GATITU SECONDARY SCHOOL P.O BOX 327 GATUNDU

NAME.....ADMIN NO.....CLASS.....

CHEMISTY FORM 4 MIDTERM EXAMINATION

FIRST TERM YEAR 2016

TIME 2HRS

INSRUCTIONS

1.Write your name ,admission number and class in the spaces provided above

2.Answer ALL the questions in the spaces provided.

3.All working must be shown where necessary.

(70mks)

1.Define the following

a)Allotropes(2mk)

b)Allotropy(2mk)

c)Name two allotropes of sulpur (2mk)

2.What is the molarity of a solution? (2mk)

b)Calculate the molarity of the following

i) 0.8 moles in $1000cm^3$ (1mk)

ii) 4g of sodium hydroxide in $250cm^3$ of solution (2mk)

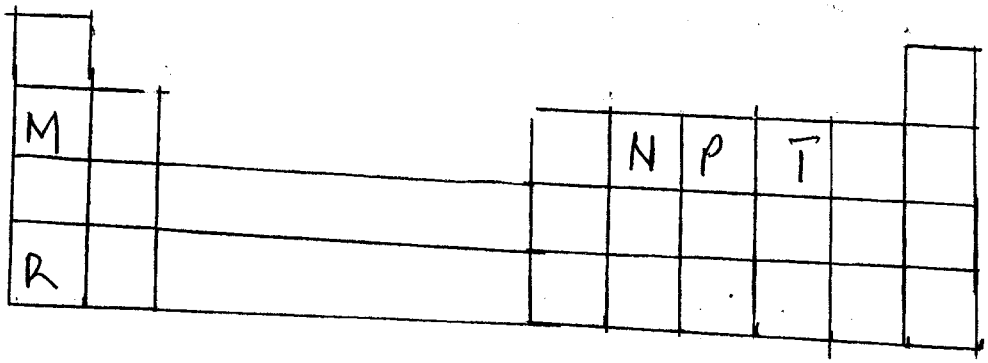
iii)Calculate the number of moles of solute present in 400cm3 of 1.6M solution (2mk)

3.When $15cm^3$ of a gaseous hydrocarbon P was burnt in $100cm^3$ of oxygen ,the resulting gaseous mixture occupied $70cm^3$ at room temperature and pressure .When the gaseous mixture was passed through potassium hydroxide solution ,its volume decreased to $25cm^3$

a) what volume of oxygen was used during the reaction(1mk)

b) Determine the molecular fomula of hydrocarbon(2mk)

4. The grid below represents part of a periodic table .Study it and answer the questions that follow .The letter do not represent the actual symbols of the elements



i) Select the letter which represents an element that loses electrons most readily .Give a reason for your answer. (2mk)

ii)Explain why the atomic radius of P is found to be smaller than that of N(2mk)

iii)Element M react s with water at room temperature to produce 0.2dm3 of gas .Determine the mass of M which was reacted with water(Molar gas volume at room temperature is 24dm3,Ram of M =7) (2mk)

b)Use the information in the table below to answer the questions that follow(The letters are not actual symbols of elements)

Element	State of oxide at room temp	Type of oxide	Bonding in oxide
U	solid	acidic	covalent
W	solid	basic	ionic
X	liquid	neutral	covalent
Y	gas	neutral	covalent

Identify a letter which represents an element in the table that could be calcium ,carbon or sulphur

i) calcium (2mk)

ii)Carbon (2mk)

iii)Sulphur (2mk)

5.Define the following terms

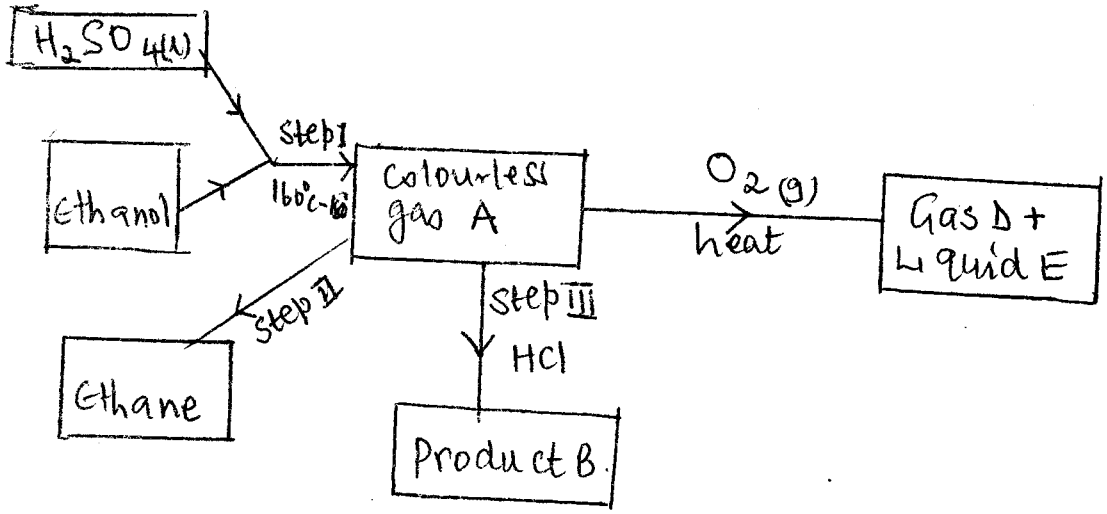
a)hydrocarbon(2mk)

b)Isomerism (2mk)

c)Draw the three structural isomers of pentane (C_5H_{12}) (3mk)

ii)Give the name of each isomer in c(i) above(3mk)

