
KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MOI GIRLS ELDORET
CHEMISTRY
PAPER 2
TIME: 2 HOURS

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CHEMISTRY

PAPER 2

TIME: 2 HOUR

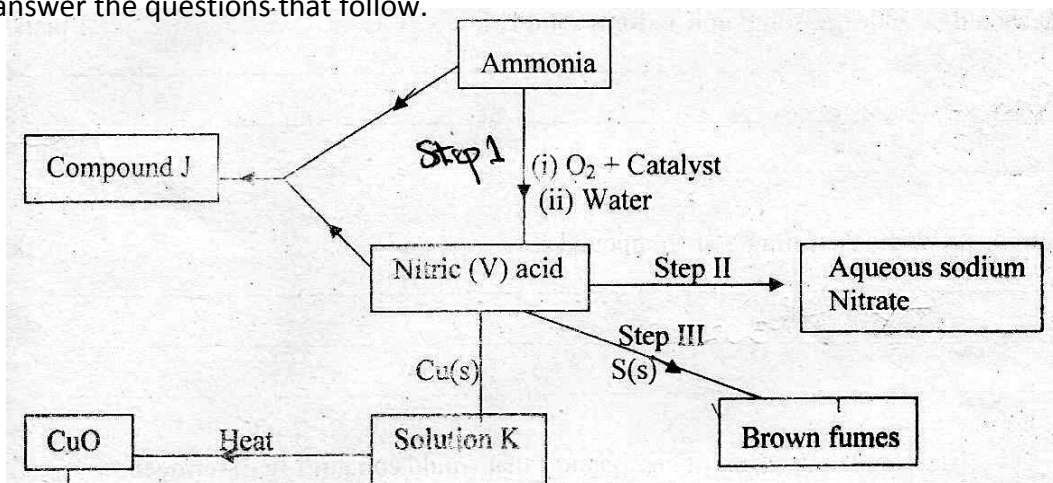
**MOI GIRLS ELDORET KCSE TRIAL AND
AND PRACTICE EXAM 2016**

Paper 2

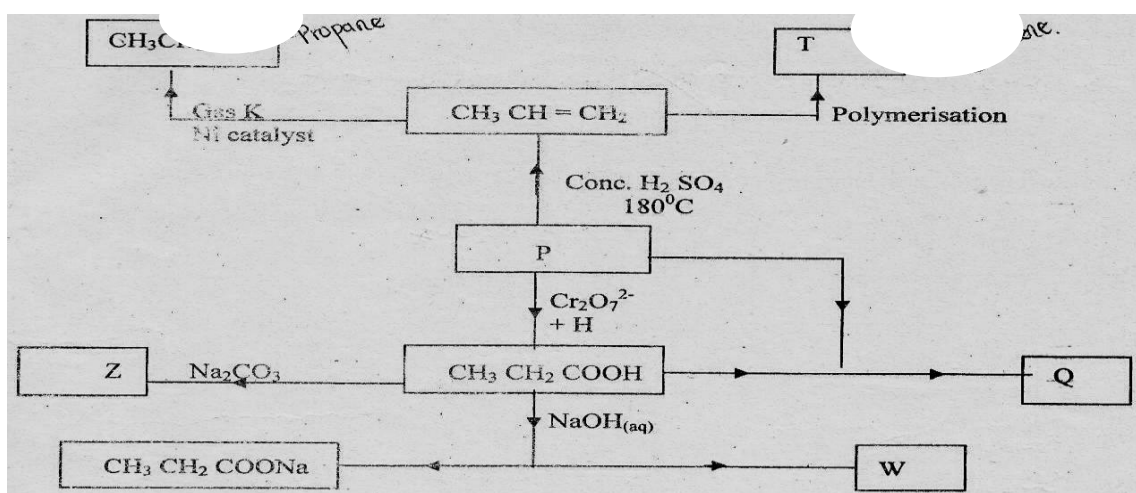
1. The grid given below represents part of the periodic table. Study it and answer the questions that follow. The letters are not the actual symbols of the elements.

| | | | | | | |
|---|---|--|---|---|---|---|
| | | | | | | A |
| B | | | G | | H | E |
| | J | | I | L | | C |
| D | | | | | | M |
| Y | | | | | | |
| | | | | | | |

