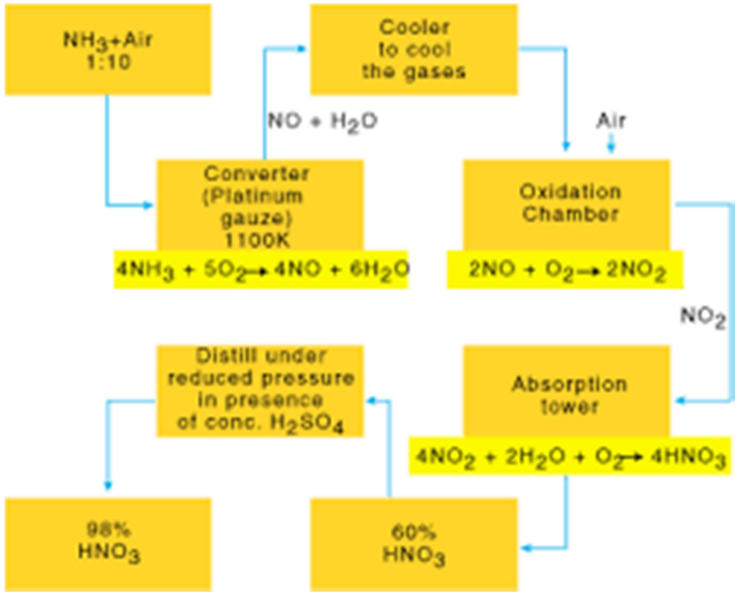
BRILLIANT EDUCATIONS

BRILLIANT PUBLISHERS
Tel: +254711-410-583
The Sign of Knowledge

Tr. Stephen O. Oketch

CHEMISTRY FLOW CHART (SCHEMES) BASED QUESTIONS- KCSE

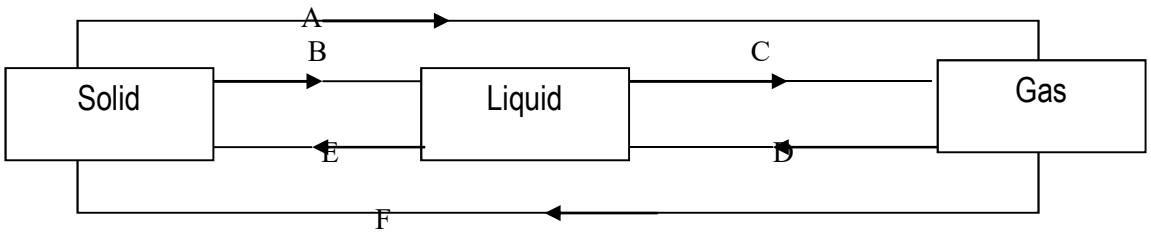


FOR THE MARKING SCHEMES CALL TR. STEPHEN: 0711410583.

The following are new resources and they are available:

- ✓ Document of questions based on flow charts. (chemistry)
- ✓ Document of questions based on structural diagrams. (chemistry)
- ✓ Brilliant pre-mocks and mocks.
- ✓ Brilliant holiday assignments trial 2.
- ✓ Industrial chemistry based questions.
- ✓ Documents of questions on the laboratory preparations of all gases.

1. The diagram below shows the relationship between the physical states of matter.



i) Identify the processes B and D. (2mks)

B……

D……

ii) Name process A (1mk)

……

……

……..…

iii) State two substances in chemistry that undergo the process A (1mk)

……

……

……

iv) Is the process E exothermic or endothermic? Explain (1mk)

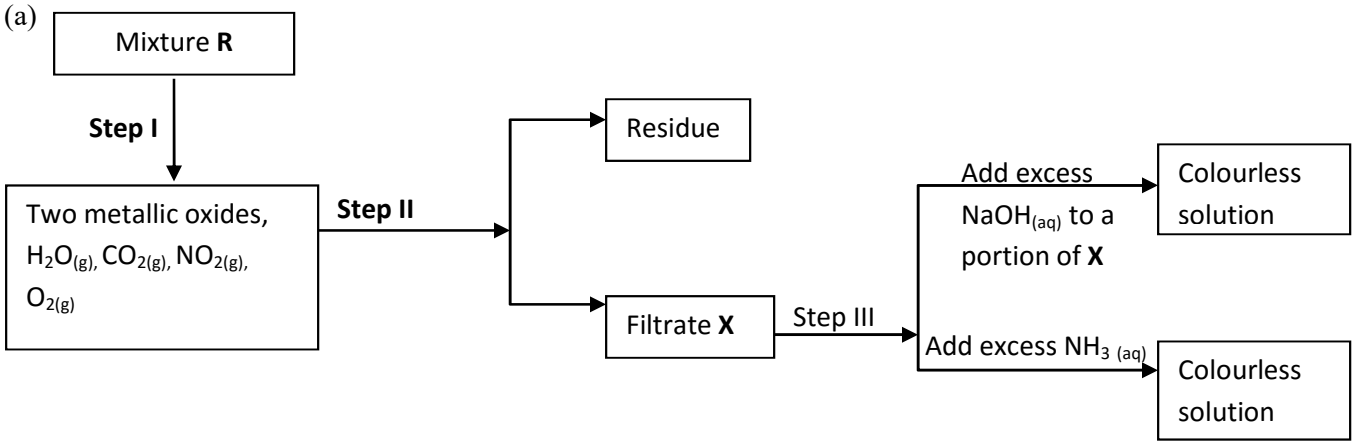
……

……

……

2. The flow charts below show an analysis of a mixture **R** that contains two salts. Study the analysis and answer the questions that follow:-

(a)



(i) State:-

(I) The condition in **step I**

……
……
……

(II) The process in **step II**

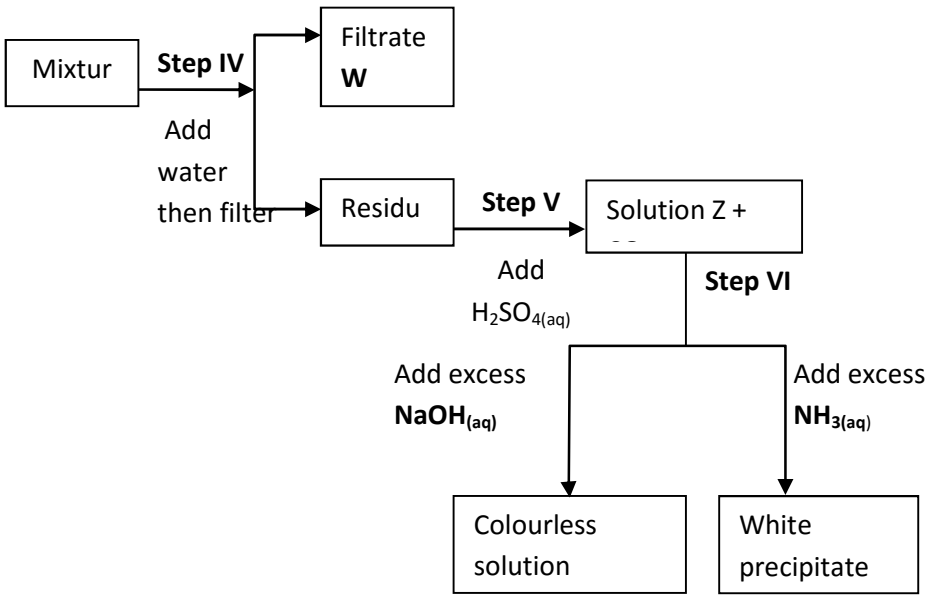
……
……
…… (ii) A small portion of mixture **R** is added to dilute nitric (V) acid in a test-tube. What would be observed?

……
……
…… (iii) Write an equation for the reaction between the cation in filtrate **X** and sodium hydroxide solution

……
……
…… (iv) Explain how water vapour in **step I** could be identified.

……
……
……

(b)



(i) State and explain the conclusion that can be made from **step IV** only.

……
……
……

(ii) Name the anion present in residue **U**. Explain

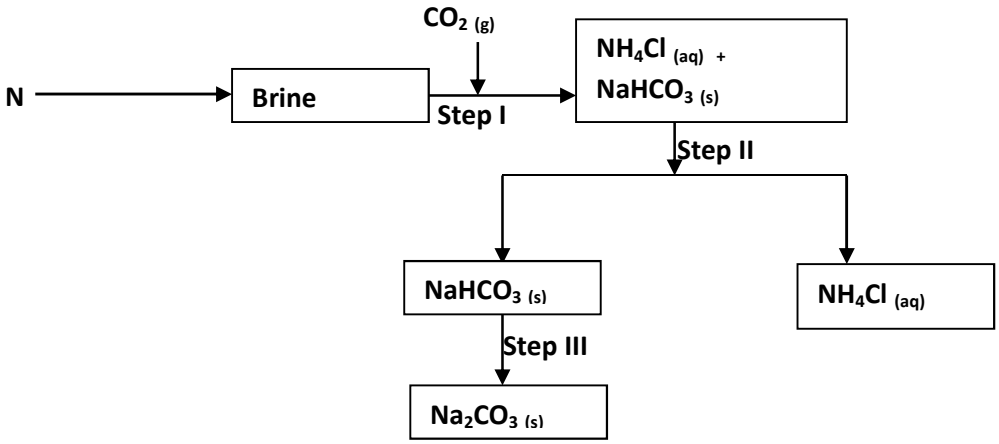
……
……
……
……
……

(iii) From the flow chart in **(a)** and **(b);**

(I) write the formulae of cations present in mixture **R**

……
……
……
……
……

3. The flow chart below shows some of the stages in the manufacture of sodium carbonate by the solvary process. Use it to answer the questions that follow:



(a) Name substance **N** (1mk)

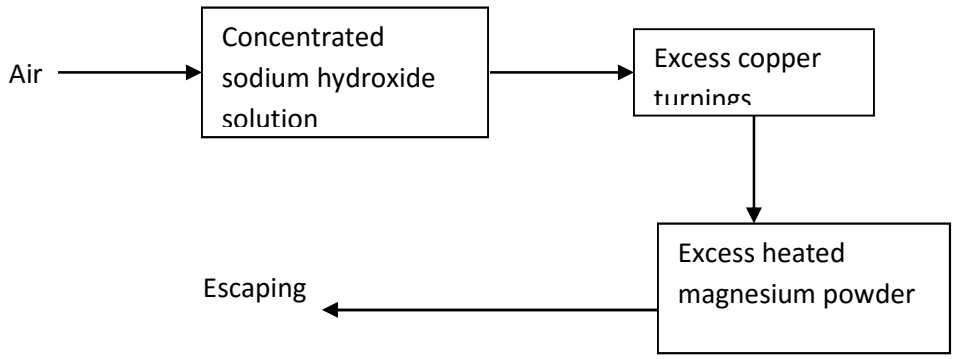
(b) Name the process taking place in

(i) Step II (1mk)

(i) Step III (1mk)

(c) Write an equation for the react producing sodium carbonate. (1mk)

4. (a) Air was passed through several reagents as shown below:



(a) Write an equation for the reaction which takes place in the chamber containing magnesium powder.
(1 mark)
……
……
……..

(b) Give another solution that can be used in place of sodium hydroxide solution. (1mark)
……
……
……..

(c) State the observation made at the chamber containing copper. (1 mark)

……
……
……..

(d) The product of the chamber containing magnesium powder was added water and a colourless solution was formed. A gas with a pungent choking irritating was also formed.

(i) State and explain the observation that would be made if red litmus was dipped in the solution above. (1 mark)
……
……
……

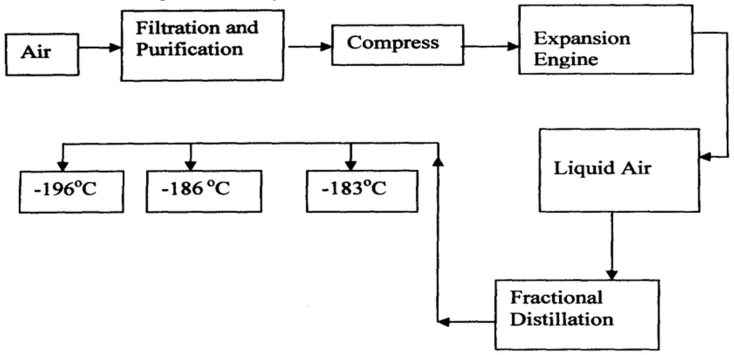
(ii) Write a balance chemical equation of the reaction that took place in the reaction of the product and water. (1 mark)

……
……
……

(e) Name **one** gas which escapes from the chamber containing magnesium powder. Give a reason for your answer. (1 mark)

……
……
……..

5. Oxygen is obtained on large scale by the fractional distillation of air as shown on the flow chart below.



a) Identify the substance that is removed at the filtration stage . (1 mark)

……
……
……

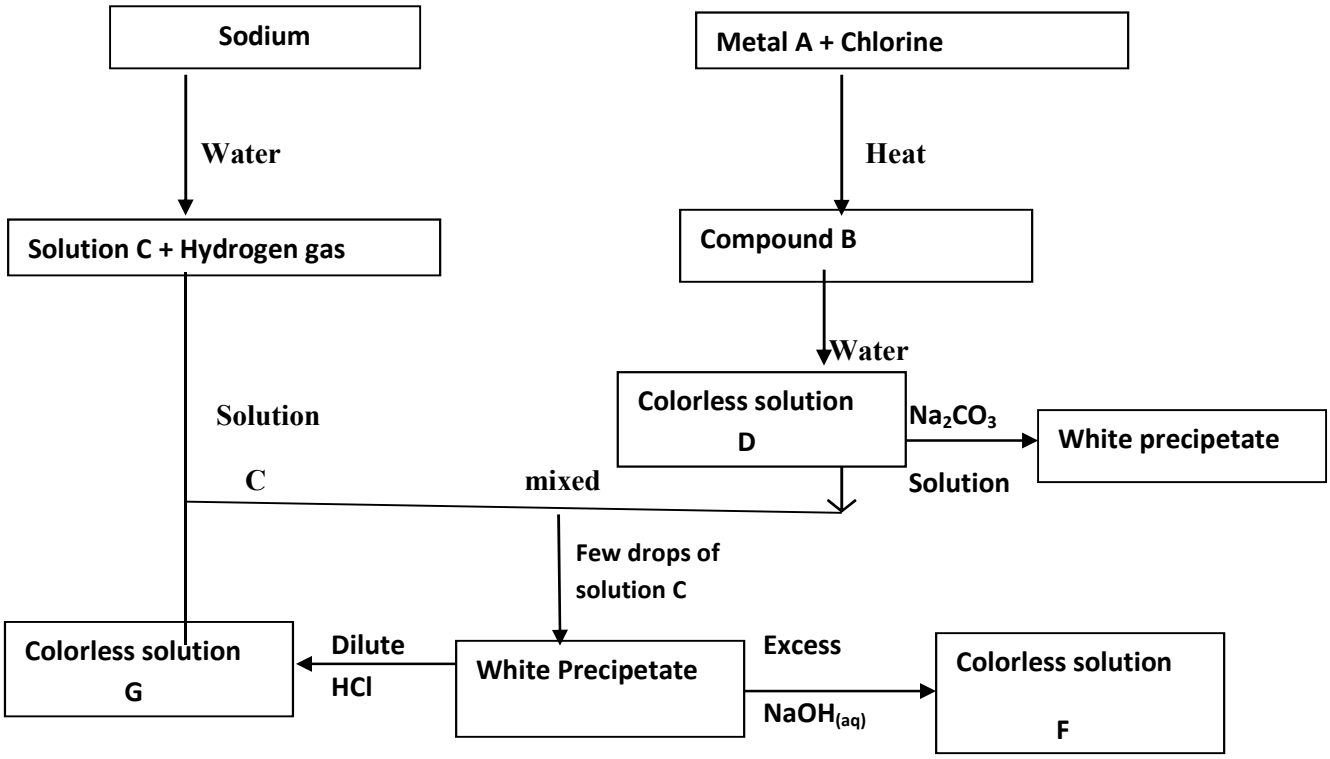
b) Explain why Carbon (IV) oxide and water are removed before liquefaction of air. (4mark)

……
……
……..
……
……
……
……
……

c) Identify the component that is collected at -186°C. (1 mark)

……
……
……

6. Study the flow diagram below and use it to answer the questions that follow.



(a) Give the name and formula of the following.

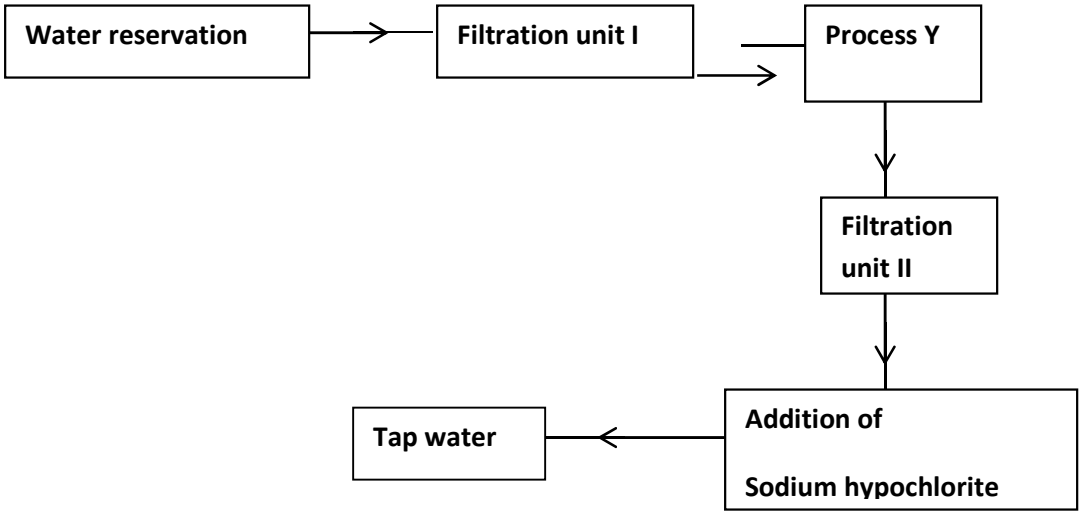
(i) White precipitate **E**

(ii) Colourless solution F

(b) What property is exhibited by white precipitate E when it reacts with Sodium hydroxide and HCl acid.

