
KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE GIRLS HIGH SCHOOL
CHEMISTRY
PAPER 2
TIME: 2 HOURS

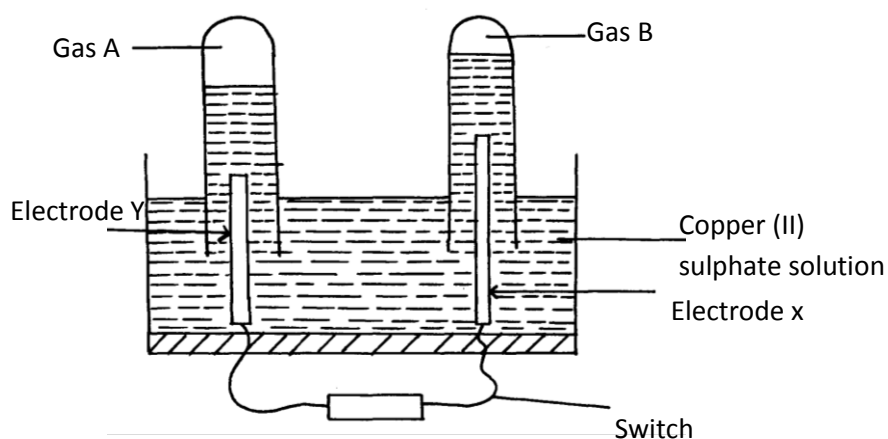
SCHOOLS NET KENYA
Osiligi House, Opposite KCB, Ground Floor
Off Magadi Road, Ongata Rongai | Tel: 0711 88 22 27
E-mail: infosnkenya@gmail.com | Website: www.schoolsnetkenya.com

**ALLIANCE GIRLS HIGH SCHOOL KCSE TRIAL AND
AND PRACTICE EXAM 2016
Paper 2**

1. Use the information below on standard electrode potentials to answer the questions that follow:

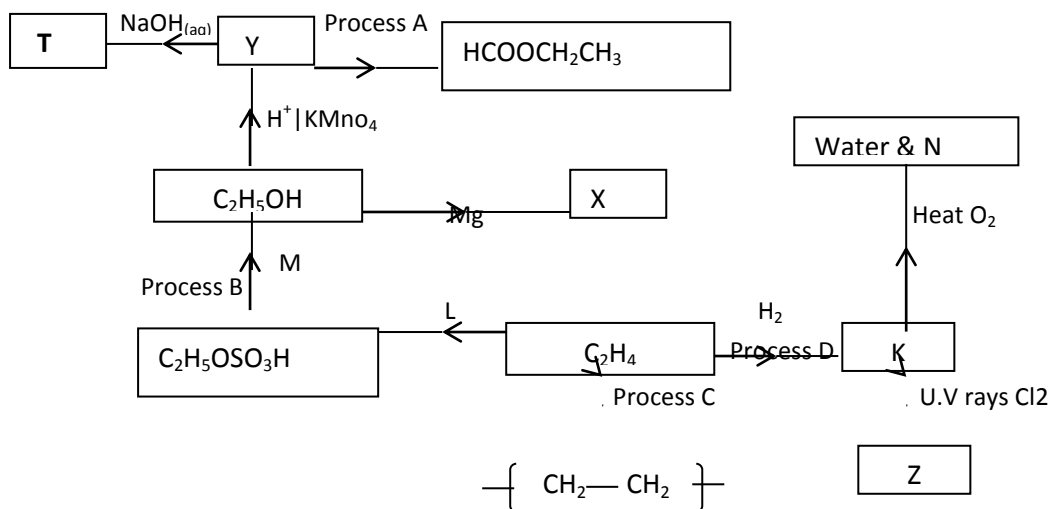
Electrode reaction	E^θ volts
$C^{2+}_{(aq)} + 2e^- \rightleftharpoons C_{(s)}$	+ 0.34
$D^{2+}_{(aq)} + 2e^- \rightleftharpoons D_{(s)}$	+ 0.44
$E^+_{(aq)} + e^- \rightleftharpoons E_{(s)}$	- 2.92
$Fe^{2+} + 2e^- \rightleftharpoons F_{(s)}$	- 2.71
$G^{2+} + 2e^- \rightleftharpoons G_{(s)}$	- 0.14
$\frac{1}{2} H_{2(g)} + e^- \rightleftharpoons H^-_{(aq)}$	+ 2.87
$\frac{1}{2} K_{2(g)} + e^- \rightleftharpoons K^-_{(aq)}$	+ 1.09
$L^+_{(aq)} + e^- \rightleftharpoons \frac{1}{2} L_2$	0.00

