
KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MANG’U 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

**MANG’U SCHOOL KCSE TRIAL AND
AND PRACTICE EXAM 2016
Paper 2**

1. Study the following table and then use it to answer the questions that follow

Hydrocarbon	Boiling point (k)
CH ₄	112
C ₂ H ₆	184
C ₃ H ₈	231
C ₄ H ₁₀	273
C ₅ H ₁₂	309
C ₆ H ₁₄	342

a) These organic compounds belong to the same homologous series.

- What is meant by the term homologous series? (1mark)
- To which homologous series do the above hydrocarbons belong? (1mark)
- Select one hydrocarbon that would be a liquid at room temperature 298K. Give a reason for your answer (2marks)
- What is the relationship between the boiling point and the relative molecular masses of the hydrocarbons in the table above? Explain your answer (2marks)
- Give one chemical test to distinguish between C₂H₆ and the third member to the homologous series of the general formula C_nH_{2n} (3marks)

2.

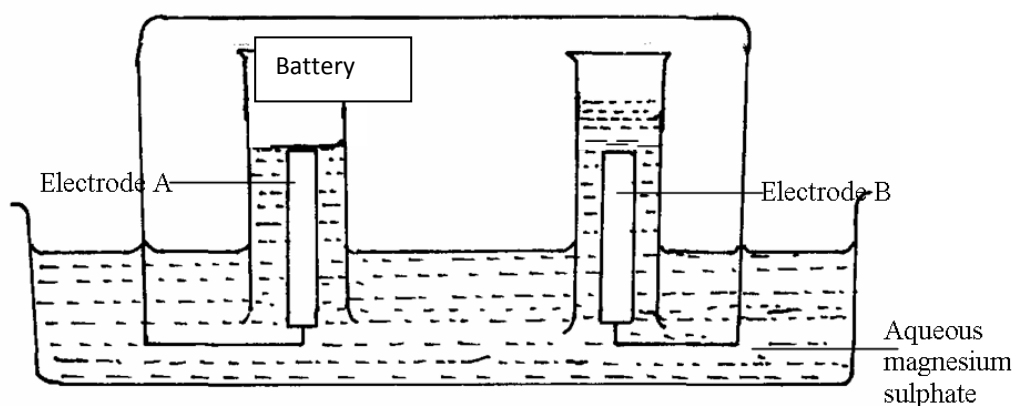
a) Study the given reduction potentials and answer the questions that follow. The letters do not represent actual symbols of elements.

			$E^{\theta}(\text{V})$
$\text{X}^{2+}_{(\text{aq})}$	+	2e^{-}	\longrightarrow $\text{X}_{(\text{s})}$ -2.90
$\text{Y}^{2+}_{(\text{aq})}$	+	2e^{-}	\longrightarrow $\text{Y}_{(\text{s})}$ -2.38
$\text{Z}^{2+}_{(\text{aq})}$	+	2e^{-}	\longrightarrow $\text{Z}_{(\text{s})}$ 0.00
$\frac{1}{2}\text{A}_{2(\text{g})}$	+	e^{-}	\longrightarrow $\text{A}_{(\text{aq})}$ +2.87

- Which element is likely to be hydrogen? (1mark)
- Draw an electrochemical cell when Y and A are combined. Show the direction of flow of electrons (2marks)
- Draw a diagram to show how a spoon made of iron can be coated with silver metal. (2marks)

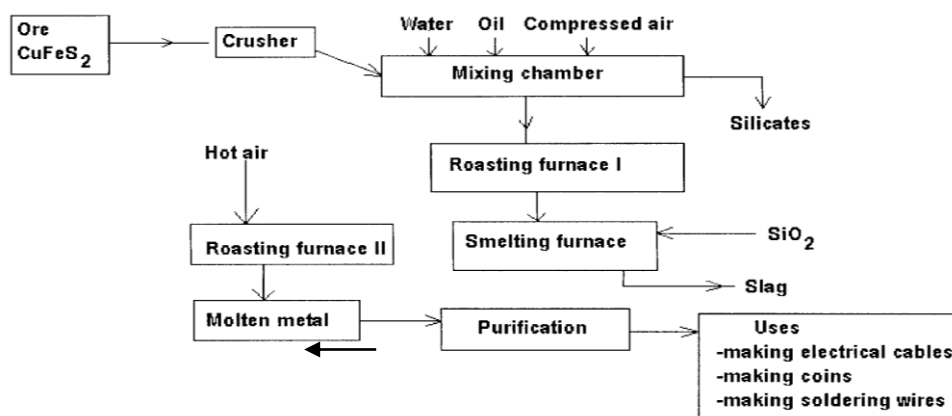
b) The sulphate

set – up below was used during the electrolysis of a solution of magnesium using inert electrodes.