(c) Write an ionic equation for the reaction between white precipitate E and excess sodium hydroxide solution.

7. The flow chart below shows the various stages of water treatment.



(i) Which substance is likely to be removed in filtration unit 1?

……
……
……

(ii) What is the name of Process Y ?

……
……
……

(iii) What is the purpose of;

I) Process Y ?

……
……
……

II) Addition of solution hypochlorite?

……
……
……

c) It was confirmed that magnesium sulphate was in the tap water.

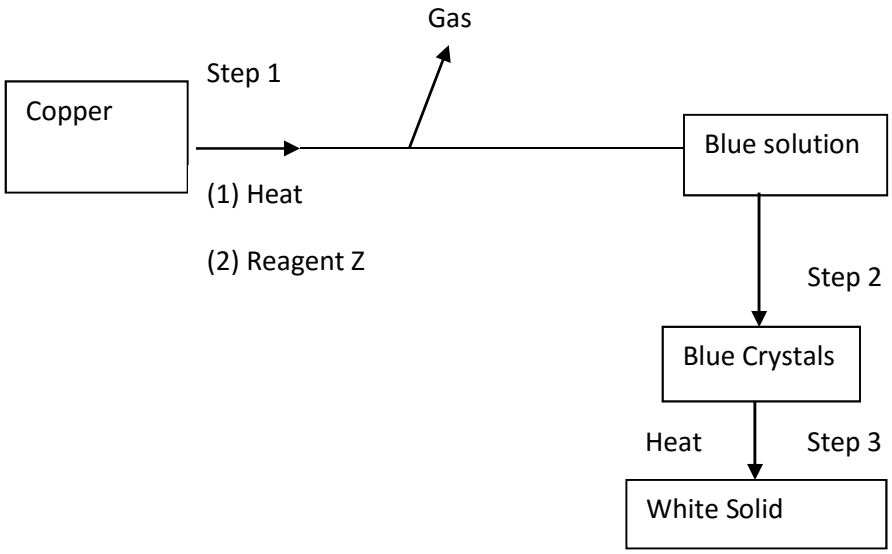
(i) What type of hardness was **K** present in the water?

(iii) Explain how the hardness can be removed.

……
……

……

8. Study the flow chart below and answer the questions that follow:



a) Name reagent Z.

……
……
……
……

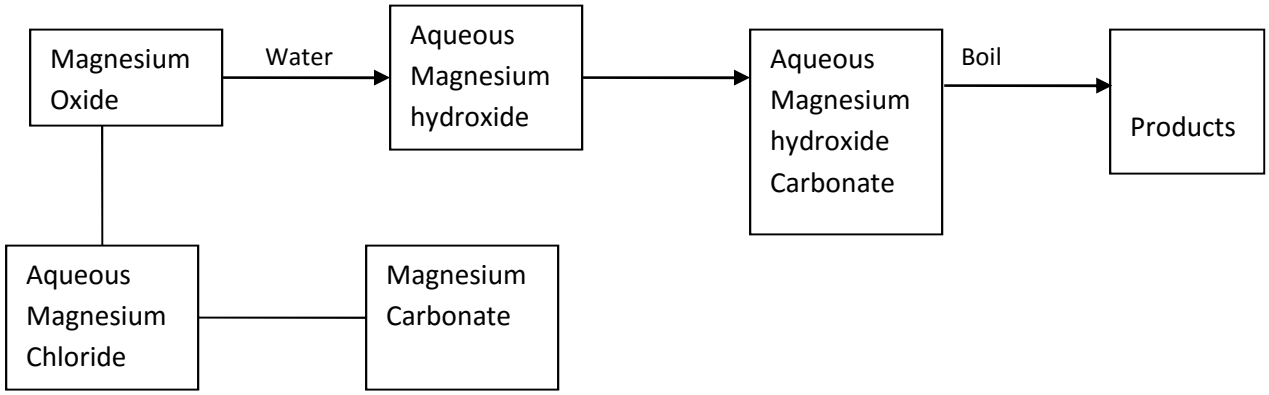
b) Describe the process which takes place in step 2.

……
……
……
……
……
……
……
……

c) Identify the white solid.

……
……
……
……

9. The scheme below shows some reactions starting with magnesium oxide. Study it and answer the questions that follow:-



(i) Name the reagents used in **steps 2 and 4**

……
……
……
……
……
……

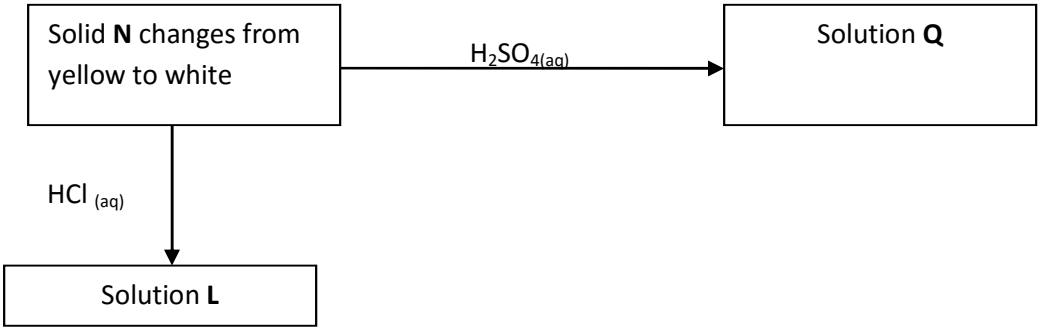
(ii) Write an equation for the reaction in **step 3**

……
……
……
……

(iii) Describe how a solid sample of anhydrous magnesium carbonate is obtained in **step 5**

……
……
……
……
……
……
……
……
……
……

10. Use the scheme to answer the questions that follow:



(a) Identify solid **N** …….

……

……

……

…….

(b) Write a balanced equation for the formation of **Q**

……

……

……

…….

(c) Write the formula of the complex ion formed when sodium hydroxide is added to solution **L** in excess.

……

……

……

……

11. (a) Define Isomerism.

……

……

(c) Draw and name one of the position isomers of Butene.

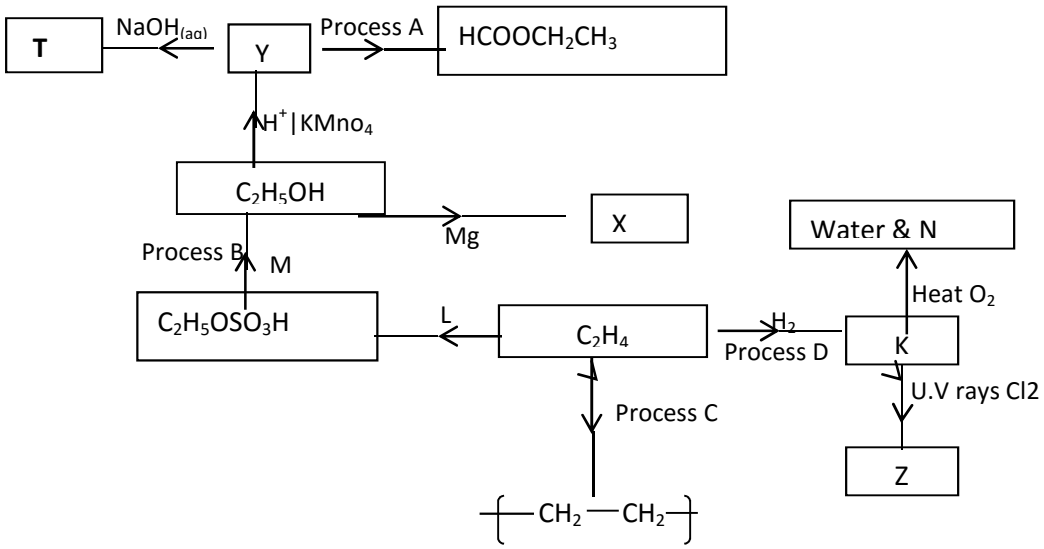
(d) Filter paper dipped in acidified Potassium Manganate (VII) were placed in two separate gas jars A and B containing pentane and Pent-l-ene respectively. Explain what was observed in each case.

……

……

……..

(e) The scheme below shows some products that can be obtained starting from ethene.



(i) Name the compounds **T, X, Y,** and **Z**

……
……
……..

(ii) Name the process A, B, C and D

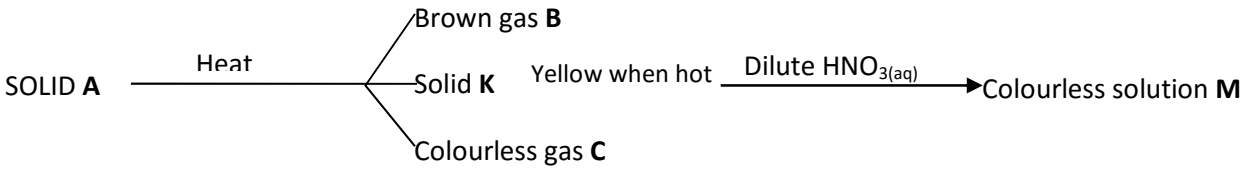
……
……
……
……..

(iii) State **one** condition necessary for the processes in (ii) above to take place.

……
……

12. Study the flow chart below and answer the questions that follow

U.V rays Cl2

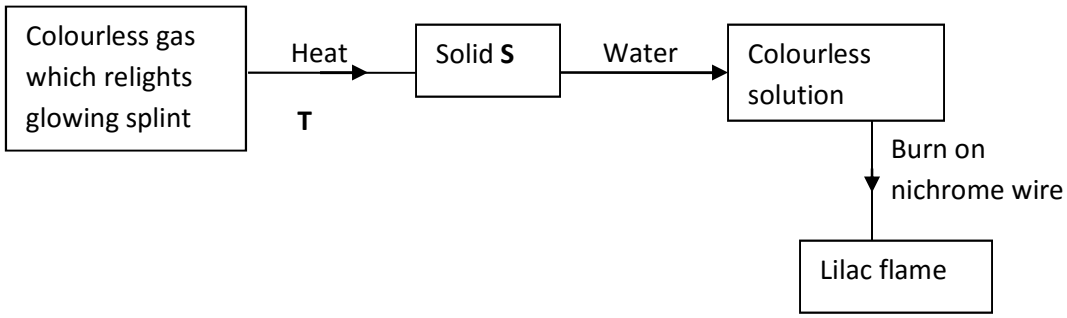


a) Identify ;

i) Gases **C** and **B**

ii) Ions likely to be presented in solid **A**

13. Study the scheme below and answer the questions which follow:



(a) Identify ;

(i) The cation present in solid **S**

(ii) The anion in solid **S**

(f) Write an equation to show how solid **S** is heated in process **T**

……
……
……
……

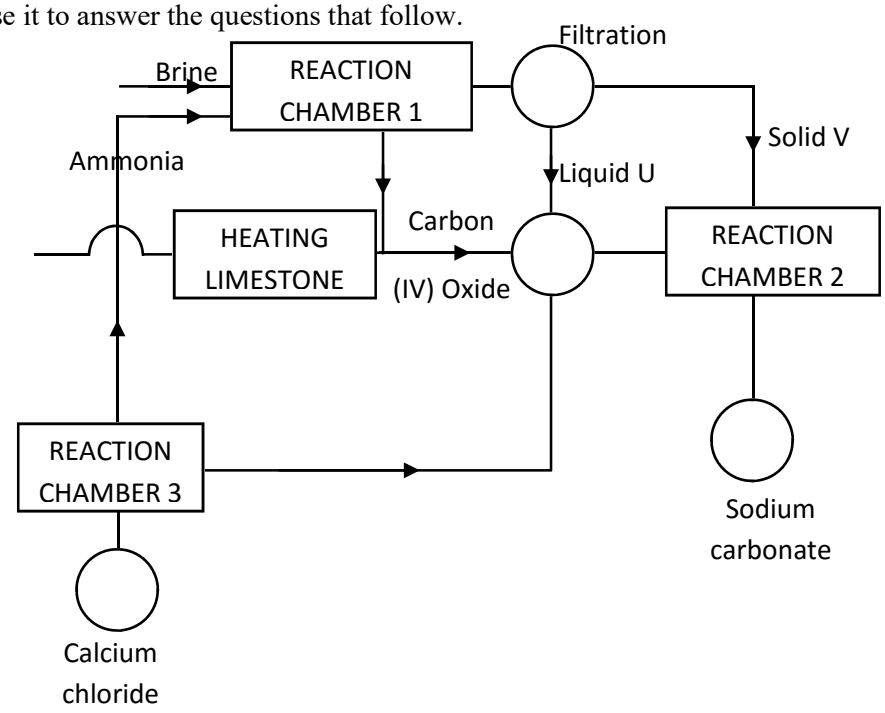
(iv) Copper II chloride solution dissolves in excess ammonia solution to form a deep blue solution. Give the ion responsible for the deep blue solution

……
……
……
……

(v) A solution of hydrogen chloride is an electrolyte but a solution of hydrogen chloride in methylbenzene in a non-electrolyte. Explain

……
……
……
……

14. The figure below shows the stages in the manufacture of sodium carbonate. Study the diagram below and use it to answer the questions that follow.



a) (i) Name **three** starting materials in the manufacturer of sodium carbonate.

……
……
……
……
……

(iii) Which substances are recycled in this process?

……
……
……
……
……..

(iv) Identify the chambers in which the recycled substances are regenerated.

……
……
……

……
……

(v) Name the substances **U** and **V**.

……
……
……
……
……..

b) Give an equation for the reaction which occurs:

(i) In the reaction chamber 1

……
……
……

(ii) When solid V is heated.

……
……
……

(iii) In the reaction chamber 3.

……
……
……

c) State **one** commercial use for;

(i) Sodium carbonate.

……
……
……

(ii) Sodium hydrogen carbonate.

……
……
……

(iii) Sodium silicate.

……
……
……

d) (i) state the by-product for the Solvay process.

……
……
……

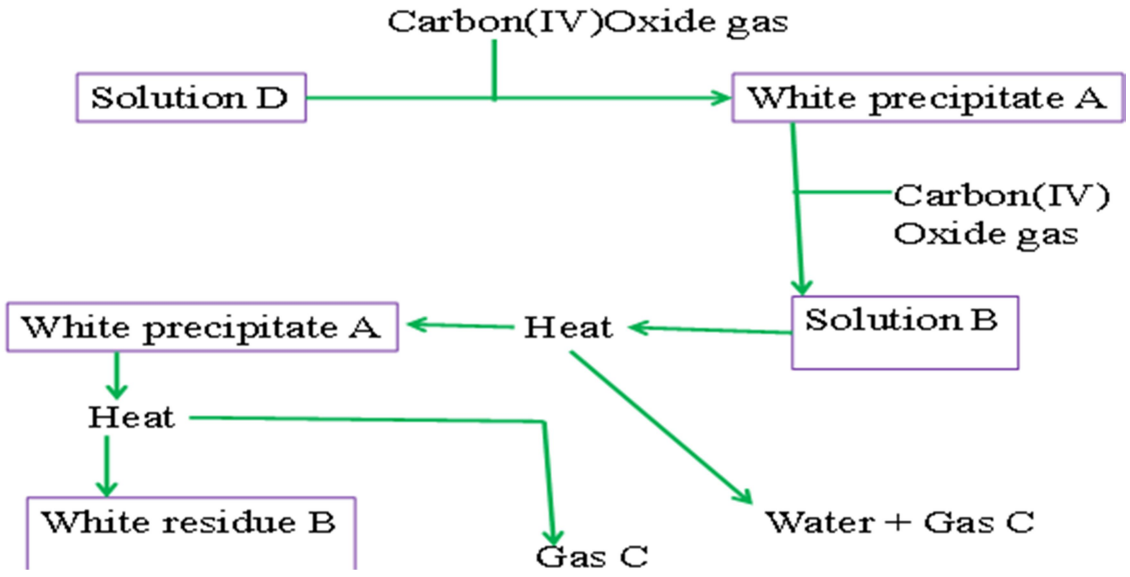
(iii) Name two uses of the by-product named in (d)(i) above.

