Energy

 2CO2(g)+3H2O(1)

Reaction co-ordinate ***(3 marks)***

(iii) 

 

 

 or if compressed ***(2 marks)***

(iv) I. Heat change 

 

 II. No. of moles of ethane

 

 Therefore mass of ethane = 0.0289423 × 30g

 = 0.868269g

 = 0.9g ***(4 marks)***