- i). Identify the ions present in the electrolyte (1mark)
- ii). Write half equations at the anode and at the cathode:
 - Cathode: (1mark)
 - Anode (1mark)
- iii). Which electrode is the cathode? Explain (2marks)
- a) Explain the pH changes of the electrolyte during the experiment (2marks)
- b) Calculate the quantity of electricity (in coulombs) that would liberate 1.2dm^3 of oxygen gas at R.T.P
 (take 1 mole of gas at r.t.p = 24dm^3 , $1F = 96500C$) (2marks)

3. Study the flow chart below and use it to answer the questions between.



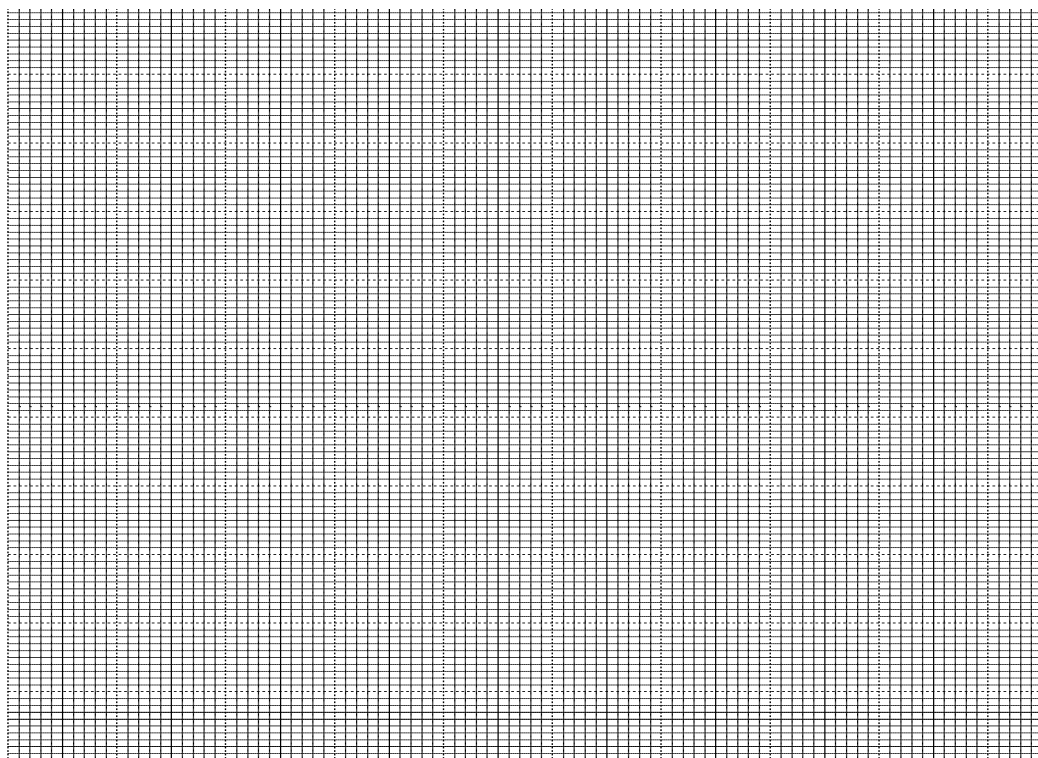
- a) Identify the process described by the flow chart (1 mark)
- b) Explain why the Ore is crushed (1 mark)
- c) Which process occurs at mixing chamber? (1 mark)
- d) Explain the use of ; (3marks)
 - i) water
 - ii) Oil
 - iii) Compressed air

(1 mark)

- a) Identify the cations present where the metal is being purified. (1 mark)
- b) Give a reason for the following uses of this above metal.
 - i) making electrical wires. (1 mark)
 - ii) Making soldering wires (1 mark)
- c) Define the term half-life. (1 mark)
- d) The table below gives the percentage of a radioactive isotope of Bismuth that remains after decaying at different times.

Time (Min)	0	6	12	22	38	62	100	
Percentage of Bismuth	100	81	65	46	29	12	3	

- i). On the grid provided, plot a graph of the percentage of Bismuth remaining (Vertical axis) against time. (4 marks)



ii) Using the graph determine the

i) Half- life of Bismuth isotope.