……

……

……

15. Study the flow chart below and use it to answer the questions that follow.



(a)Name:

(i) the white precipitate A

……

……

(ii) Solution B

……

……

(iii) Gas C

……

……

(iv) White residue B

……

……

(v) Solution D

……

……

(b)Write a balanced chemical equation for the reaction for the formation of:

(i) the white precipitate A from solution D

……

……

(ii) The white precipitate A from solution B

……
……
……

(iv) solution B from the white precipitate A

……
……
……

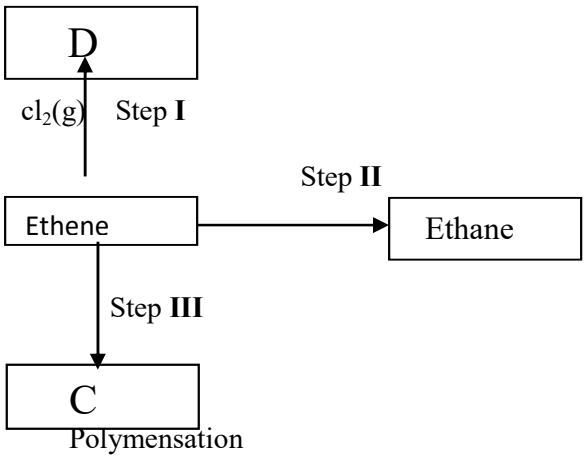
(v) white residue B from the white precipitate A

……
……
……

(vi) reaction of white residue B with water

……
……
……

16. Study the flow chart below and answer the questions that follow.



(i) Give the reagents and conditions for step **II** to occur.

……
……
……

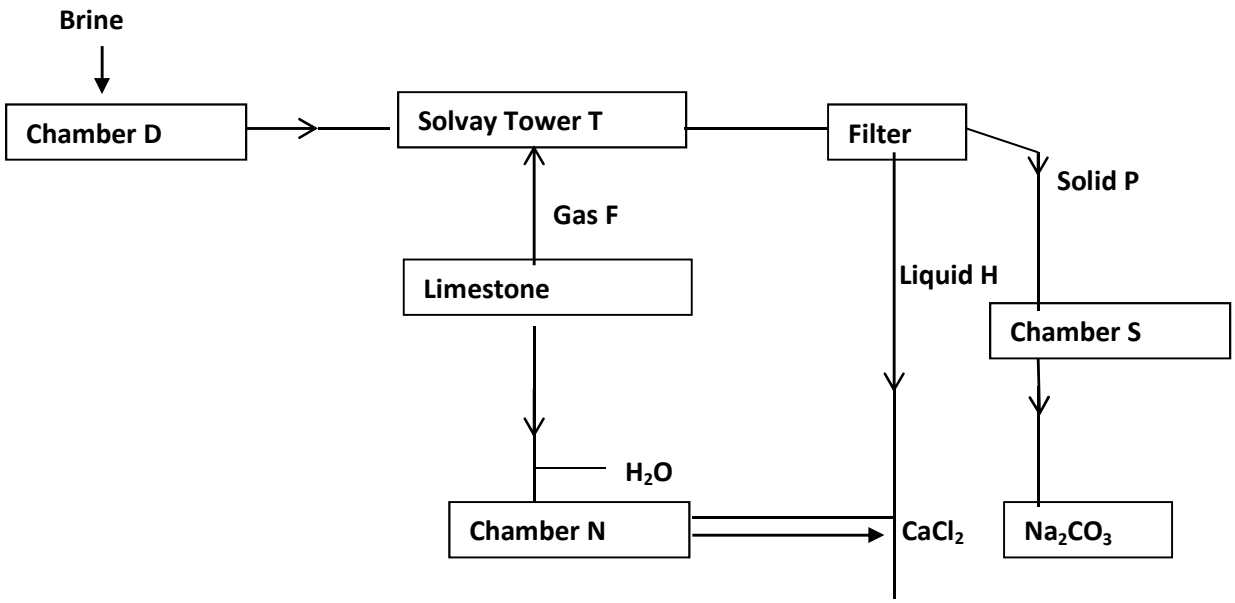
(ii) Give the industrial importance of step **II**

……
……
……

(iii) Name the compounds **D** and **C**

……
……
……
……
……
……

17. Study the flow chart below and answer the questions which follow.



(a) Identify

(i) Gas **F**

(ii) Liquid **H**

(iii) Solid

(b) State **one** use of calcium chloride.

(g) Give **two** reasons why such a plant should be cited near a river

(d) Write equations for the reactions occurring in chamber:

(i) **N**

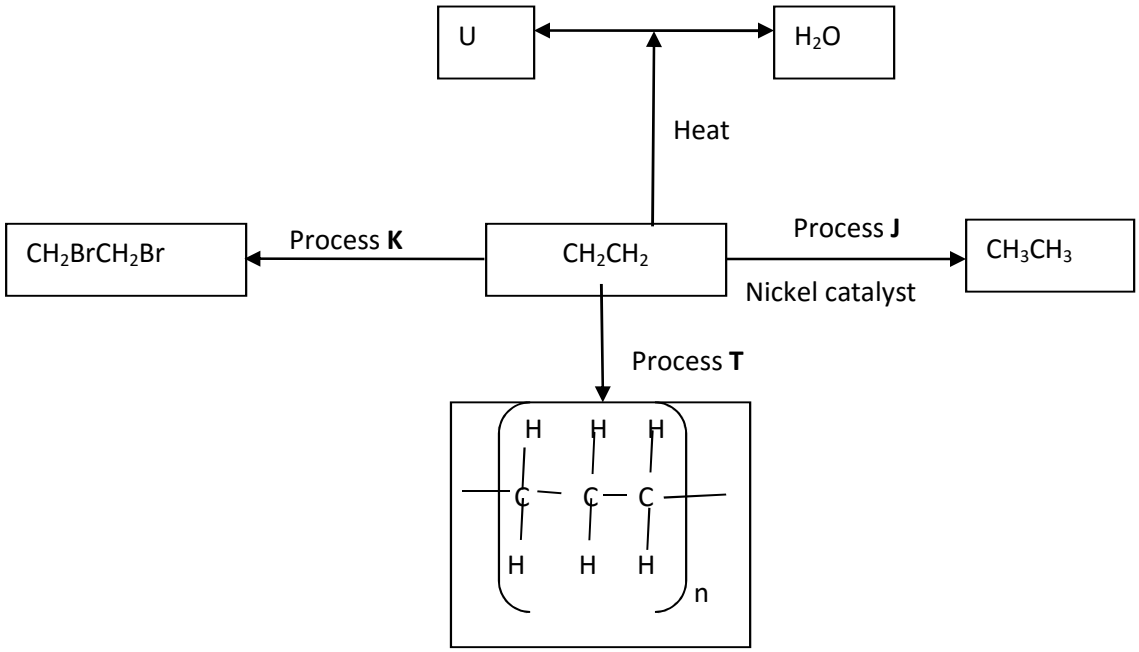
(ii) **S**

(e) Using an ionic equation, explain how sodium carbonate is used to soften hard water.

(f) Explain how ammoniacal brine is formed.

(g) State **one** use of sodium hydrogen carbonate.

18. Use the flow chart below to answer the questions that follow:



(a) What observation would be made in process **K**?

……

……

……

(b) Name another conditions necessary for process **J** to take place

……

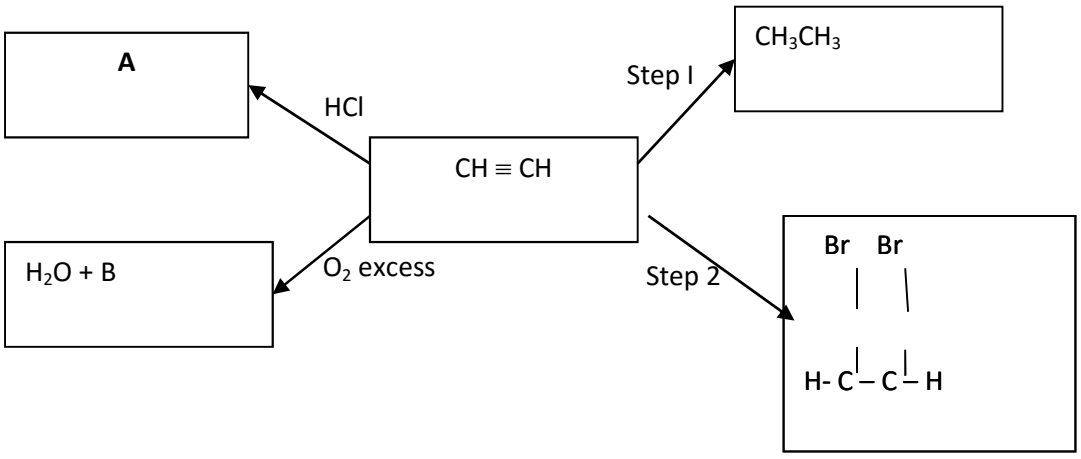
……

……

(c) Give the name of substance **V**

……
……
……

19. Study the flow chart below and answer the questions that follow:-



(i) Give the name of the substance CH ≡ CH

……
……
……

(ii) To which group of hydrocarbons does the substance in (i) above belong?

……
……
……

(iii) Give **two** reagents that can be used to prepare the substance named in (i) above

……
……
……

(iv) State **two** physical properties of the substances in (i) above

……
……
……

(v) Give the names to the process in step I and 2

……
……
……

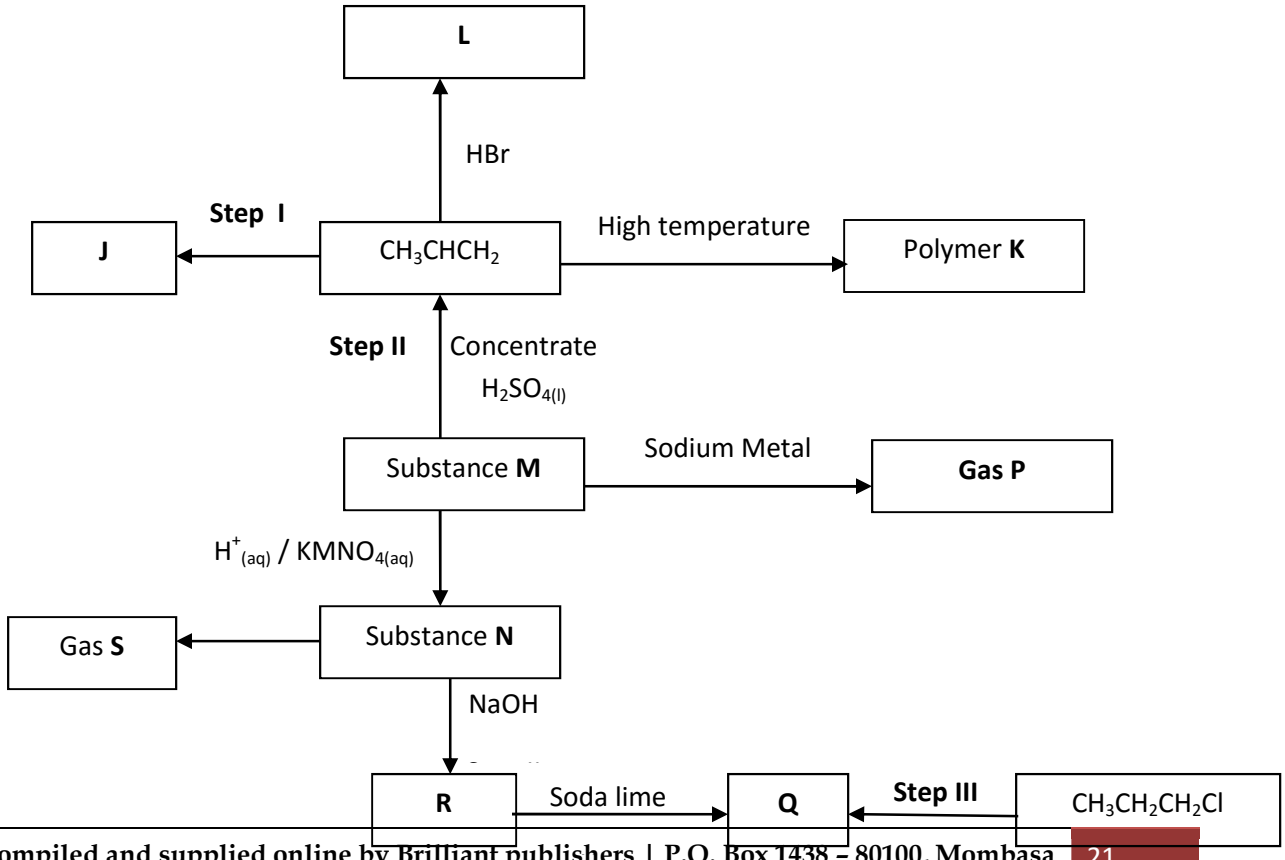
(vi) Write an equation to show how substance **A** is formed

……
……
……

(iv) Identify substance **B**

……
……
……

20. Use the flow chart below to answer the questions that follow:-



(a) (i) Name the following :-

I. Gas **S** ……..…….

II. Gas **P** ……

III. **J** …….

(ii) Name the processes involved in the following steps:

I. Step I ……..

II. Step II …….

III. Step III …….

(iii) Write a chemical equation for the complete combustion of substance **M**

……
……
……...

(iv) Name the condition and reagent in step III

Condition ……

Reagent …….

(v) Calculate the mass of salt **R** that would be formed by using 21.9 tonnes of **N** when it reacts with excess sodium hydroxide (C= 12.0 H= 1.0 Na = 23)

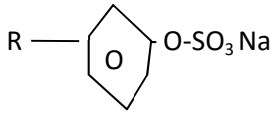
(vi) Draw the structure of polymer **K**

(vii) State **one** use of the above polymer

……

(b) (I) Name the class to which the following cleansing agents belong:-

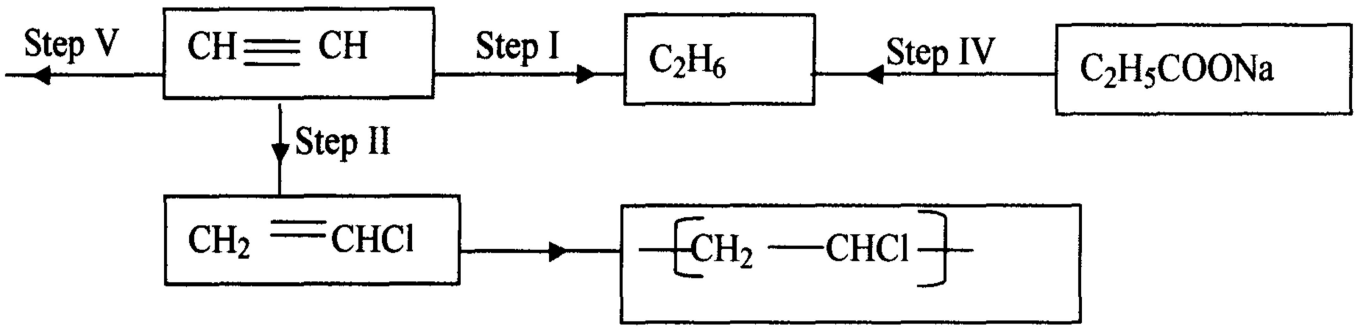
i) $R - COONa^+$ ……

(ii) 

……

II. Which cleaning agent above is not environmental friendly? Explain

21. Study the scheme below and answer the questions that follow



(i) Name the reagents in;

Step I ……

Step II ……

Step IV ……

(ii) Write an equation for the complete combustion of CH ≡CH

……

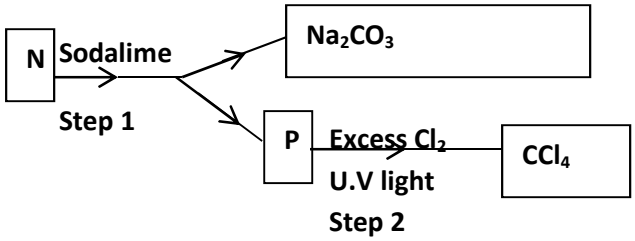
……

……

(iii) Give **two** uses of CH_4

……
……
……

22. Study the flow chart below and answer the questions that follow.



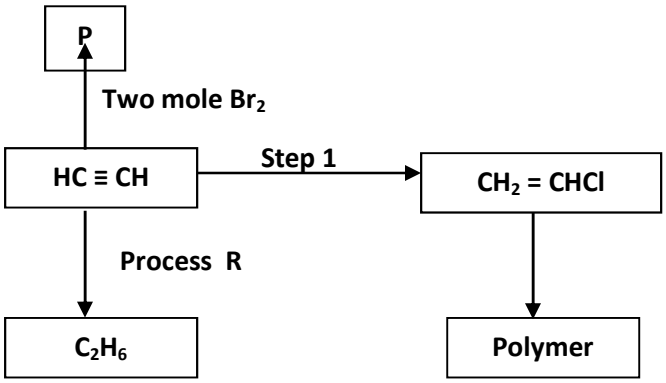
a) Identify **N** and **P**

……
……
……

b) What name is given to the type of halogenation/Chlorination reaction in step 2

……
……
……

23. The scheme below represents some reaction involving hydrocarbons. Study it and answer the questions that follow.



(i) Name Compound **P**.

……
……
……

(ii) Draw the structural formula of **P**.

……

……

……

(iii) Name the reagent and type of reaction taking place in process **R**.

……

……

……

(iv) What is a polymer.

