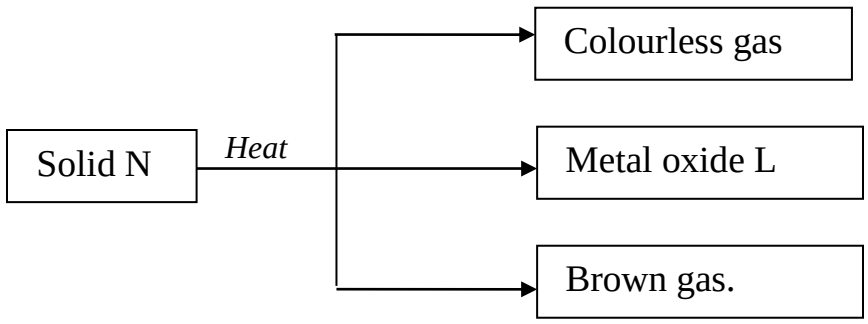
NAME: .....CLASS: ..... ADM.NO. : .....

CHEMISTRY FORM THREE

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



a) Write the formula of the anion present in solid N. (1mk)

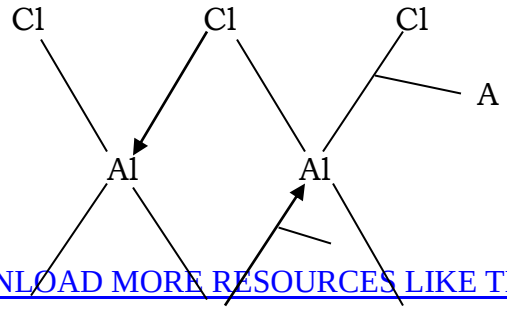
b) Metal oxide L is black in colour. Identify:-]
i) Cation present in solid N. (1mk)

ii) Metal oxide L. (1mk)

2. (a) State the mathematical expression of Boyle's Law. (1mk)

(b) In an experiment, 375cm^3 of gas P have a pressure of 800mmHg at 25^{o}C. what will be the volume if pressure is reduced to 720mmHg under the same temperature? (3mks)

3. Below is a structure of Aluminium chloride.



B

Cl Cl Cl

i) Identify the bonds labeled A and B. (2mks)

ii) When aluminium chloride is dissolved in water, the resultant solution has a pH of 3. Explain. (2mks)

4. Lithium has two isotopes with mass numbers 6 and 7. If the relative atomic mass of Lithium is 6.94, determine the percentage abundance of each isotope. (3mks)

5. A mixture of magnesium powder and lead oxide will react vigorously when heated but no reaction occurs when a mixture of magnesium oxide and lead powder are heated.
   a) Explain the observation. (2mks)

   b) Which of the two substances, magnesium or lead oxide is:
      i) Oxidized in the reaction? (1mk)

      ii) The oxidizing agent? (1mk)

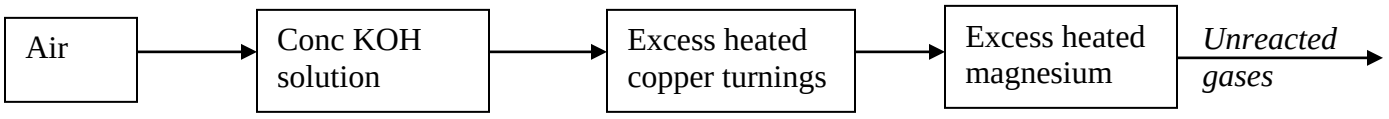
6. Give two reasons why hydrogen is not commonly used as a fuel. (2mks)

7. Using dots(.) and crosses (x), show the type of bonding in the following compounds
   i) Sodium oxide (1mk)

   ii) Silicon (IV) chloride. (1mk)

8. An ion T^{3-} has an electronic arrangement of 2.8
   a) What is the atomic number of the element? (1mk)
   b) To which group and period does the element belong to:
      Group ..... (1mk)
      Period ..... ((1mk)

9. Air was passed through several reagents shown in the flow chart below.



   a) Write an equation for the reaction which takes place in the chamber with magnesium powder. (1mk)

   b) Name another solution that can be used in place of conc. KOH solution. (1mk)

   c) Name one gas, which escapes from the chamber containing magnesium powder. Give a reason for your answer. (2mks)

10. Give the name of each of the following properties as described.
   i) When anhydrous copper sulphate is exposed to air for some time, it becomes wet. (1mk)

   ii) Lead oxide can react with both dilute nitric (V) acid and sodium hydroxide solutions. (1mk)

iii) Magnesium metal can be hammered into sheets. (1mk)

11. A mass of 3.6g of magnesium reacts in excess chlorine to form a chloride. If the mass of the chloride is 14.25g, find the formula of the chloride formed (Mg=24, Cl=35.5) (3mks)

12. The grid below represents part of the periodic table. Study it and answer the questions that follow. The letters are not actual symbols of the elements.

								A
B				G		H	E	
	J		I	L				C
D								

a) What name is given to the family of elements to which A and C belong? (1mk)

b) Write the formula of the sulphate of element D. (1mk)

c) Which letter represents the most reactive; (2mks)
i) Metal

ii) Non-metal

d) Name the bond formed when B and H react. Explain your answer. (2mks)

e) Select one element that belongs to period 4. (1mk)

f) Explain why the ionic radius of element E is bigger than the atomic radius. (2mks)

g) The electron configuration of a divalent anion of element N is 2.8.8. Indicate the position of element N on the periodic table above. (1mk)

h) The oxide of G has a lower melting point than the oxide of L. Explain. (2mks)

i) How do the atomic radii of I and C compare. Explain. (2mks)

j) Explain the trend in the 1st ionization energies of the elements J, I and L. (1mk)