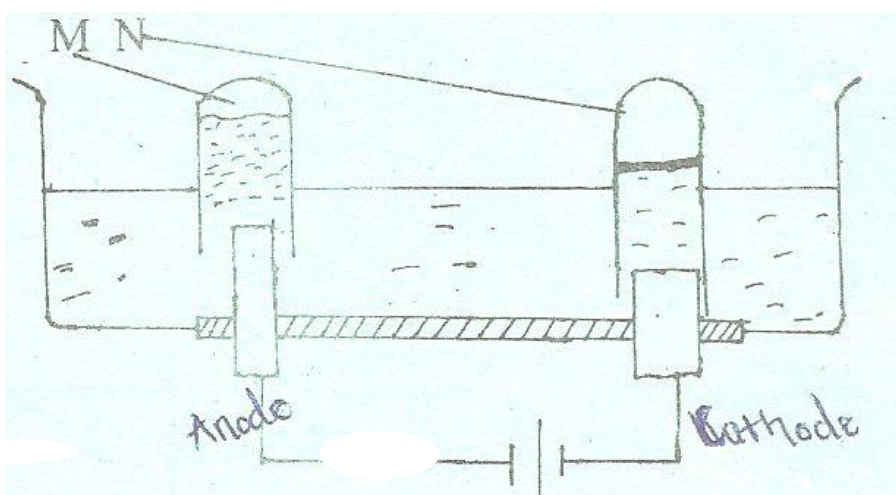
- (i) What name is given to the family of elements to which A and C belong? (1 mark)
 - (ii) Write the chemical formula of the sulphate of element D. (1 mark)
 - (iii) Which letter represents the most reactive (2 marks)
 - (a) Metal
 - (b) Non-metal
 - (iv) Name the bond formed when B and H react. Explain your answer. (2 marks)
 - (v) Select one element that belong to period 4. (1 mark)
 - (vi) Ionic radius of element E is bigger than the atomic radius. Explain. (2 marks)
 - (vii) The electron configuration of a divalent anion of element N is 2.8.8. Induce the position of element N on the periodic table drawn above. (1 mark)
 - (viii) The oxide of G has a lower melting point than the oxide of L. Explain. (1 mark)
 - (ix) How do the atomic radii of I and C compare. Explain. (2 marks)
 - (x) Explain the trend in the 1st ionization energies of the elements J, I and L. (1 mark)
2. (a) The scheme below shows various reactions starting with ammonia. Study it and answer the questions that follow.



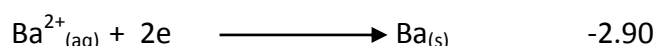
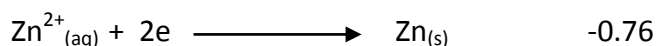
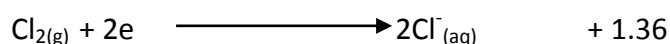
- (i) List the raw materials used in the manufacture of ammonia. (1 mark)
- (ii) What catalyst is used in step I? (1 mark)
- (iii) Write an equation for the reaction that occurs between ammonia and oxygen in presence of the catalyst. (1 mark)
- (iv) Identify the process in step II (1 mark)
- (v) Using an appropriate equation, explain how the reaction in step III occurs? (2 marks)
- (vi) What should be added to solution K to form solid L? (1 mark)
- (vii) (a) (i) Write the formula of compound J. (1 mark)
- (ii) Calculate the mass of compound J that would contain 14g of nitrogen
(H = 1, N = 14, O = 16) (2 marks)
- (b) State two advantages of ammonium phosphate over ammonium nitrate. (2 marks)
3. (a) Give the IUPAC names of the following compounds. (2 marks)
- (i) $\text{HCCCH}_2\text{CH}_3$
- (ii) $\text{H}_2\text{CCHCH}_2\text{C}$
- (b) Study the following diagram and answer the questions that follow.



- (i) Identify substances (2 marks)
- (ii) Draw the structure of compound P and state one use. (2 marks)
- (iii) Write the equation for the reaction leading to the formation of the products in Z. (1 mark)
- (iv) Show the general structure of polymer T and give its name. (2 marks)
- (v) To which class of organic compounds does compound Q belong to? (1 mark)
4. The set-up below represents electrolysis of dilute sulphuric (VI) acid.



- (a) Identify gases M and N (1 mark)
 (b) Write an ionic equation for the production of gas M. (1 mark)
 (c) At what electrode does reduction take place. Explain your answer. (2 marks)
 (d) State the most suitable electrodes that can be used in this experiment.
 Explain your answer. (2 marks)
 (e) The standard electrode potentials for some half cells are given below.