……

……

……

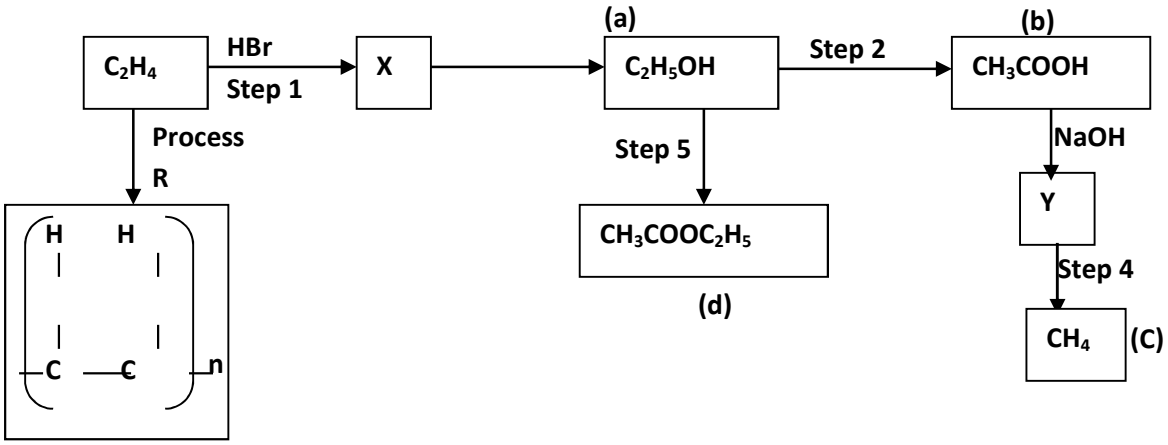
(v) Identify the reagent used in Step 1

……

……

……

24. The scheme show the reaction starting with Ethane.



(i) Name the compound **a**, **b**, **c** and **d** (2mks)

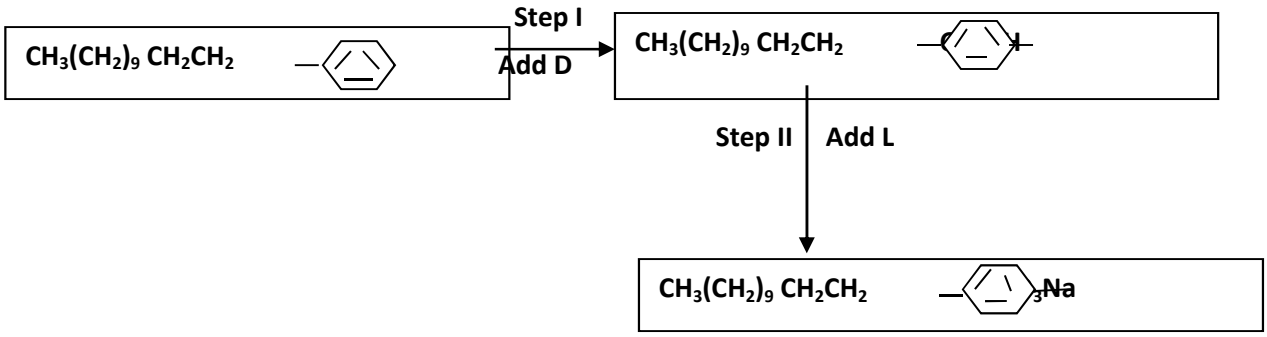
(ii) Give the formulae and name of **X** (1mk)

(iv) Name the reagent and condition needed to carry out steps 2 and 5 . (2mks)

(v) Write a balanced equation which lead to the formation of substance **Y** (1mk)

(v) Name process **R** in the above schematic diagram.
(1mk)

(b) The flow chart below shows the manufacture of a cleansing agent.

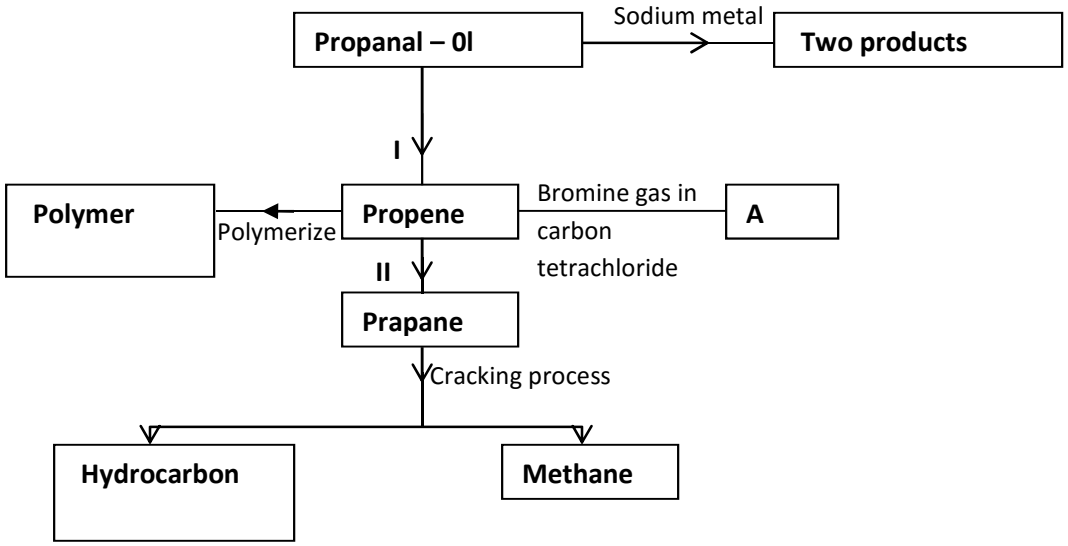


(i) Identify each of the substance **D** and **L** (2mks)

(ii) Give **one** advantage of using this cleansing agent over ordinary soap
(1mk)

(iii) What is the effect of the above cleansing agent to the environment.
(1mk

25. Study the scheme below and answer the questions that follow.



(i) Write an equation for the reaction between propan – l- ol and sodium metal.

……
……
……
……
……..

(ii) Name process I and II

……
……
……
……
……..

(iii) Identify the products A and B

……
……
……
……
……..

(iv) Name catalyst used in product II

……
……
……
……
……..

(v) Draw the structural fromular of the repeating unit to the polymer C.

……
……
……
……
……..

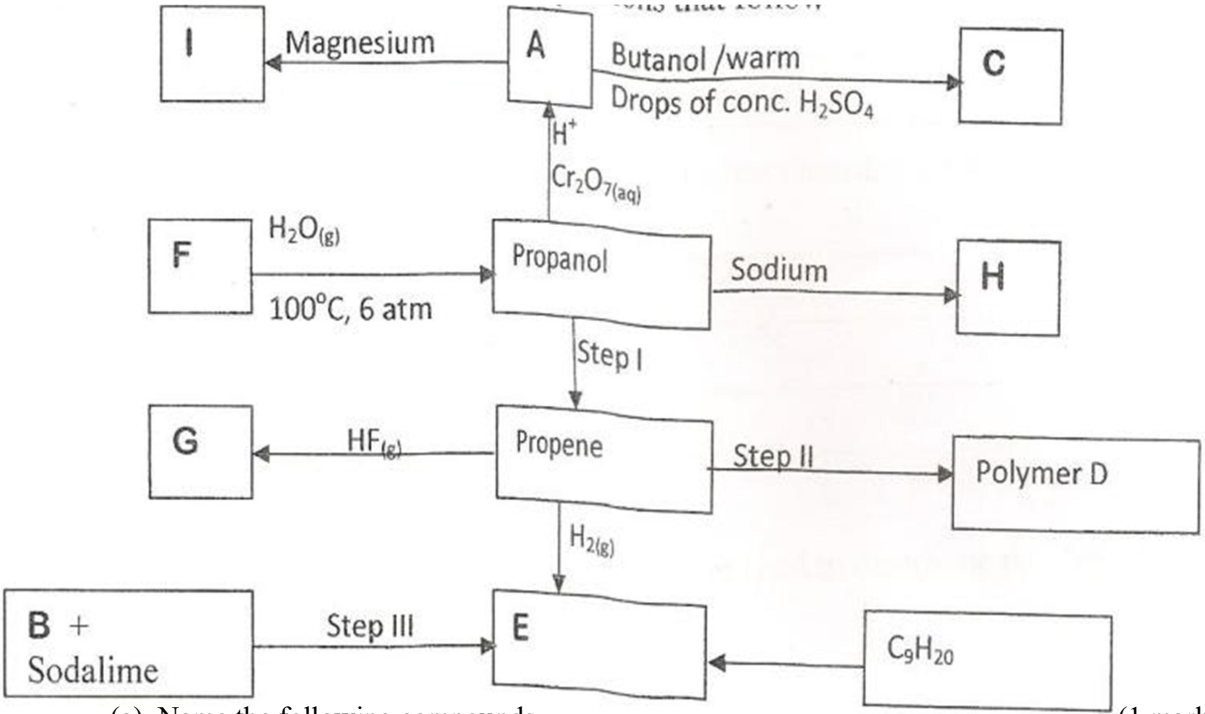
c) State **two** industrial use of methane.

……
……
……
……
……..

d) State and explain the observations when sodium metal is put unto a boiling tube containing propan–l-ol

……
……
……
……
……..

26. Study the scheme below and answer the questions that follow.



(a) Name the following compounds. (1 mark)

F ……..

I……

(b) Name and draw the structural formula of compounds G and H. (2 marks)

……

……

(c) Write down chemical equations for;

(i) Reaction of compound A and butanol (1 mark)

……

……

(ii) Reaction in step II (1 mark)

……

……

(d) Name the process that takes place in step IV (1 mark)

……

……

(e) Name the conditions necessary for propene to form compound E. (1 mark)

……

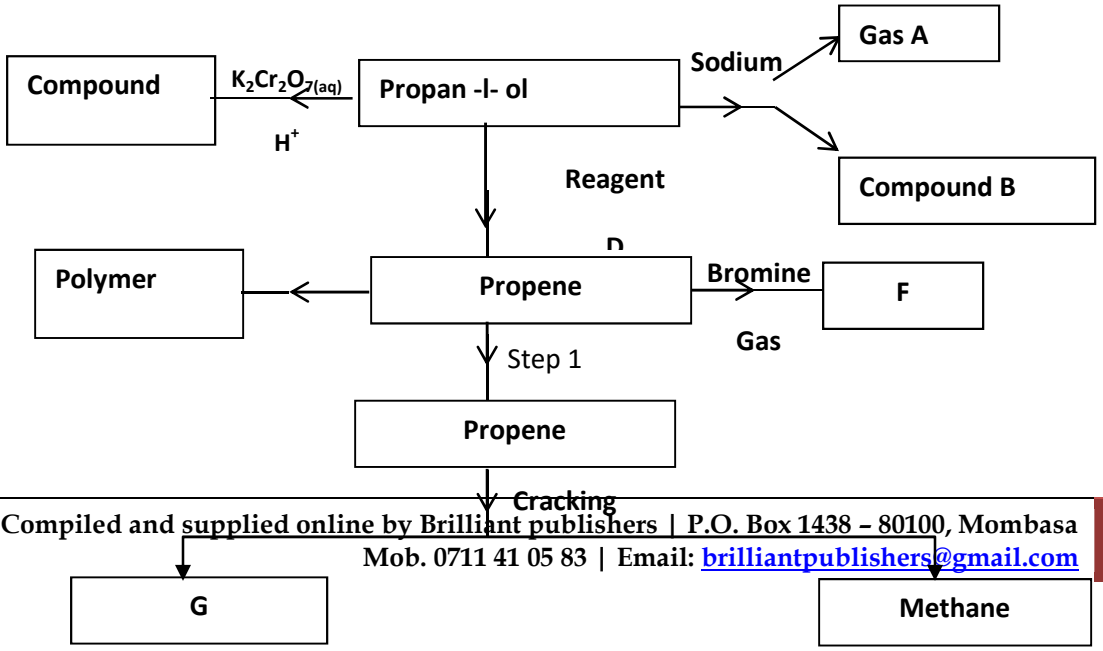
……

(f) Describe how you can distinguish between compound A and propanol. (3 marks)

……

……

27. Study the scheme below and answer the questions that follow.



(i) Identify the product.

……

……

……..

(ii) Name the compound.

……

……

……..

(iii) State the conditions for step 1

……

……

……..

(iv) Write the equation for the reaction leading to the formation of methane.

……

……

……..

(v) State **two** industrial uses of methane.

……

……

……..……

……

……

……..

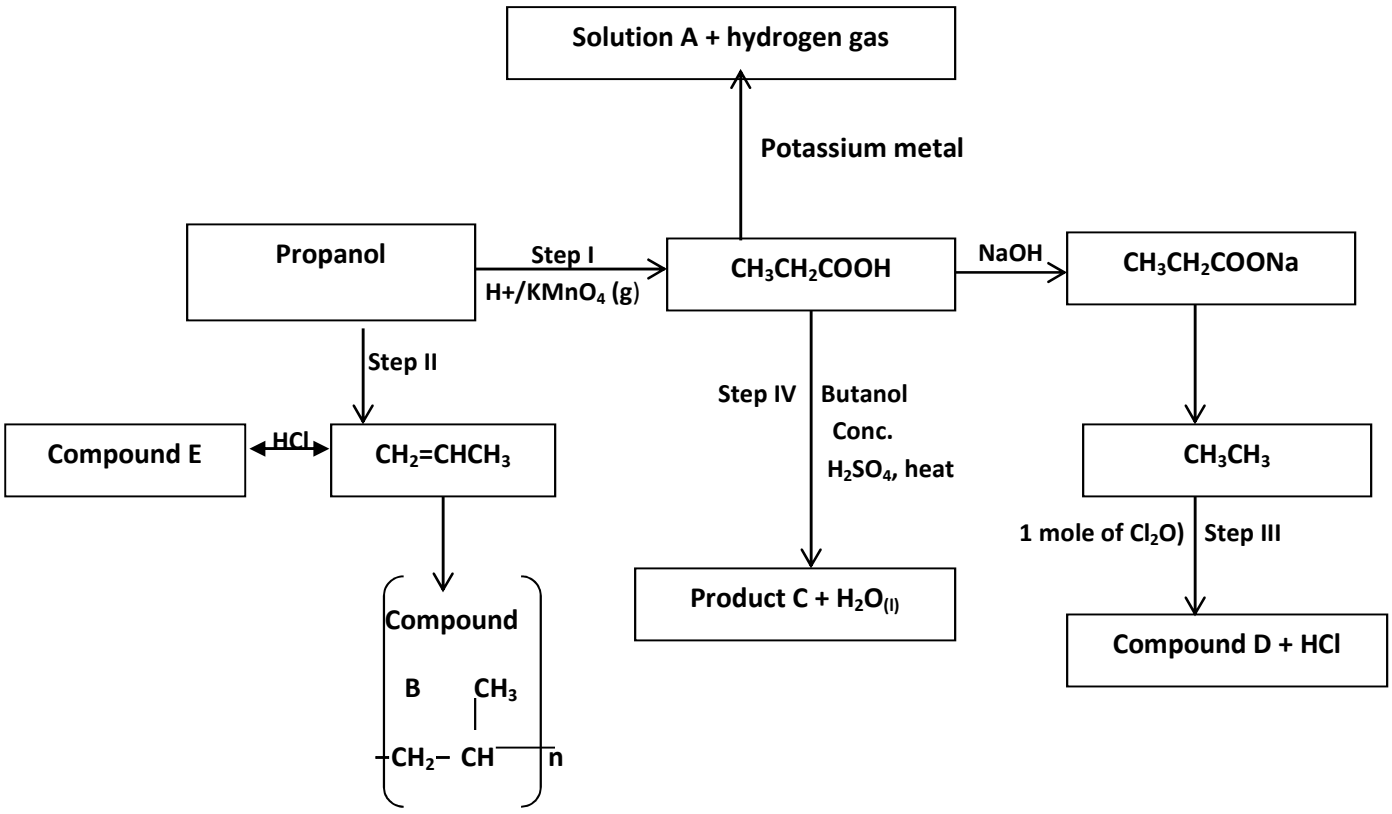
(vi) Identify the reagent **D**

……

……

……..

28. The scheme below shows a series of reactions starting with Propanol. Study it and answer the questions that follow.



(a) (i) Name the type of reaction in steps I and II

……

……

……..

(b) Write the equation for the reaction that takes place in Step III

……

……

……..

(c) Name substances labeled **A,C,D** and **E**

……

……

……..

(d) Draw the structural formula of product **C** .

……
……
……..

(e) Name the process in Step (IV).

……
……
……..

(f) Name compound **B** and state the type of reaction involved in its formation.

Name of compound **B**……
Type of reaction…….

(g) If the relative molecular mass of B is 35,700 determine the value of n.

……
……
……..

(h) Below are structures of two cleaning agents.