- a) (i) Identify the strongest reducing agent and the strongest oxidizing agent. Give reasons. (2mks)
(ii) Calculate the e.m.f of the cell formed by connecting half cells **C** and **D**. (1mk)
- b) Draw and label a diagram of a cell formed by –connecting half cells of E and D. On the diagram indicate the flow of electrons. (3mk)
- c) An aqueous solution of Copper (II) Sulphate was electrolysed using platinum electrodes. When a current was passed a gas that relights a glowing splint was produced.

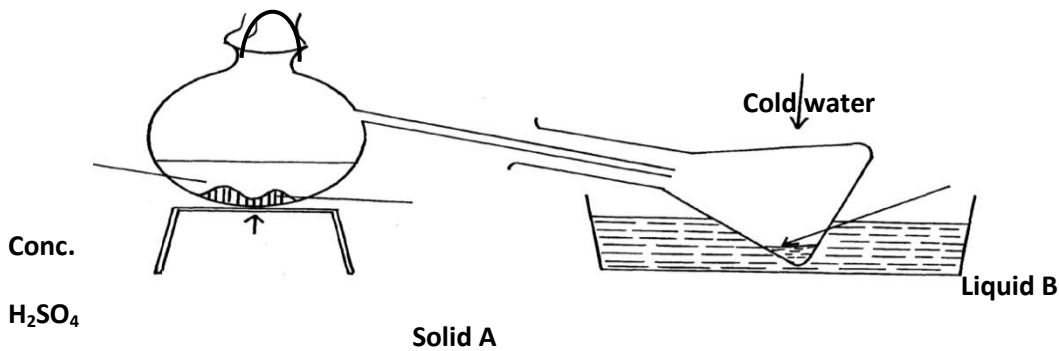


- (i) Name the electrode which acts as cathode. Give a reason. (1mk)
(ii) Write an equation for the reaction at the anode. (1mk)
- d) 0.11g of metal R deposited by electrolysis when a current of 0.03 amperes flow for 99 minutes. ($R = 92.$), (1 Faraday = 96500 C)
- (i) Find the number of moles of metal deposited. (2mks)
(ii) Find the number of moles of electrons passed. (2mks)
(iii) Determine the value of **n** in the metallic ion R^{nt} . (2mks)
2. (a) Define Isomerism. (1mk)
(b) Draw and name one of the position isomers of Butene. (2mks)

- (c) Filter paper dipped in acidified Potassium Manganate (VII) were placed in two separate gas jars A and B containing pentane and Pent-1-ene respectively. Explain what was observed in each case. (2mks)
- (d) The scheme below shows some products that can be obtained starting from ethene.



- (i) Name the compounds (4mks)
- (ii) Name the process (2mks)
- (iii) State **one** condition necessary for the processes in (ii) above to take place. (3mks)
3. In the preparation of magnesium carbonate magnesium was burnt in air and the product collected.
- Dilute sulphuric acid was added and the mixture filtered and cooled. Sodium carbonate was added to the filtrate and the content filtered. The residue was washed and dried to give a white powder.
- a) Give the chemical name of the product formed when magnesium burns in air (1mk)
- b) Write a chemical equation for the formation of product. (1mk)
- c) (i) Name filtrate collected after sodium carbonate was added (1mk)
- (ii) Name the white powder. (1mk)
- d) Write chemical equation for the reaction between product in (a) and acid. (1mk)
- e) Name the ions present in the filtrate after addition of sodium carbonate. (1mk)
- f) Write an ionic equation to show the formation of the white powder (1mk)
- g) Write an equation to show what happened when white powder is strongly heated. (1mk)
4. Elements **V**, **W** and **X** have atomic number 17, 19 and 20 respectively.
- (a) What are the valencies of **V** and **W** respectively (1mk)
- (b) To which groups of the periodic table do **V**, and **X** belong. (1mk)
- (c) In which periods do elements **V** and **W** lie? (1mk)
- (d) Which of the three elements is a non-metal? (1mk)
- (e) Write down the formula of the compounds formed when:
- (i) **V** reacts with **W** (1mk)
- (ii) **X** reacts with Oxygen (1mk)
- f) How many
- (i) Neutrons does V have? if its mass number is 35 (1mk)
- (ii) Protons does W have? (1mk)
5. The diagram below shows the preparation of nitric acid.

