CHEMISTRY QUESTIONS **Answer all questions**

1.State what is observed,name the products and write ionic equations for the reactions that take place when

a) sodium hydroxide solution is added until in excess to solutions of

i) lead(II) nitrate

ii) zinc sulphate

iii) aluminium chloride

iv) copper(II) nitrate

b) ammonia solution is added until in excess to solutions of

i) copper(II)sulphate

ii) zinc chloride

iii) aluminium sulphate

iv) lead(II) chloride

c)concentrated hydrochloric acid is added until in excess to solutions of

i) lead(II) nitrate

ii) copper(II) sulphate

iii) silver nitrate

d) potassium iodide solution is added to solutions of

i) lead(II) nitrate

ii) silver nitrate

iii) copper(II) sulphate

2.a) i)Explain what is meant by **structural isomerism**

ii) state the 3 main types of structural isomerism

iii) differentiate between the 3 types of structural isomerism.use examples to illustrate your answer

c) Write the structural formulae and IUPAC names of compounds with the following formulae

i) C_4H_8

ii) $C_4H_{10}O$

iii) C_4H_9Br

3. a) i)Define a **primary standard**

ii)state 4 characteristics of a primary standard

iii) Explain why sodium hydroxide and hydrochloric acid are not primary standards

c) Write the formula and name of one compound that is used to standardise

i) acids

ii) alkalis

d) Calculate the mass of ethanedioic acid(oxalic acid) crystals $H_2C_2O_4.2H_2O$ required to prepare 250cm3 of a 0.05M solution.

e) 20cm^3 of a solution containing 7.6g of a monobasic acid XCH_2COOH per litre of solution required 19.4cm^3 of 0.1M sodium hydroxide for complete neutralisation.Calculate the

i) molarity of the acid

ii) atomic mass of X

e) Lemon juice contains citric acid which is tribasic (H_3Y). $25cm^3$ of lemon juice was diluted to $250cm^3$.$25cm^3$ of the solution was neutralised by $15cm^3$ of 0.1M sodium hydroxide. Calclate the

i) concentration of the diluted solution of lemon juice

ii)concentration of the original lemon juice

iii) percentage by mass of citric acid in lemon juice (molecular formula of citric acid is $C_6H_8O_7$

4. a) Define an ideal gas

b) Draw a sketch graph to show how pressure varies with volume for

i) an ideal gas

ii) a non ideal gas

c) explain why carbon dioxide deviates from ideal gas behaviour more than ammonia

d) 0.096g of a liquid hydrocarbon was vapourised. it occupied 29.8cm3 at 18oC and 750mm.Hg. On analysis the liquid was found to contain 92.3% of carbon.

calculate the

i) relative molecular mass of the hydrocarbon.

ii)empirical formula of the hydrocarbon

e)i)determine the molecular formula of the hydrocarbon

ii) write the structural formula and name of the hydrocarbon