(i)

$R - COO^{-}Na^{+}$…….. A

R -  - $OSO^{-}_{3}\ Na^{+}$……..……. B

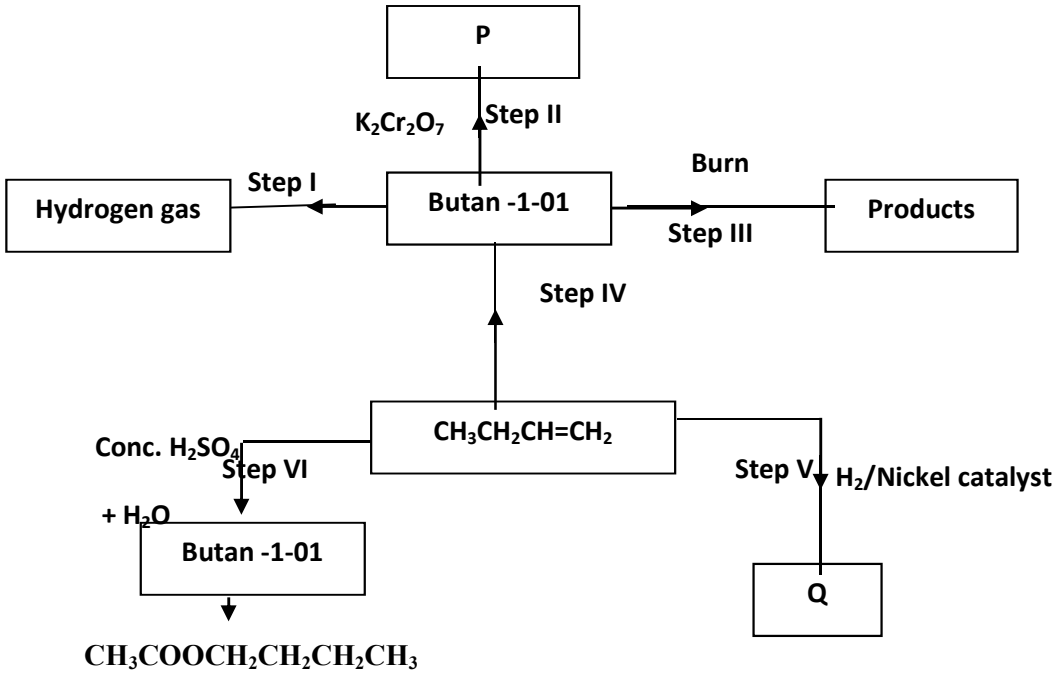
Identify the cleaning agent suitable to be used in water containing magnesium chloride.

……
……
……..

(ii) State **one** advantage of using cleaning agent B

……
……
……

29. Use the information in the scheme below to answer the questions that follow.



a) Name substance P (1mk)

b) Give the structure and name of compound Q. (1mk)

c) Write the equation for the chemical reaction in steps III (1mk)

d) Name the reagents and conditions necessary for the reaction in

(i) Step IV

Reagents (1mk)

Conditions (1mk)

(ii) Step VII

Reagents (1mk)

Conditions (1mk)

e) What name is given to the reaction in step VII? (1mk)

f) Below are **two** reactions showing how a long chained alkanoic acid can be converted into detergent B.

I. CH_2 — $C_{17}H_{35}COOH$

$$CH — C_{17}H_{35}COOH + 3H_2O \longrightarrow 3C_{17}H_{35}COOH + C_3H_8O_3$$

$$CH_2 — C_{17}H_{35}COOH$$

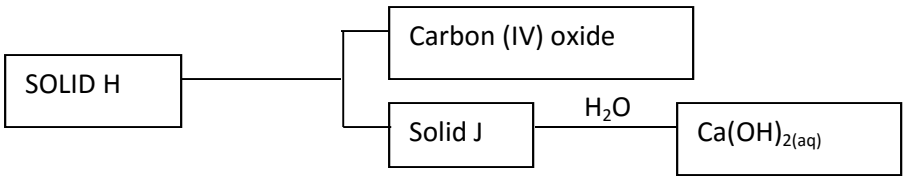
II. $3C_{17}H_{35}COOH + 3NaOH \longrightarrow C_{17}H_{35}COONa + 3H_2O$

(detergent B)

(i) Name the type of reaction in (2mks)

(ii) Give **one** disadvantage of using detergent B in washing clothes.

30. Use the scheme below to answer the questions that follow



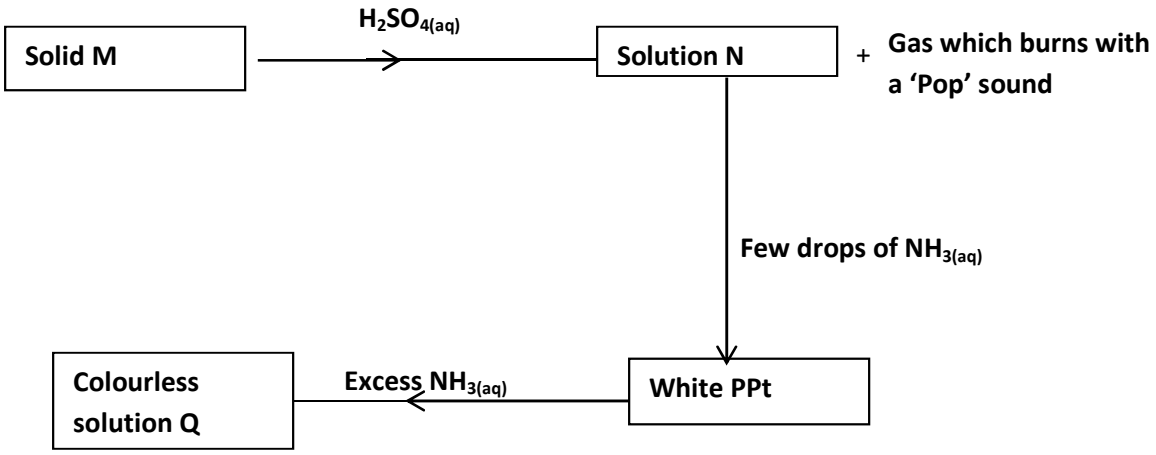
a) Identify the solids

i) H - (1mk)

ii) J - (1mk)

b) State one laboratory use of $Ca(OH)_{2(aq)}$ (1mk)

31. The scheme below shows some reaction sequence starting with solid M



(i) Name Solid **M**

……

……

……..

(ii) Write the formula of complex ion present in Solution **Q**

……

……

……..

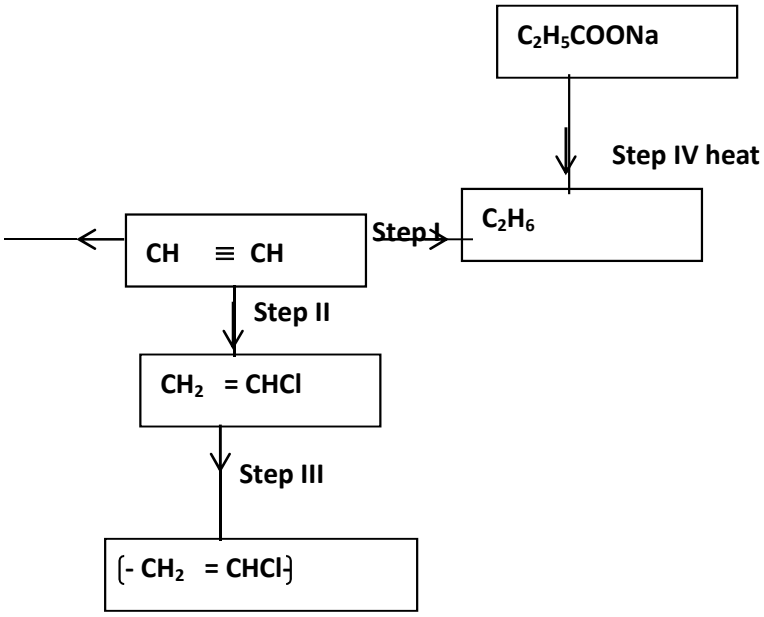
(iii) Write ionic equation of reaction between barium nitrate and solution N.

……

……

……..

32. Study the scheme given below and answer questions that follow.



(i) Name the reagent used in

Step I (1mk)

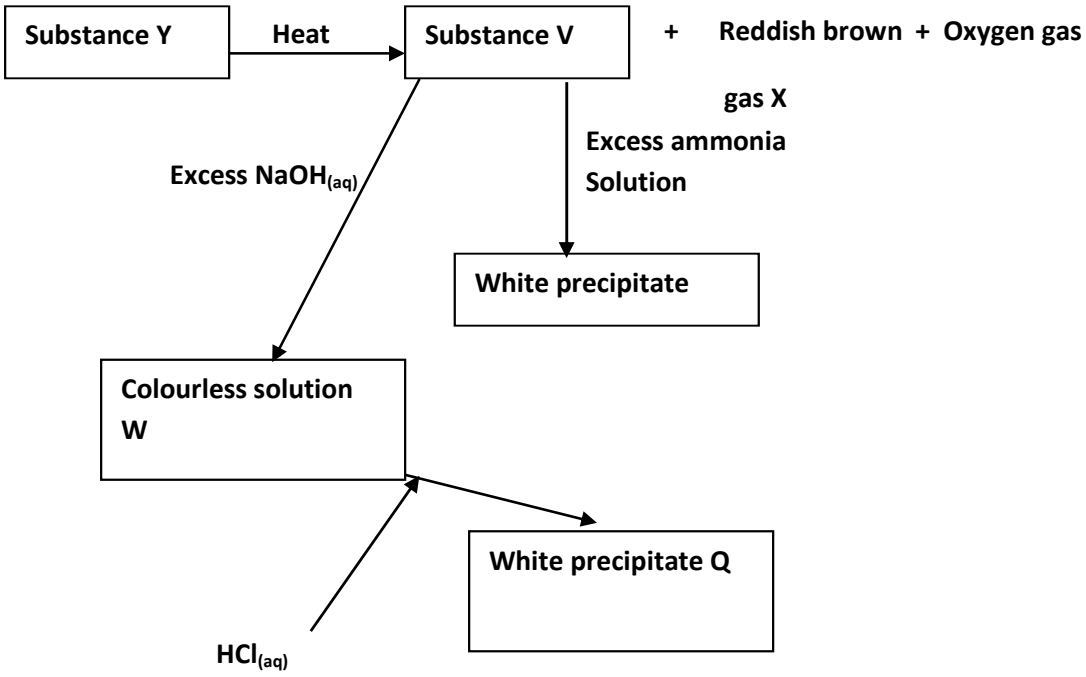
Step I (1mk)

Step III (1mk)

(ii) Write an equation for complete combustion of CH≡CH. (1mk)

(iii) Explain **one** disadvantage of the continued use of items in step III. (1mk)

33. Study the reaction scheme below and answer the questions that follow.



(a) Suggest the possible anions in **Y** and **V**

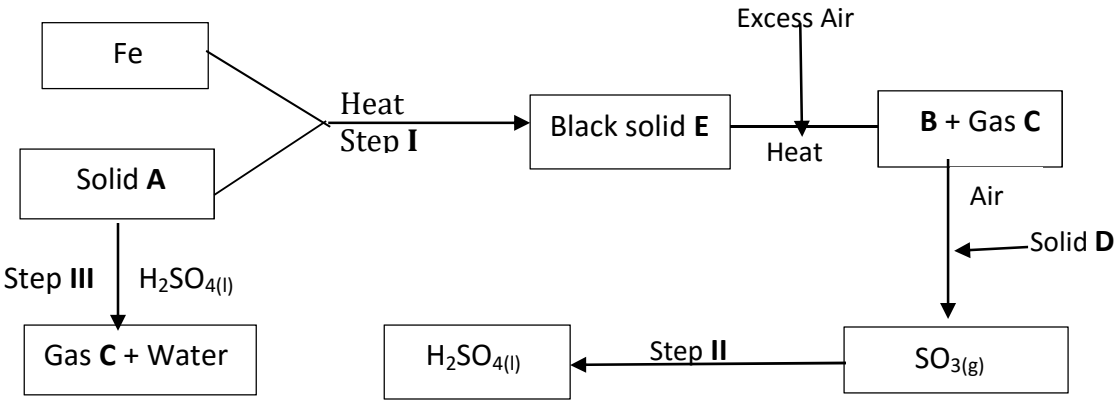
……

……

(b) Predict the name of gas X.

(c) ……
……

34. Study the flow chart below to answer the questions that follow.



(i) Name; **(3 marks)**

I. Solid **A**

……

II. Solid **D** ……

III. Substance **B**

……

(ii) Write equations for the two consecutive reactions that must take place in step **II** before sulphuric (VI) acid is formed. **(2 marks)**

……

……

……

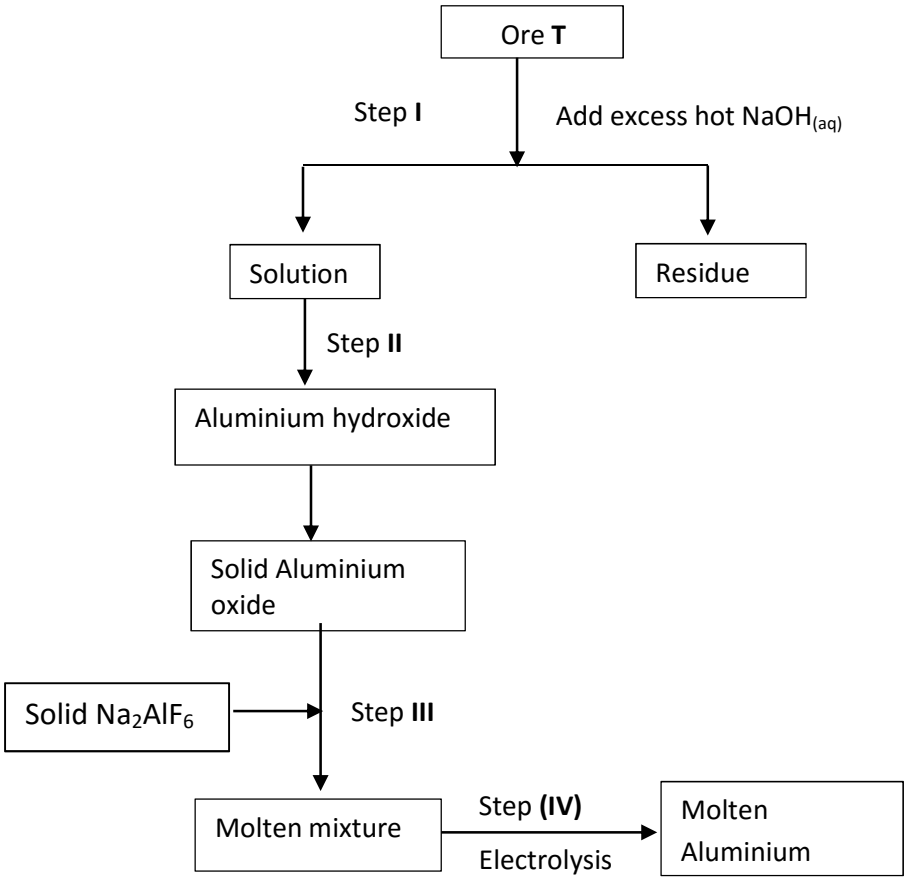
(iii) State the property of solid A that enables it to react with H_2SO_4 in step **III**. **(1 mark)**

……
……

(iv) State any **two** uses of sulphuric (VI) acid. **(2 marks)**

……
……
……

35. Study the flow chart below and answer questions that follow.



(a) Name ore **T**. **(1 mark)**

……

……..

(b) Explain why the ore is dissolved in excess $NaOH_{(aq)}$. **(1 mark)**

……

……..

……

……..

(c) Name compound present in:- **(1 mark)**

(i) Solution

……

(ii) Residue

……

(d) Name the process that takes place in step **II**. **(½ mark)**

……

(e) Why are sodium and fluoride ions not discharged in step **IV**? **(½ mark)**

……

……

……

(a) Write the equation for reaction in step **IV**. **(1 mark)**

……

……

……

(b) Why should the anode be replaced from time to time? **(1 mark)**

……

……

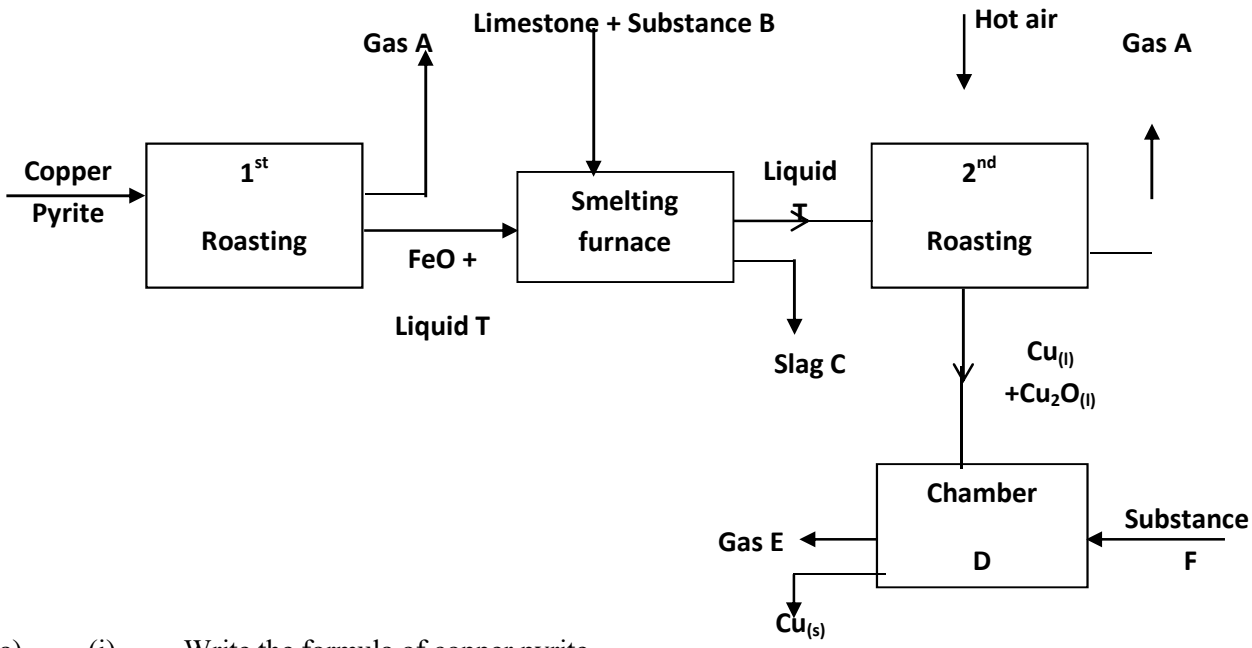
……

(c) State any **two** uses of aluminium. **(1 mark)**

……

……

36. The flow chart below outlines some of the process involved during extraction of copper.



a) (i) Write the formula of copper pyrite.