6.Study the following reaction scheme and answer the questions that follow.



a)Name i) Coluorless gas A (1mk)

ii) Product B (1mk)

iii) Gas D (1mk)

iv) Liquid E (1mk)

b) Write balanced equations for each of the reactions forming the products in (a) above(4mk)

c)Name the type of reaction taking place in step I and II (2mk)

d) State the importance of the reaction taking place in step II (1mk)

7 .Explain why an organic compound with the formula C_3H_6 burns with a more sooty flame than that of C_3H_8. (2mk)

8 .Butane and Bromine react as shown below

$CH_3CH_2CH_2CH_3 + Br_2 \rightarrow CH_3CH_2CH_2CH_2Br + HBr$

a) Name the type of reaction taking place in the equation above(1mk)

b) State the conditions under which the above reaction takes place .Explain (2mk)

9.A hydrocarbon Q ,was found to decolourise potassium permanganate (vii) solution .When two moles of Q are burnt completely ,six moles of carbon (iv) oxide and six moles of water were formed

a) write the structural formula of Q (1mk)

b) Name the homologous series to which Q belong s(1mk)

c) Name one industrial use of Q (1mk)

10. Nitric (v) acid is manufactured by catalytic oxidation of ammonia gas.

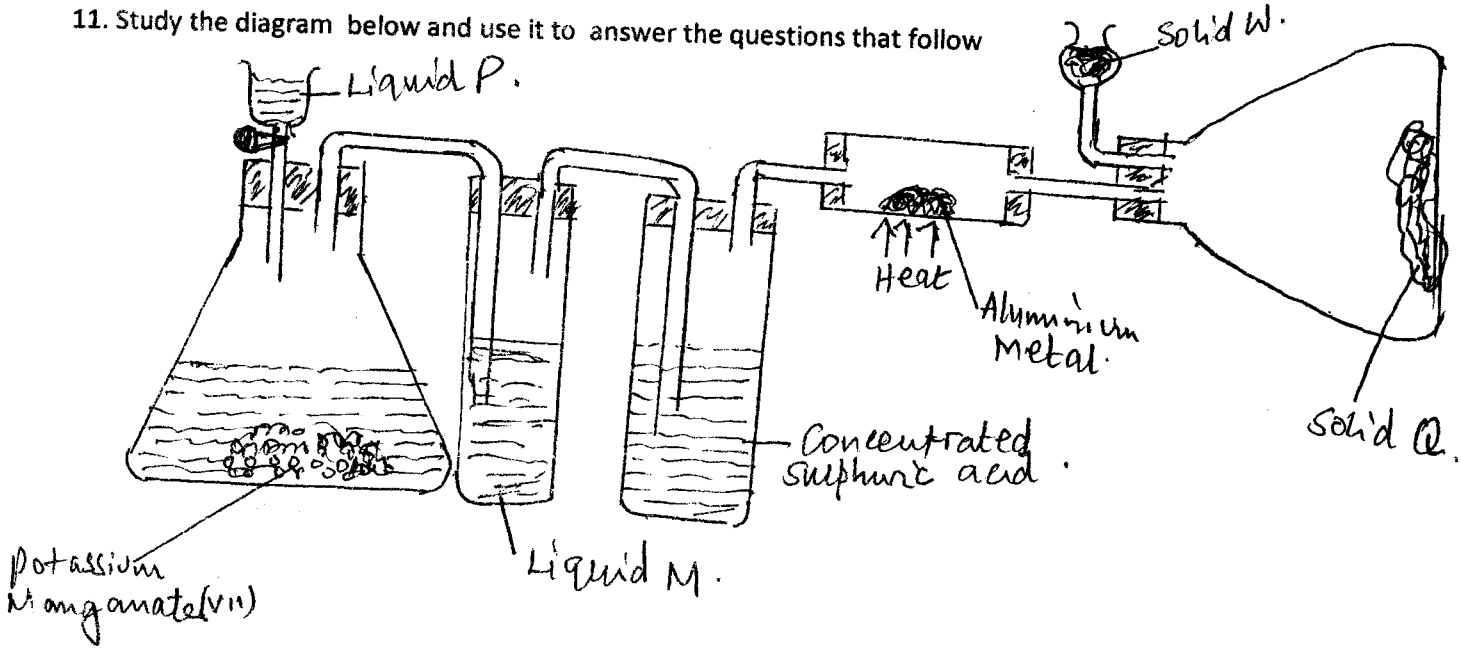
i) Name two raw materials ;other than ammonia that are used in the manufacture of the acid (2mk)

ii) Name the catalyst used (1mk)

iii) Write an equation for the reaction between nitric (v) acid and ammonia gas (1mk)

iv)State one use of the product in (iii) above (1mk)

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



i)Name liquid:

P..... (1mk)

M..... (1mk)

ii) what is the function of concentrated sulphuric (vi) acid in the setup (1mk)

iii) Suggest a suitable reagent that can be used as solid W (1mk)

iv) State the role of solid W in setup (1mk)

v)In the reaction above 0.645g of alluminium metal reacted with 1800cm3 of chlorine gas at room temperature .Determine the molecular formula of solid Q given that its molecular mass is 267.(Al=27,Cl=35.5 ,molar gas volume at RTP is 24.0 litres) (2mks)