- (i) Arrange the metals in order of reactivity. (1 mark)
 $\text{Ag}/\text{Ag}^+_{(\text{aq})}$ and $\text{Ba}/\text{Ba}^{2+}_{(\text{aq})}$ (2 marks)
 (iii) What would happen if a cell with chlorine and zinc ions, the anode was made of zinc. Explain your answer. (2 marks)

5. A piece of marble chip (calcium carbonate) is put in a beaker containing excess of dilute hydrochloric acid which is placed on a reading balance. The mass of the beaker and its contents is recorded every two minutes, as shown in the table.

| Time (min) | 0 | 2 | 4 | 6 | 8 | 10 | 12 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| Mass(g) | 126.4 | 126.3 | 126.2 | 126.1 | 126.0 | 126.0 | 126.0 |

- (a) Why is there a continuous loss of mass of the reaction mixture. (1 mark)
 (b) Write an equation for the reaction taking place. (1 mark)
 (c) State two different ways by which the reaction could have been made more rapid. (2 marks)
 (d) Why does the mass remain constant after 8 minutes. (1 mark)
 (e) State the observations that would be made if a few drops of silver nitrate solution was added to 1cm^3 of the resulting solution followed by ammonia solution. (2 marks)
 (f) State one environmental effect that excess carbon (IV) oxide in the air causes. (1 mark)

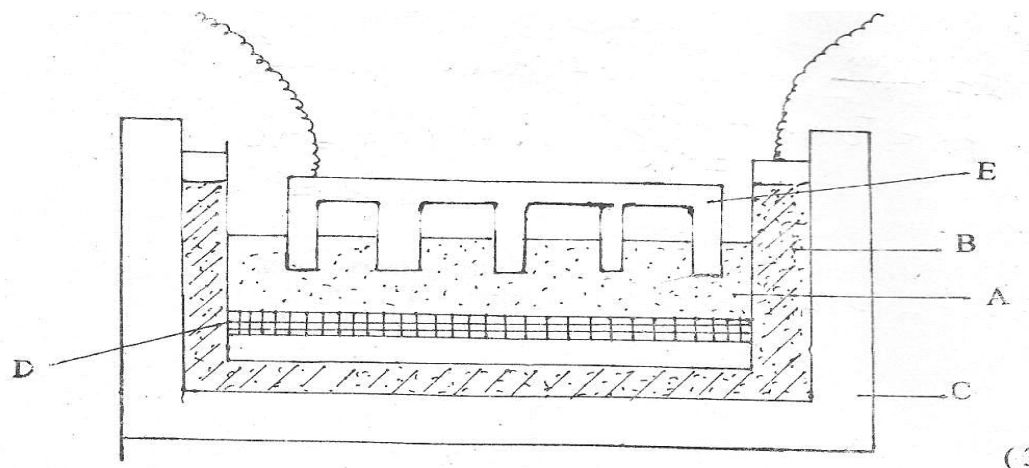
- (g) State two uses of carbon (IV) oxide. (2 marks)

6. In an experiment to determine the molar heat of neutralization of hydrochloric acid with sodium hydroxide, students of Furaha Secondary school reacted 100cm^3 of 1M hydrochloric acid with 50cm^3 of 2M sodium hydroxide solution. They obtained the following results.
 Initial temperature of acid = 25.0°C
 Initial temperature of base = 25.0°C
 Highest temperature reached
 With the acid – alkali mixture = 34.0°C

- (a) Define the term molar heat of neutralization. (1 mark)
 (b) Write an ionic equation for the neutralization reaction between hydrochloric acid and sodium hydroxide. (1 mark)
 (c) Calculate :
 (i) The change in temperature. (ΔT) (1 mark)
 (ii) The amount of heat produced during the reaction.
 (Specific heat capacity of solution = $4.2 \text{ kJkg}^{-1}\text{k}^{-1}$) (2 marks)
 (iii) The molar heat of neutralization of sodium hydroxide. (2 marks)
 (d) Write the thermochemical equation for the reaction. (1 mark)

(e) Draw an energy level diagram for the reaction. (2 marks)

7. Aluminium is extracted from its ore by electrolysis method. The current required in the process is 4,000 amperes. Study the diagram and answer the questions that follow.



(a) Name: (3 marks)

(i) Electrolyte A

(ii) Substance D

(iii) Electrode E

(b) Name the material from which the electrodes are made. (1 mark)

(c) (i) Write the equation that produces aluminium metal. (1 mark)

(ii) Explain why E has to be replaced from time to time. (1 mark)

(iii) Why is cryolite added to the electrolyte before the process of electrolysis? (1 mark)

(d) Name the ore from which aluminium is extracted.

(e) A current of 25 amps was passed through molten aluminium oxide for 36 hrs.

Calculate the amount of aluminium deposited in kg.

(Al = 27, IF = 96500C) (3 marks)

(f) Give two industrial uses of aluminium. (2 marks)