(ii) Name liquid T

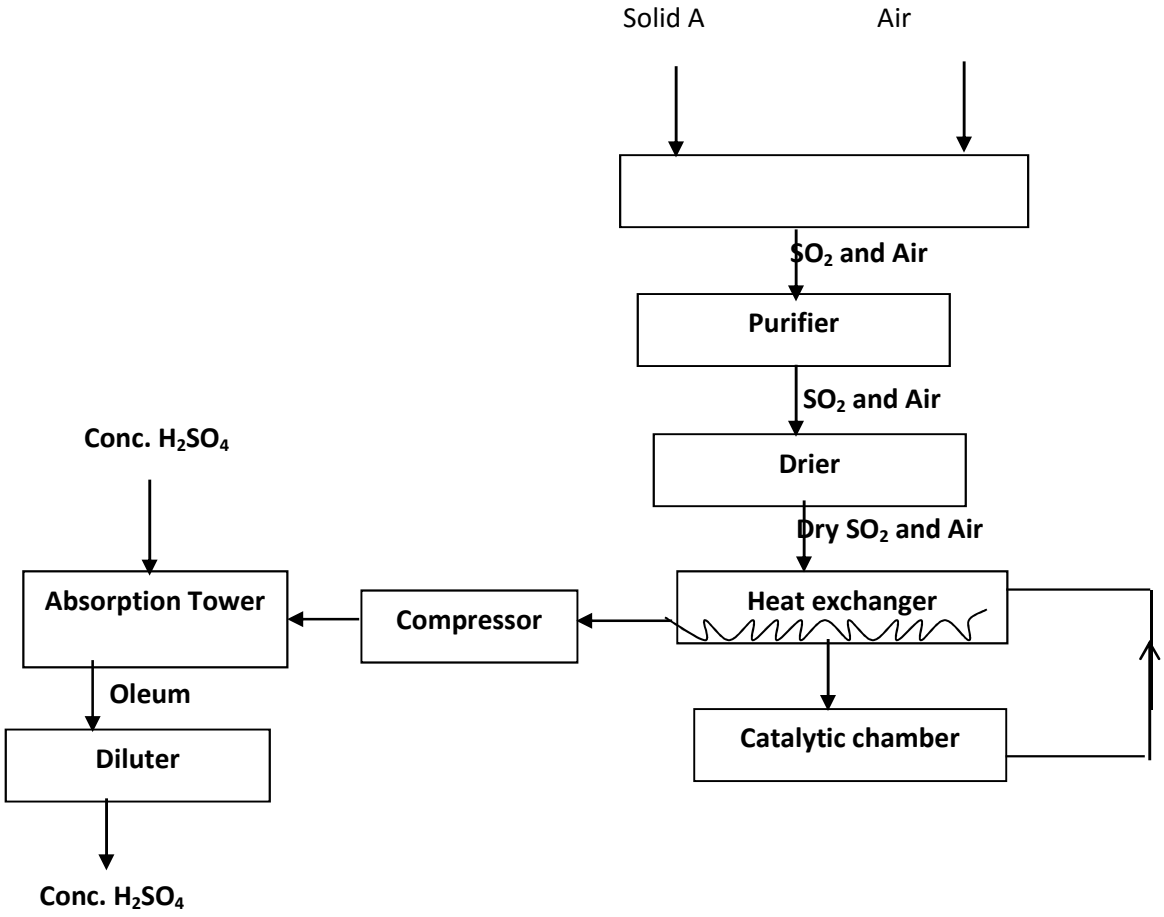
(iv) Write equations for the reactions taking place in the 2nd roasting furnace.

(v) Identify substance B and write equation for the reaction that take place in the smelting furnace.

(vi) State the purpose of substance F

b) Copper obtained from chamber D is impure draw a well labelled diagram showing how the copper obtained can be purified.

37. study it and answer the questions which follow.



(i) Name **three** possible identities of solid A. (1mk)

(ii) Name **two** impurities removed by the purifier. (1mk)

(iii) Why is it necessary to remove impurities. (1mk)

(c) The following chemical equation shows a reaction taking place in the catalytic chamber/converter.

$2SO_{2S} + O_{2(g)} \rightleftharpoons 2SO_{3\,(g)} \quad D H^{o} = -197 kjmol^{-1}$

(i) How would the following factors affect the production of sulphur (IV) oxide.

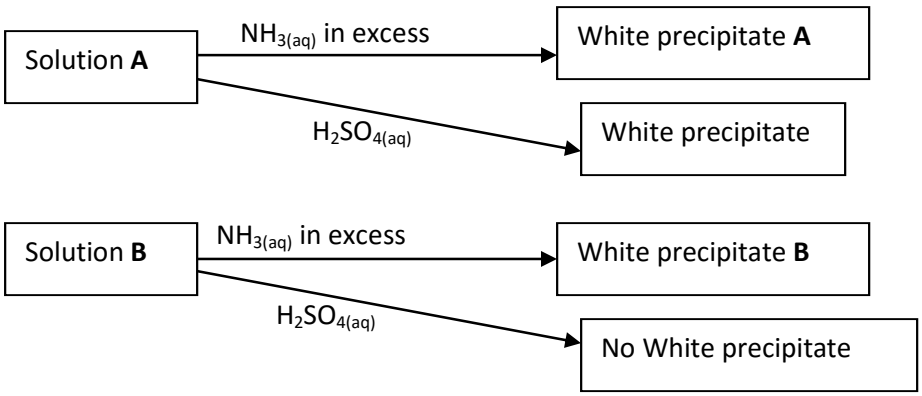
I . Increase in temperature. (1mk

II . Decrease in pressure (1mk)

(ii) Name the catalyst which is commonly used in this process and why? (1mk)

(iii) State and explain one environmental effect of sulphur (IV) oxide in the atmosphere. (2mks)

38. Study the flow charts below and use them to answer the questions that follow:



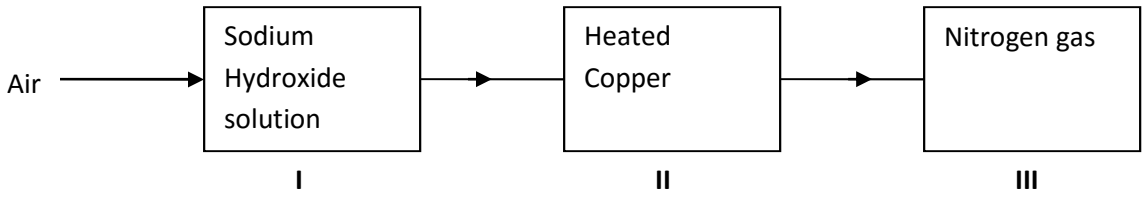
(a) Identify possible **cations** present in:

(i) Solution **A**

(ii) Solution **B**

(b) State and explain the observations made when a sample of dry white precipitate **B** is heated in a test-tube

39. The chart below shows a summary for the preparation of nitrogen gas from air

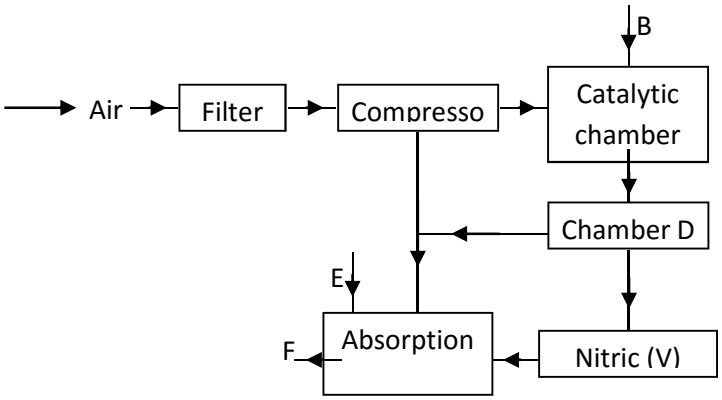


(a) What is the purpose of the sodium hydroxide?

(b) Write an equation for the reaction taking place in chamber **II**

(c) The nitrogen gas obtained is not pure. Explain

40. The following flow chart shows the industrial manufacture of Nitric (V) acid.



a) Identify substance **B, C, E** and **F**.

b) Describe what happens in the catalytic chamber.

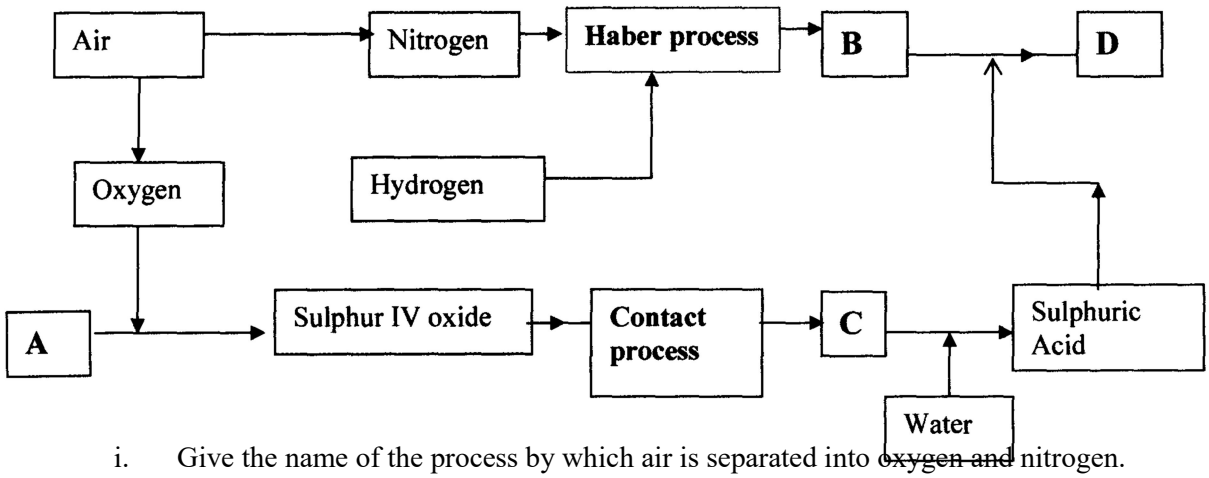
c) State what takes place in chamber **D.**

d) 60 – 65% nitric (V) acid is produced in the absorption chamber. Describe how the acid can be concentrated.

e) State why nitric (V) acid is stored in dark bottles.

f) Copper reacts with nitric (V) acid and not hydrochloric acid. Explain.

41. The flow chart below illustrates two industrial processes, **Haber** process and the **Contact** process:



i. Give the name of the process by which air is separated into ~~oxygen and~~ nitrogen.

ii. Apart from oxygen and nitrogen gases produced from process **(a)(i)** Name **one** other gas produced.

(b) Name the substances represented by the letters **A, B, C** and **E**

(c) Name the catalysts used in:

(i) Haber Process ……..

(ii) Contact Process ……..

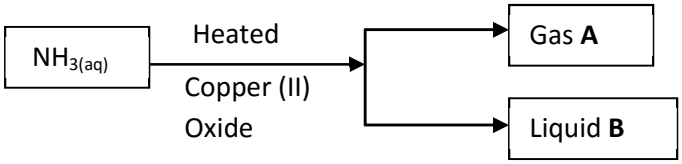
(d) Explain the role of the catalysts in both the Haber and the Contact processes

(e) Write a chemical equation for the formation of compound **B**

(f) Calculate the percentage by mass of the nitrogen present in compound **D** .

(g) Give **one** major use of compound **E**

42. Study the flow chart below and answer the questions that follow



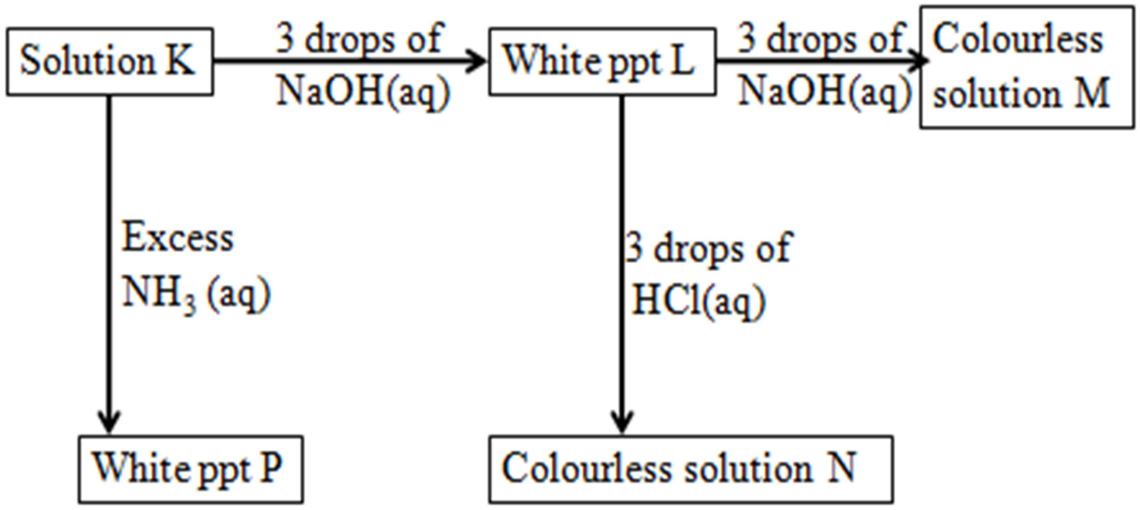
(a) State the observation made when ammonia is passed over heated Copper (II) Oxide

(b) Identify:-

(i) Gas **A** ……..……

(ii) Liquid **B** ……..……

43. Study the scheme below and use it to answer the questions that follow:



(a)Write the formula of:
(i)Cation in solution K.

(ii)white precipitate L.

(iii) colourless solution M

(iv) colourless solution N

(v)white precipitate P

(b)Write the ionic equation for the reaction for the formation of:
(i)white precipitate L

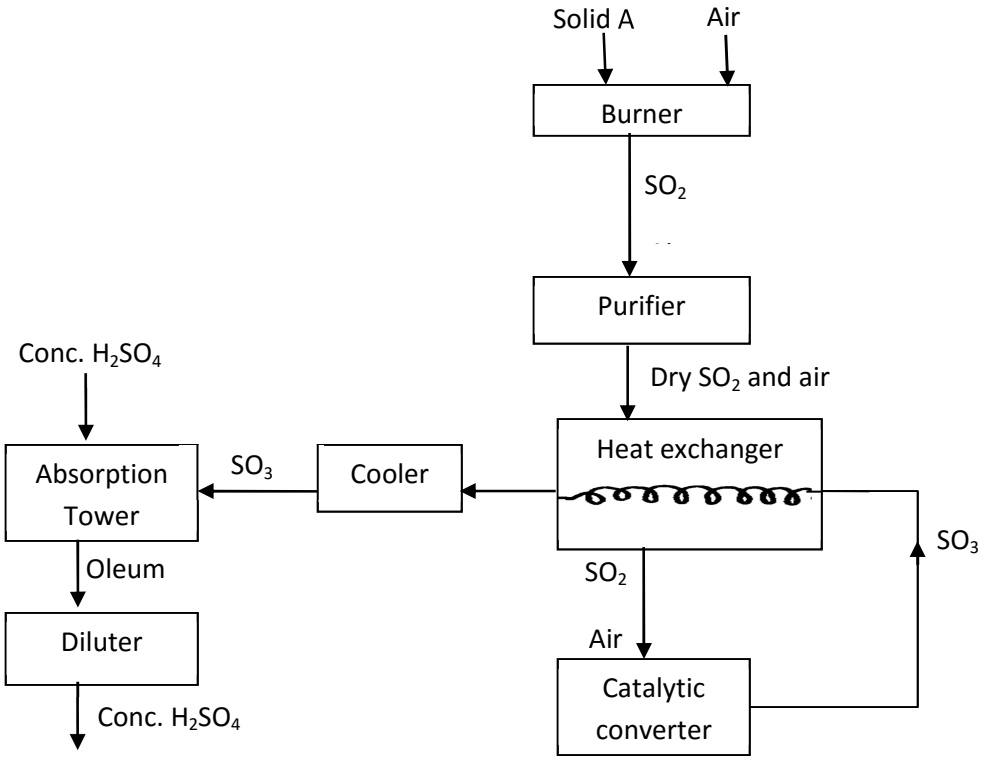
(v)white precipitate P

(c)What property is illustrated in the formation of colourless solution M and N.

44. (a) (i) Name the **two** crystalline forms of sulphur.

(ii) Briefly explain how plastic sulphur is formed.

(b) The scheme below represents the steps followed in the contact process. Study it and answer the questions that follow:-



(a) Name **two** possible identities of solid **A.**

(b) Name **one** impurities removed by the purifier.

(c) Why is it necessary to remove impurities?

(d) Write down the equation of the reaction taking place in the converter.

(e) (I) Name the **two** catalysts that can be used in the converter.

(II) What is the function of heat exchanger?