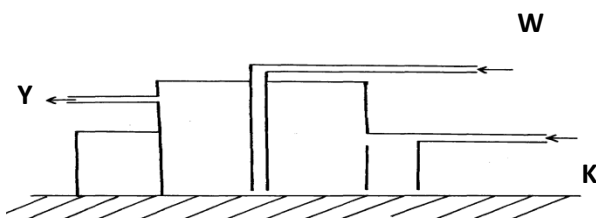


- Heat**
- Name solid A (1mk)
 - Under what conditions does sulphuric acid react with solid A (1mk)
 - What is the colour of liquid B (1mk)
 - What is the purpose of cold water (1mk)
 - 1 cm³ of liquid B was diluted with distilled water and a few drops of copper turnings dropped into it

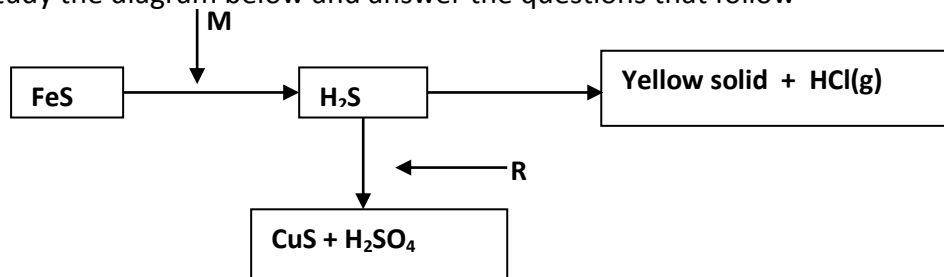
A colourless gas and later brown gas were produced.

- Name the colourless gas (1mk)
- Name the brown gas formed? (1mk)
- Give an equation for the formation of the brown gas (1mk)
- Give **two** uses of the nitric acid. (1mk)

b) The diagram below shows the process of extracting sulphur from its ore. Study it and answer the questions that follow.