(1 mark)

ii) Original mass of the Bismuth Isotope given that the mass that remained after 70 minutes was 0.16g.

(2 marks)

e) Distinguish between nuclear fission and nuclear fusion.

(2 marks)

f) Radioactive carbon – 14 decays by emitting β^- Particle to form N-14. Write a nuclear equation for the reaction.

(1 mark)

g) State one use of radioactive isotope in

i). Medicine

(1 mark)

ii). Industry.

(1 mark)

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

A						A	
						G	H
B	D					E	F
C							

a) Explain why element A is placed in two positions in the periodic table. (2 marks)

b) Name the type of bond and structure formed when element F reacts with element G. (2 marks)

c) Select one element which forms a highly soluble carbonate.

(1 mark)

d) Which name is given to the group to which element D belong?.

(1 mark)

e) Compare and explain the following:

i). Atomic radii of elements B and E.

(2 marks)

ii). Electrical conductivity of elements E and H.

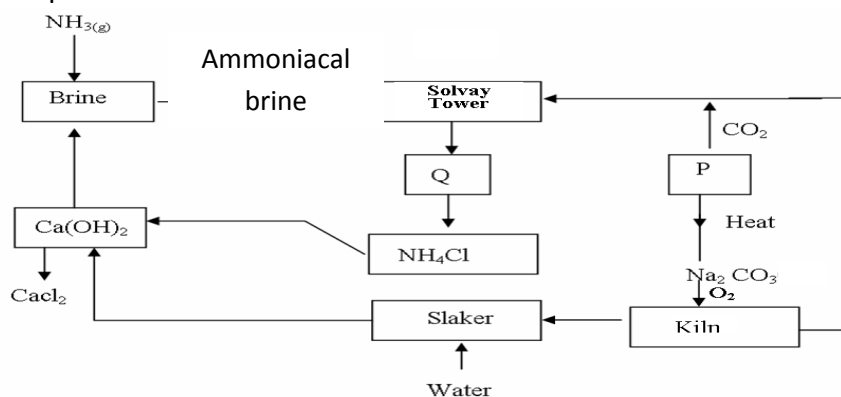
(2 marks)

f)

- i). The oxide of element C was dissolved in water to form a solution of C. Compare the pH value of the solution C with that of sodium chloride solution. Give a reason for your answer. (2 marks)
- ii). Give ONE use of elements of which J is a member. (1 mark)
5. 0.65 of zinc was reacted with 20cm^3 of 2 M copper(II) sulphate solution in a plastic beaker. The copper(II) sulphate solution was in excess. The initial temperature and the highest temperature of the solution were recorded. 0.64 of copper metal was formed.
- a) Other than change in temperature, state the observations made during the reaction (1 mark)
- b) Calculate the
- Number of moles of Zinc that reacted (Zn=65) (1 mark)
 - The number of moles of copper that was displaced from the solution (Cu=64)(1 mark)
 - The mole ratio of Zn: Cu (1 mark)
- c) Use the mole ratio obtained in III above to write the equation for the reaction (1 mark)
- d)
- Define the term molar heat of displacement (1 mark)
 - The molar heat of displacement of copper by Zinc is $-205.8\text{ kJ mol}^{-1}$.

Determine the temperature change in the above experiment (assume density of copper(II) sulphate is 1g/cm^3 and specific heat capacity $4.2\text{Jg}^{-1}\text{K}^{-1}$) (3 marks)

6. The flow chart below shows the manufacture of sodium carbonate. Study it carefully and answer the questions that follow.



- a) CaCl_2
- What is ammoniacal brine? (1mark)
 - Ammoniacal brine reacts with carbon (IV) oxide to form a mixture of two salts which produce Q. Write an equation to show formation of Q (1mark)
Name **two** processes that are used to separate Q into NH_4Cl and P (2marks)
- b) Give two uses of sodium carbonate produced in the process. (1marks)
- Name the substance that reacts with water that comes into the slaker (1mark)
 - What happens at the kiln? (1mark)
- c) Write an equation for the reaction that occurs when P is heated to form solid Na_2CO_3 (1mark)
- d) Name two substances that are recycled in the process. (1mark)
- e) A factory produces 63.6 tonnes of anhydrous Na_2CO_3 on a certain day by this process. Calculate the number of tonnes of sodium chloride used on this particular day. Assume the plant is working at 100% efficiency.
(C = 12, H = 1, Cl = 35.5, Ca = 40, Na = 23) (3marks)