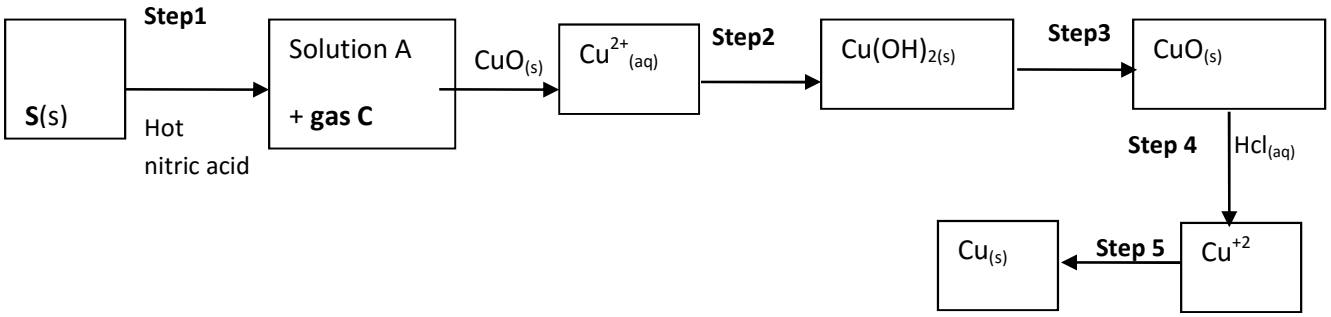
(f) Sulphuric (VI) Oxide is not dissolved directly into water? Explain

(g) (I) Name the main pollutant in the contact process.

(III) How can the pollution in **(g) (I)** above be controlled?

(h) Give **one** use of sulphuric (VI) acid.

45. The flow chart below shows a sequence of chemical reactions starting with sulphur. Study it and answer the questions that follow:-



(a) (i) State **one** observation made when the reaction in step 1 was in progress.

(ii) Explain why dilute hydrochloric acid cannot be used in **step 1.**

(iv) Write the equation for the reaction that took place in **step 1.**

(v) Name the reactions that took place in **step 4**

(vi) Name **solution A**

(vii) State and explain the harmful effects on the environment of the **gas C** produced in **step1.**

46. (a) Sulphur occurs naturally in two different forms called allotropes;

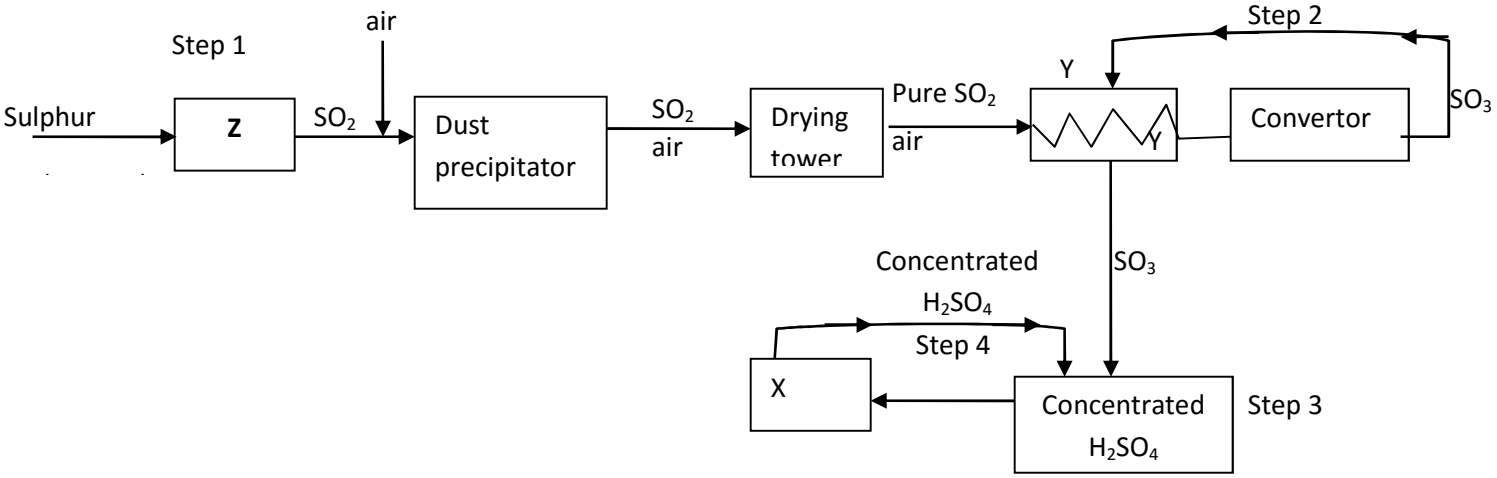
i) What are allotropes?

ii) the two allotropes of sulphur are stable at different temperatures, as shown in the equations below.

$$\text{Rhombic sulphur} \underset{\text{below } 95.5^{o}\text{C}}{\overset{\text{above } 95.5^{o}}{\rightleftharpoons}} \text{monoclinic sulphur}$$

Give the name to the temperature 95.5ºC

b) below is a flow diagram for the contact process for manufacture of sulphuric acid(VI)



i) Give the name of the chambers labeled Z, Y and X.

ii) State the **three** conditions in the convertor.

iii) Explain why the gases are passed though;

I. The dust precipitator and drying power.

II. The chamber labeled **Y.**

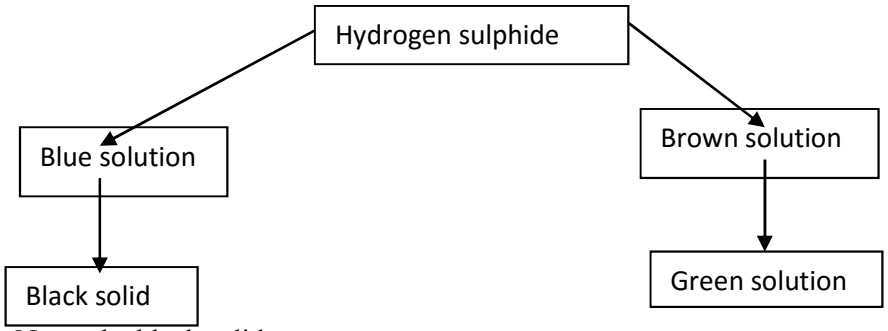
iv) Write the balanced equations for the reactions in :

Step 2

Step 3

Step 4

47. Hydrogen sulphide gas was bubbled into a solution of metallic nitrate(V)salts as in the flow chart below



(a) Name the black solid

(b) Identify the cation responsible for the formation of:

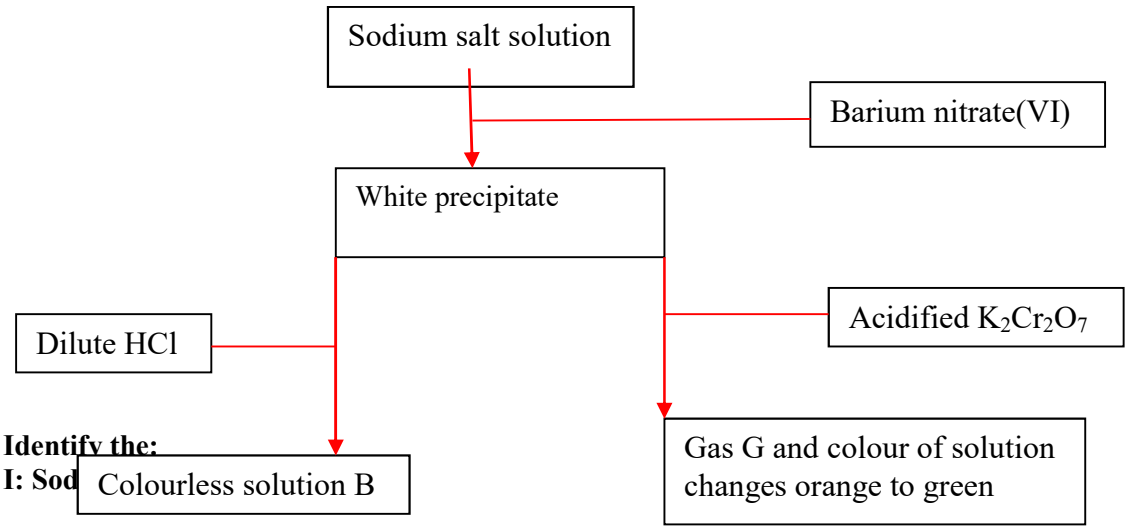
I. Blue solution

II. Green solution

III. Brown solution

(c) Using acidified potassium dichromate(VI) describe how you would differentiate between sulphur(IV)Oxide and hydrogen sulphide.

48. Study the flow chart below and use it to answer the questions that follow



(a) **Identify the:**

I: Sod

II: White precipitate

III: Gas G

IV: Colourless solution H

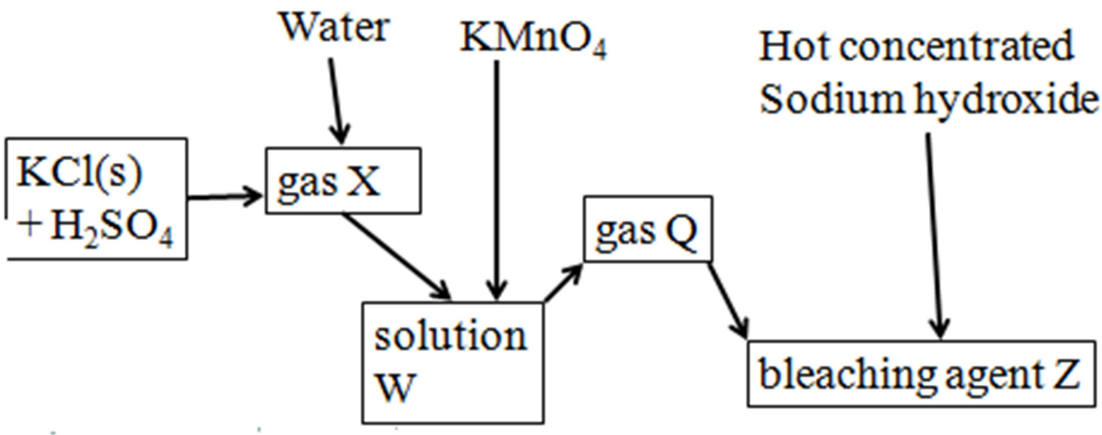
(b) Write an ionic equation for the formation of:

I.White precipitate

II.Gas G

III. Green solution from the orange solution

49. Use the flow chart below to answer the questions that follow.



a) (i) Name:
Gas X

Solution W

Gas Q

Bleaching agent Z

b) Write the chemical equation for the formation of :
(i) Gas X

(ii) Solution W

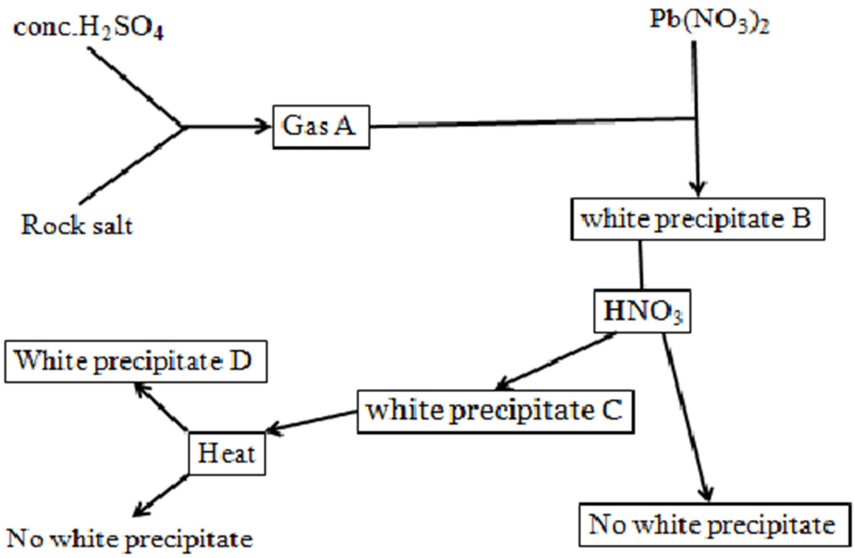
(iii) Gas Q

(iv) Bleaching agent Z

c) State and explain the following observations;
(i) a glass rod dipped in aqueous ammonia is brought near gas X.

(ii)Wet blue and red litmus papers were dipped into gas Q

50. Use the flow chart below to answer the questions that follow.



a) Write the chemical equation for the formation of gas A

b) Identify:

(i) Four possible ions that can produce white precipitate B

(ii) Two possible ions that can produce;

I.White precipitate C

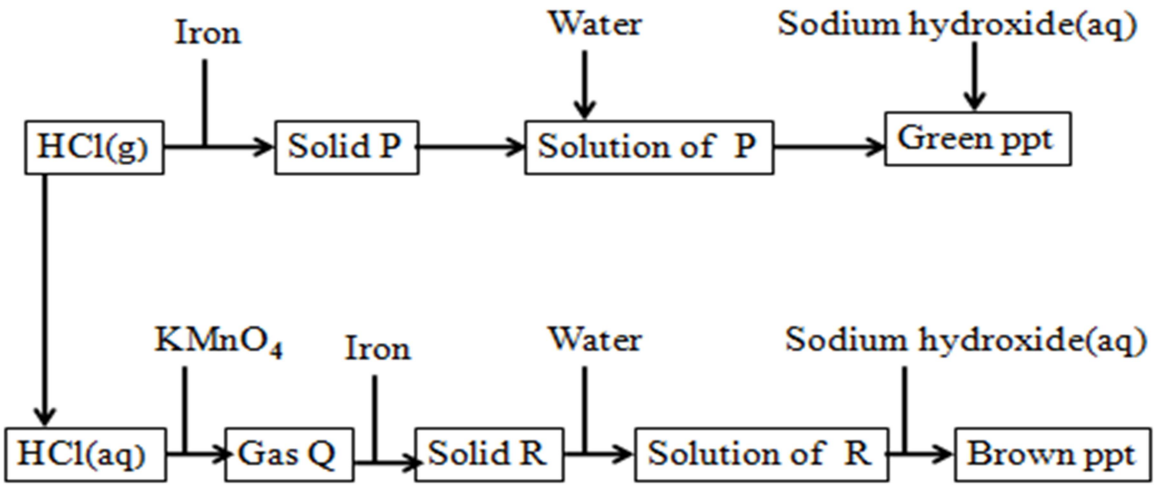
II.colourless solution D

(iii) possible ions present in

I.White precipitate E

II.colourless solution F

51. Study the flow chart below and use it to answer the questions that follow



a) Identify substance:

P

Q

R

b) Write the equation for the reaction for the formation of:

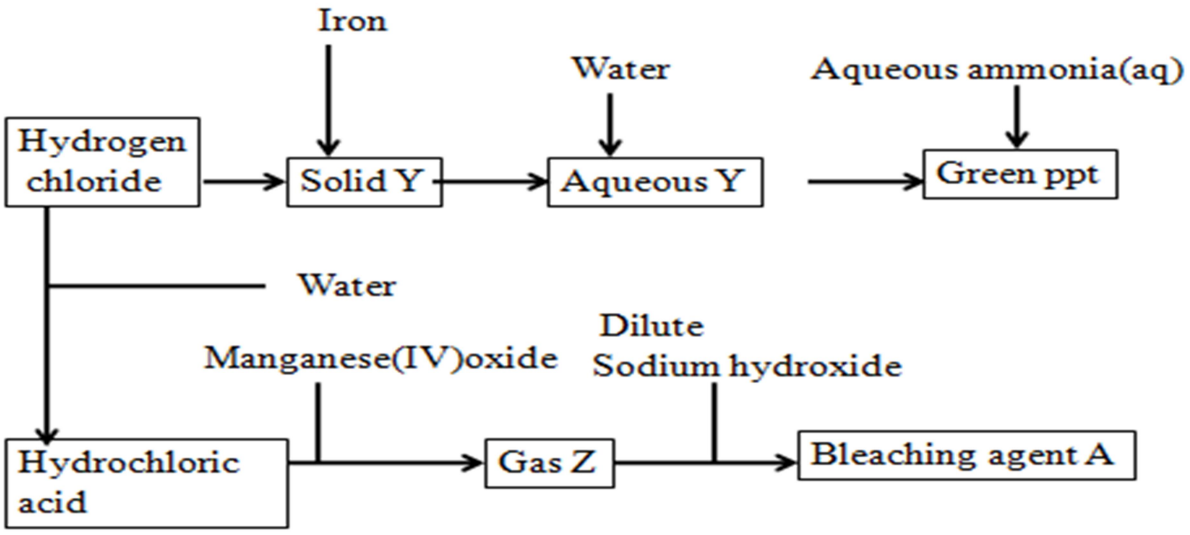
(i) gas Q

(ii) the green precipitate (using ionic equation)

(iii) the brown precipitate (using ionic equation)

c)A glass rod was dipped in aqueous ammonia. The rod was then brought near hydrogen chloride. State and explain the observation made.

52. Use the flow chart below to answer the questions that follow:



a) Write an equation for the school laboratory formation of hydrogen chloride gas

b) Name:

I. solid Y

II green precipitate

III Gas Y

IV. Bleaching agent A

b) Blue and red litmus papers were dipped into bleaching agent A. Write the equation for the reaction that takes place.

