(b) It takes 44 seconds for Nitrogen (IV) oxide to effuse through an opening. Calculate how long it will take for an equal volume of chlorine gas to effuse through the same opening.

(N= 14.0 , O=16.0 , 35.5 ) (2marks)

14. Compound “L” react with hydrogen bromide gas to give another compound whose structure is

H H H Br H

H ― C ― C ― C ― C ― C ― H

H H H H H H

(a) Give the structural formula and name of compound “L” ( 2 marks)

……………………………………………………………………………………………………………………………………………………………..

(b) Write an equation for the reaction which takes place between enthyne excess chlorine gas …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….. (2 marks)

(c) A hydrocarbon “p” was found to decolorize bromine water. On complete combustion of 2 moles of “P” 6 moles of carbon (IV) oxide and 6 moles of water were formed

(a) Write the structural formula of “p” ( 1 mark)

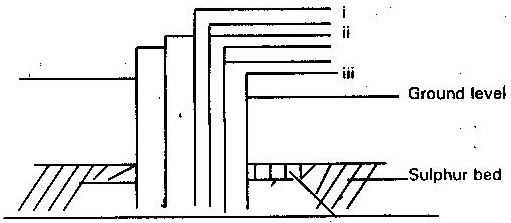
……………………………………………………………………………………………………………………………………………………………..

(d) Give the name of p ( 1 mark)

……………………………………………………………………………………………………………………………………………………………..

(e) Name one industrial source of “p” ( 1 mark)

……………………………………………………………………………………………………………………………………………………………..

16. The diagram below illustrates how sulphur is extracted by frasch process

(a) Label the pipe through which superheated water is pumped in (1 mark)

……………………………………………………………………………………………………………………………………………………………..

(b) The equation below shows the oxidation of sulphur (IV) oxide to sulphur (VI) oxide in the contact process

2SO2 (g) + O2 (g) →2 SO3(g) ∆H = - 196KJ

(i) Name the catalyst used in this process (1mark)

……………………………………………………………………………………………………………………………………………………………..

(ii) State and explain the effect on the yield of sulphur (VI) oxide when

I. The temperature is increased (2marks)

……………………………………………………………………………………………………………………………………………………………..

II. The amount of oxygen is increased ( 2 marks)

……………………………………………………………………………………………………………………………………………………………..

(iii) Describe how sulphur (VI) oxide is converted to sulphuric acid in the contact process. ( 2 marks)

……………………………………………………………………………………………………………………………………………………………..

(c) Ammonium sulphate is a fertilizer produced by passing ammonia gas into concentrated sulphuric acid

(i) Write the equation for the reaction ( 1 mark)

……………………………………………………………………………………………………………………………………………………………..

(ii) Calculate the mass in kg of sulphuric acid required to produce 25kg of fertilizer

(S= 32.0) (0= 16.0) (N = 14.0) (H. 1.0) (3 mks)

……………………………………………………………………………………………………………………………………………………………..

17. The grid below is part of the periodic table. Use it to answer the questions that follow. (The letters are not the actual symbols of the elements)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | R | S |  |
| N | Q |  |  |  |  |  |  |  | U |
| P |  |  | |  |  |  |  |  |  |
|  |  |  | |  |  |  |  |  |  |

a) Indicate on the grid the position of an element represented by letter V whose atomic number is (1mark)

……………………………………………………………………………………………………………………………………………………

b) Select a letter which represents a monoatomic gas. (1mark)

……………………………………………………………………………………………………………………………………………………

c) Write an equation for the reaction between Q and S. (1mark)

(d) Select

i) Element which has the largest atomic radius (1mark)

…………………………………………………………………………………………………………………………………………………

ii) Most reactive non- metal (1mark)

……………………………………………………………………………………………………………………………………………………………..

(e) Show on the grid the position of element “J” which forms J-2 ions with electronic configuration 2:8:8 (1mk)

18. (a) Describe how a solid sample of Lead (II) chloride can be prepared using the following reagents. Dilute nitric acid (Nitric (V) acid), dilute Hydrochloric acid and lead (II) carbonate. 2mks)

……………………………………………………………………………………………………………………………………………………………..

……………………………………………………………………………………………………………………………………………………………..

(b) A bee keeper found that when stung by a bee, application of a little solution of sodium hydrogen Carbonate help to relieve the irritation from the affected area. Explain. (2mks)

……………………………………………………………………………………………………………………………………………………………..

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(C) Some sodium Chloride was found to be contaminated with Copper (II) Oxide. Describe how a sample of sodium chloride can be separated from the mixture. (3mks)

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