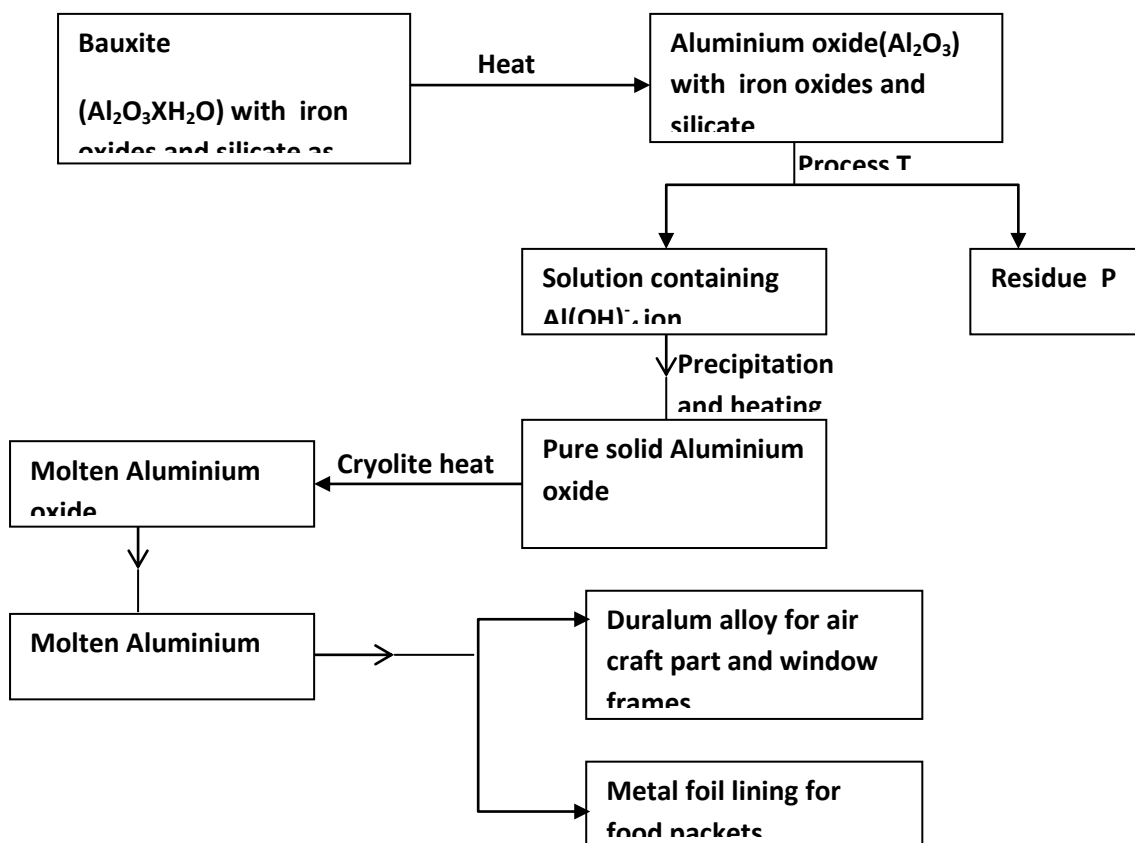


- Name the substances that pass through
- Explain the purpose of what passes through (1mk)
- Study the diagram below and answer the questions that follow

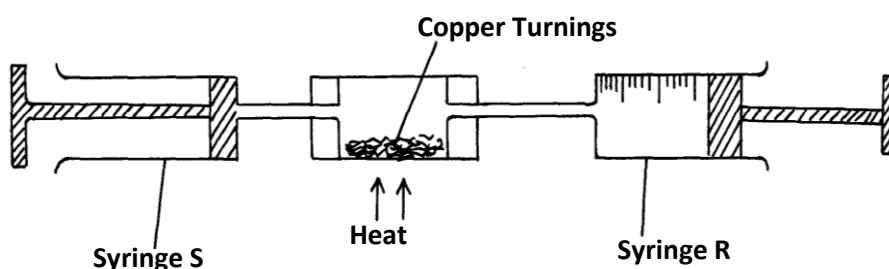


- Identify the reagents (1mk)
 - Name the yellow solid. (1mk)
 - By using a chemical test, how can you distinguish H₂S(g) and SO₂(g) (2mks)
- What would be the effect of the yield of sulphur (VI) oxide when
 - Increasing the concentration of oxygen. (1mk)
 - Increasing the temperature. (1mk)
- Describe how sulphuric acid is manufactured from sulphur (VI) oxide. (2mks)
 - Name **two** uses of sulphur (VI) acid. (2mks)

6. The flow chart below shows industrial extraction Aluminium metal. Study it and answer the questions that follow.



- a) (i) Explain how process **T** is carried out. (2mks)
 (ii) Name residue **P**, give a reason. (2mks)
- (iii) Explain why it is necessary to heat Aluminium oxide in presence of cryolite before electrolysis is carried out. (1mk)
- b) Suggest a reason why:
 (i) Aluminium is not used for marine purpose (1mk)
 (ii) Carbon is not used for the reduction of Aluminium oxides. (1mk)
- c) What properties of Aluminium and its alloys make them suitable for the uses indicated? (1mk)
- d) When 31.2g of hydrated Aluminium oxide ($\text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O}$) was heated to a constant mass of 20.6g of Aluminium oxide (Al_2O_3) was obtained. Determine the value of x in hydrated oxide. (3mks)
 (Al= 27.0, O=16.0, H=1.0)
7. (a) Name the solution and the catalyst used in preparation of oxygen in the laboratory. (2mks)
- (b) Give a chemical equation for the reaction above. (1mk)
- (c) In an experiment to determine the proportion of oxygen in air, Copper turning were packed in excess in a long combustion tube connected to two syringes of 120cm^3 each in a volume. Syringe R contained 120cm^3 of air while syringe S was closed and empty as shown.



Air was passed over heated turnings slowly and repeatedly until there was no further change in volume. 95.5cm³ of air remained in syringe R.

- (i) Why was copper packed in excess? (1mk)
- (ii) Why was air passed over heated copper slowly? (1mk)
- (iii) State **one** observation made in the combustion tube during experiment. (1mk)
- (iv) Give an equation for the reaction that took place in combustion tube (1mk)
- (v) Determine the percentage of oxygen used up during the experiment. (2mks)
- (vi) Give a hospital use of oxygen. (1mk)