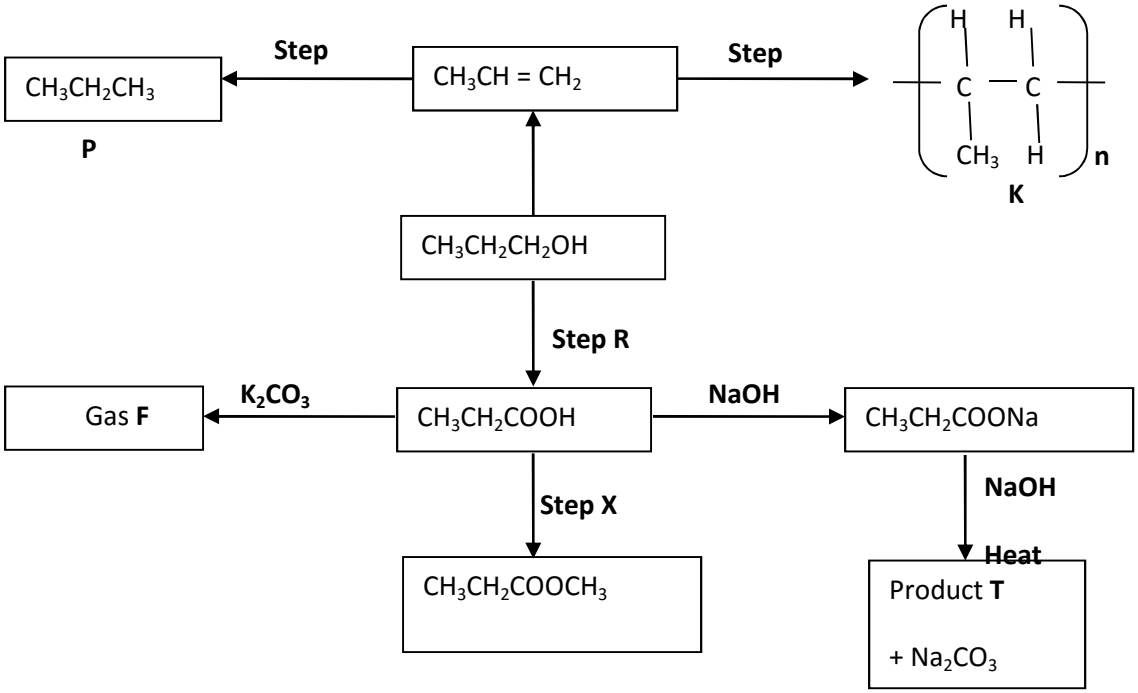
c) State four uses of gas Z

53. (a) State **two** factors that affect the properties of a polymer

b) Name the compound with the formula below :

$CH_3CH_2CH_2ONa$

c) Study the scheme below and use it to answer the questions that follow:-



i) Name the following compounds:-

I. Product **T** …… II. **K** ……

ii) State **one** common physical property of substance **G**.

ii) State the type of reaction that occurred in step **J**

iii) Give **one** use of substance **K**

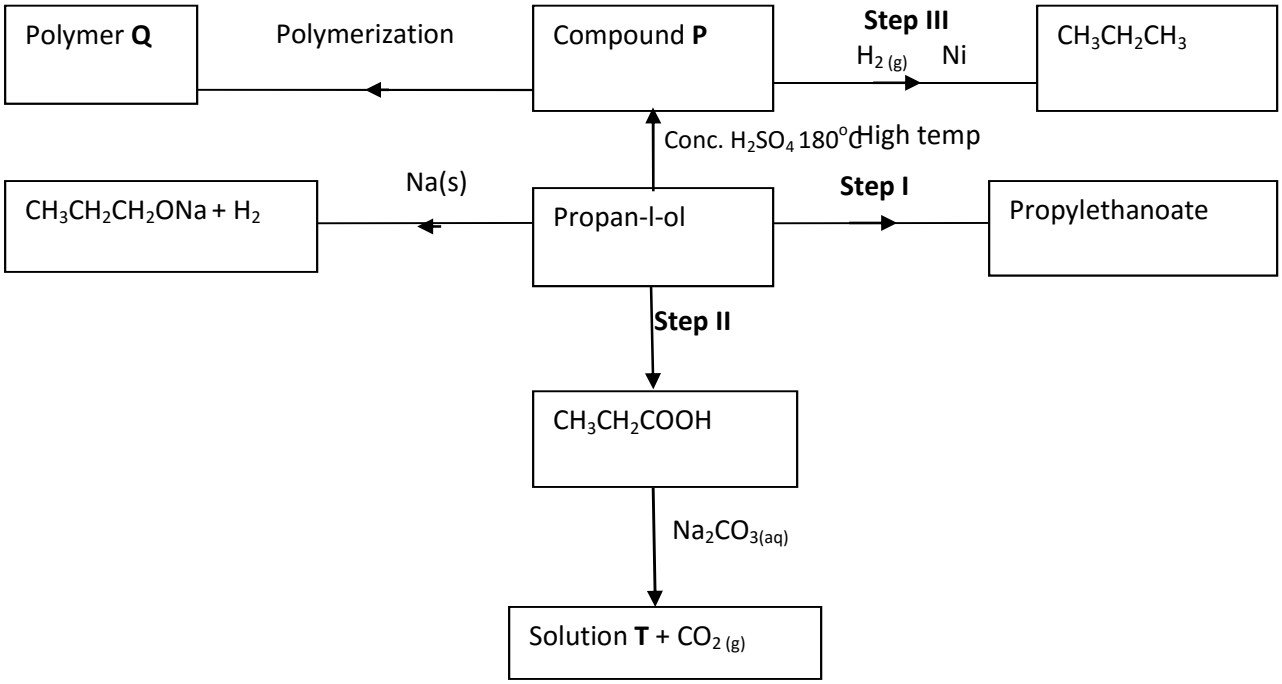
iv) Write an equation for the combustion of compound **P**

v)

vi) Explain how compounds CH_3CH_2COOH and $CH_3CH_2CH_2OH$ can be distinguished chemically

vii) If a polymer **K** has relative molecular mass of 12,600, calculate the value of **n** (H=1 C =12)

54. Study the scheme given below and answer the questions that follow:-



(a) (i) Name compound **P** ……

(ii) Write an equation for the reaction between CH_3CH_2COOH and Na_2CO_3

(b) State **one** use of polymer **Q**

(c) Name **one** oxidising agent that can be used in **step II**

(d) A sample of polymer **Q** is found to have a molecular mass of 4200. Determine the number of monomers in the polymer(H = 1, C = 12)

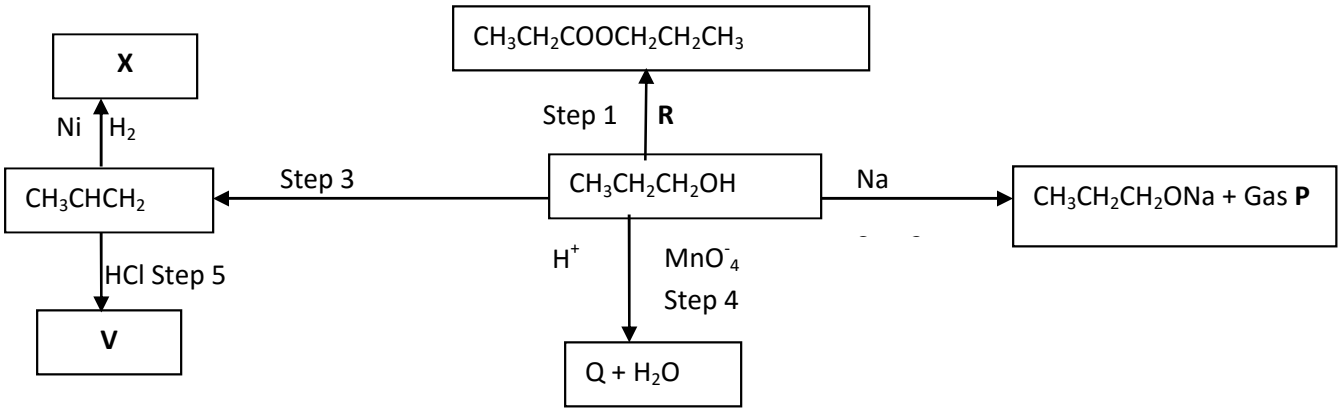
(e) Name the type of reaction in **step I**

(f) State **one** industrial application of **step III**

(g) State how burning can be used to distinguish between propane and propyne. Explain you answer

(h) $1000cm^3$ of ethene (C_2H_4) burnt in oxygen to produce Carbon (II) Oxide and water vapour. Calculate the minimum volume of air needed for the complete combustion of ethane. (Air contains 20% by volume of oxygen)

55. (a) Study the schematic diagram below and answer the questions that follow:-



(i) Identify the following:

Substance **Q** .....

Substance **R**.....

Gas **P**.....

(ii) Name:

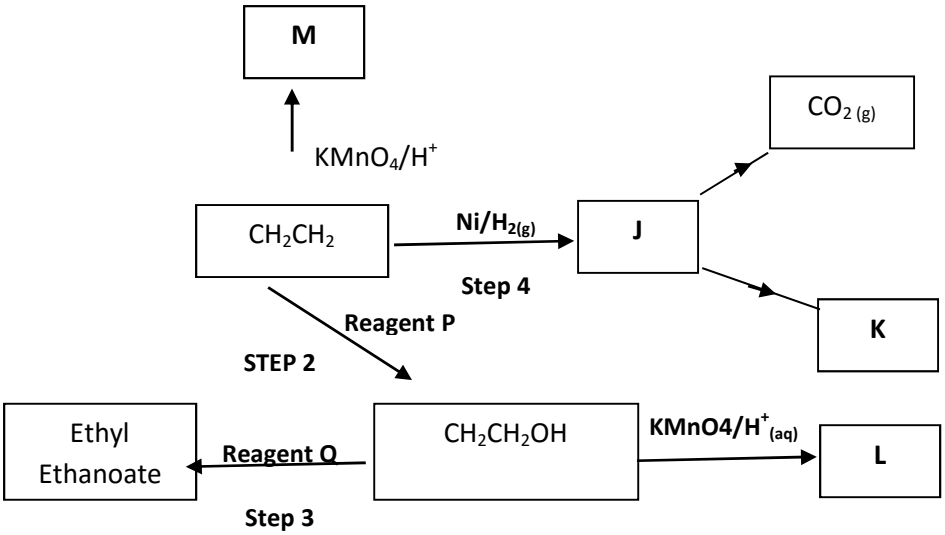
Step 1.....

Step 4.....

(iv) Draw the structural formula of the major product of step **5**

(v) State the condition and reagent in step **3**

16. Study the flow chart below and answer the questions that follow



(a) (i) Name the following organic compounds:

M……..……..

L……..

(ii) Name the process in step:

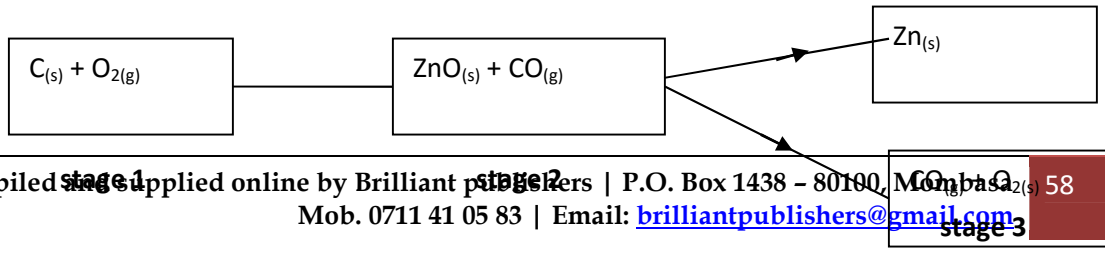
Step 2 ……..….

Step 4 ……..…

(iii) Identify the reagent **P** and **Q**

(v) Write an equation for the reaction between $CH_3CH_2CH_2OH$ and sodium

56. The stages shown in the following diagram can be used to extract zinc from its oxide:



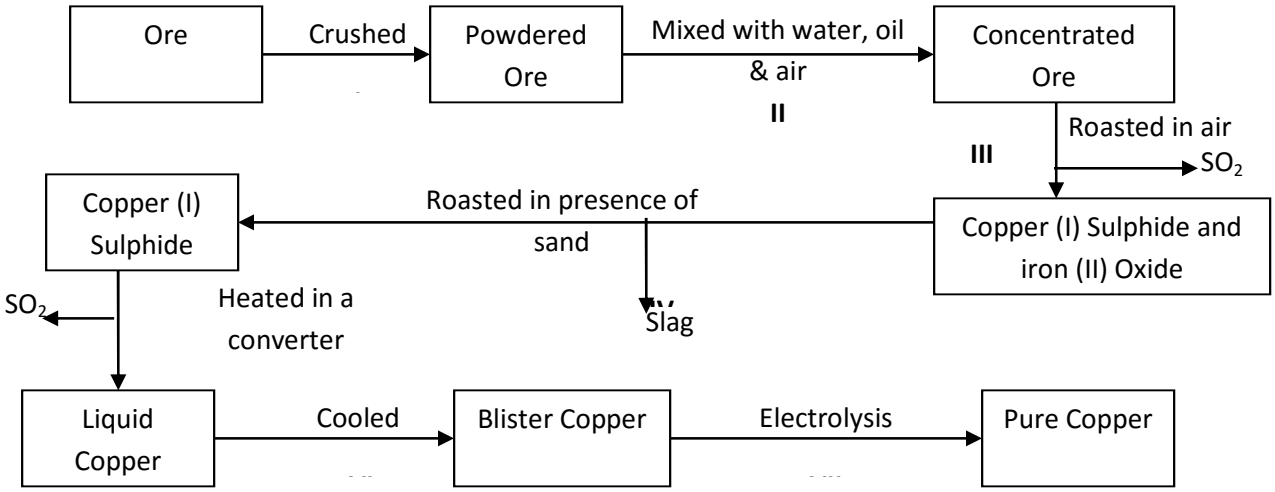
Name each sage and the process taking place in it:

Stage 1.....

Stage 2.....

Stage 3.....

57. The diagram below is a flow chart for the extraction of copper. Study it and answer the question that follow:



(a) Write the formula of the major ore of copper metal.

(b) Name **process II**

(c) Give an equation for the reaction that occurs in **stage III**

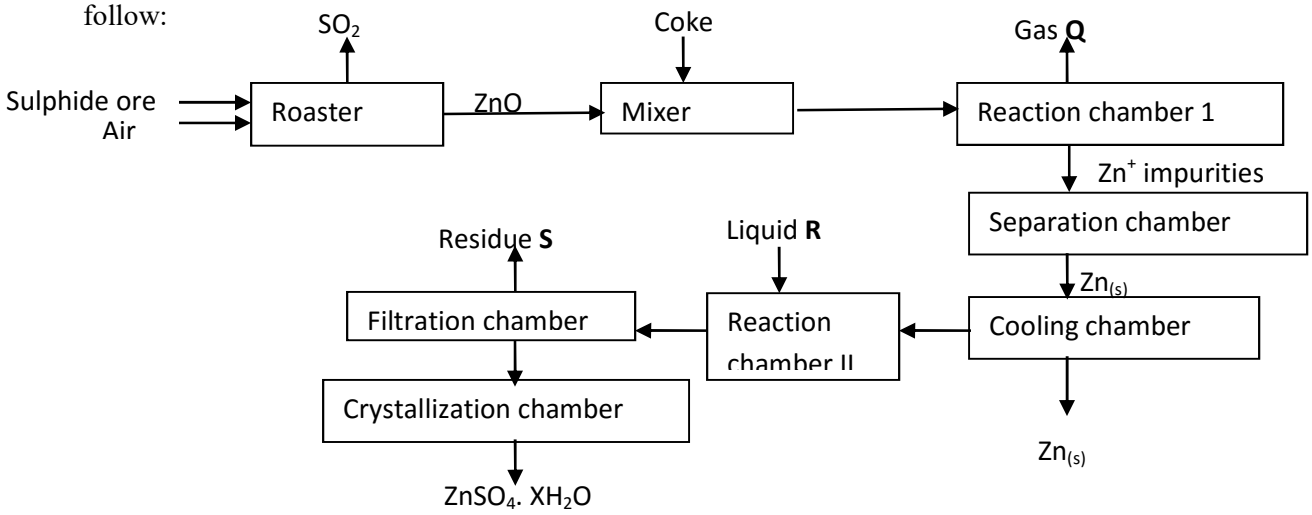
(d) Explain what happens in stage **IV**

(e) Write half cell equations occurring at the anode and cathode in **stage VII**

(f) Draw a simple diagram showing the set-up that is used in electrolytic purification of copper

(g) A green rocky materials suspected to be the ore malachite $CuCO_3$. Cu $(OH)_2$.

58. The flow chart below illustrates the extraction of Zinc. Study it and answer the questions that follow:



a) Name:-

i) Gas **Q** .....

.

ii) Liquid **R** .....

iii) Residues **S** .....

b) Name the sulphide ore used.

c) Before the ore is roasted, it is first concentrated;

(i) Explain why it is necessary to concentrate the ore

(ii) Explain briefly the process of concentrating the ore

d) Write an equation for the reaction that takes place in the:-

(i) Roaster

(ii) Reaction chamber

e) (i) Name **one** major impurity present in the sulphide ore used

(ii) Write an equation to show how the impurity in **(e)(i)** above is removed

f) Given that the sulphide ore contains only 45% Zinc sulphide by mass, calculate :

(i) The mass in grams of Zinc sulphide that would be obtained from 250kg of the ore.

(ii) The volume of Sulphur (IV) oxide that would be obtained from the mass of sulphid ore at room temperature and pressure

(Zn = 65.4, S = 32.0, O= 16.0, I mole of gas occupies 24.0 liters at r.t.p)