

FORM 2 CHEMISTRY

KAGONDO SECONDARY SCHOOL

END TERM 3 2013

1. Give the particles responsible for the conductivity of the following substances (3mks)

i) Molten lead (ii) bromide

ii) Aluminium metal

iii) sodium chloride solution

2. Draw the dots and crosses diagram representation of water molecule. (H=1, O=8) (2mks)

3. Study the table of elements below. Letters are not the actual symbol of element

Element	W	X	Y	Z
Electronic arrangement	2.8.1	2.8.2	2.8.6	2.8.8

a) Select the element which;

i) forms an ion with a charge of +2 (1mk)

ii) Is the least reactive. Explain (2mks)

iii) Would react with oxygen to form an acidic oxide (1mk)

b) State the name of the chemical family to which the following elements belong (2mks)

i) W

ii) Z

c i) Write down the chemical formula of the compound formed between W and Y (1mk)

ii) What type of a bond is formed in c (i) above (1mk)

d) Which element has the lowest ionization energy? Explain (2mks)

4. Other than cost, give two reasons why aluminium is used for making electric cables while magnesium is not (2mks)

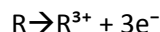
5. Explain why the boiling point of water 100°C is higher than that of ether (-26°C) while their relative molecular mass is the same (2mks)

6. a) The first, second and third ionization energies in kJ/mole of elements G and R are given below

Element	Ionization energies (kJ/mol)		
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
G	520	7300	9500
R	420	3100	4800

i) What is ionization energy (1mk)

ii) Calculate the amount of energy for the process (2mks)



b) The first three ionization energies of an element M are 530, 1100 and 4900 kJ/mol respectively. Suggest with reason the group in the periodic table to which M belongs (3mks)

7. The melting point of phosphorous trichloride is  $-91^{\circ}\text{C}$ , while that of magnesium chloride is  $715^{\circ}\text{C}$ . In terms of structure and bonding, explain the difference in their melting points (2mks)

8. Natural silicon contains 92% silicon-28, 5% silicon-29 and 3% silicon-30. The atomic number of silicon is 14.

a) Write the electronic configuration of silicon (1mk)

b) Draw the atomic structure of the most abundant isotope of silicon (3mks)

c) Calculate the relative atomic mass of silicon (2mks)

d) Write the chemical symbol of each of the three isotopes of silicon indicating both the mass numbers and atomic numbers (3mks)

9. Hydrogen has atomic number 1

a) Write symbols of each of the two ions formed by hydrogen atoms (2mks)

b) One of the ions formed is considered to be a proton. Identify the ion and give a reason for your answer (2mks)

c) Hydrogen can be placed in both group I and group VII. Explain (2mks)

10. Write the equation for the following reaction (1mk)

a) Magnesium with steam (1mk)

b) Aluminium with dilute sulphuric acid (1mk)

11. Use the table below to answer the following questions

Substance	Electrical conductivity		Melting point (°c)	Boiling point (°c)
	Solid	molten		
I	Does no conduct	Conducts	801	1420
II	conducts	Conducts	650	1107
III	Does not conduct	Conducts	1700	2200
IV	Does not conduct	conducts	113	440

i)What type of a bond exists in I and II(2mks)

ii)Which substance is likely to be sulphur .Explain (2mks)

12.Give two reasons why helium is used in weather balloon (2mks)

13.Classify the following compounds as deliquescent, hygroscopic, efflorescence.

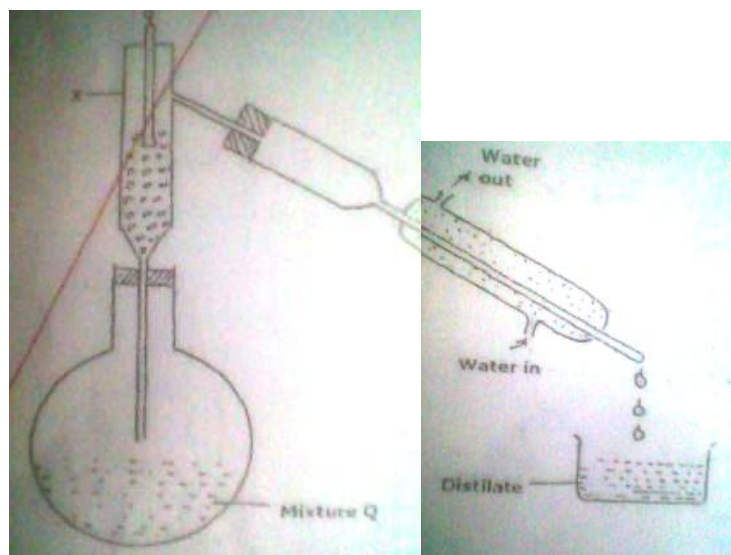
i) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$  1mk

ii) $\text{ZnCl}$  (1mk)

iii) $\text{CuSO}_4$

14.using excess zinc powder and dilute sulphuric acid, describe how a dry sample of zinc sulphate crystals can be prepared.(3mks)

15. . The diagram shows the method of separating components of mixture Q



State what would happen if the water inlet and water outlet in the Liebig's condenser is interchanged (1mk)