KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MOI GIRLS NAIROBI HIGH SCHOOL
CHEMISTRY
PAPER 1
TIME: 2 HOURS

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233/1
CHEMISTRY
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MOI GIRLS SCHOOL NAIROBI KCSE TRIAL AND AND PRACTICE EXAM 2016

INSTRUCTIONS TO CANDIDATES:

- Write your name and Index number in the space provided above.
- Answer ***all*** the questions in the spaces provided.
- All working **must** be clearly shown where necessary.
- Mathematical tables and electronic calculators can be used.

Question	**Maximum score**	**Candidate's score**
Score 1 - 29	80	

1. When an electric current was passed through molten substances M and N in different containers the observations in the table below were made

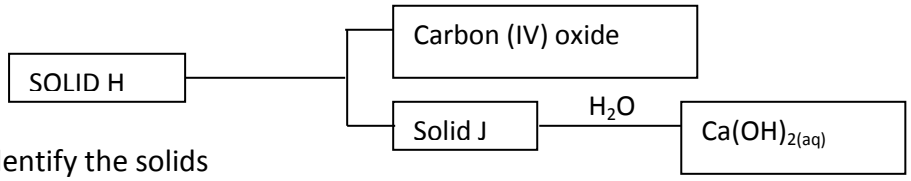
Molten M	Conduct electric current and is not decomposed
Molten N	Conduct electric current and a gas is formed at one of the electrodes

Suggest the type of bonding present in;

a) Substance M (1mk)

b) Substance N (1mk)

2. Use the scheme below to answer the questions that follow



a) Identify the solids

i) H - (1mk)

ii) J - (1mk)

b) State one laboratory use of $Ca(OH)_{2(aq)}$ (1mk)

3. Explain why potassium is kept under paraffin while phosphorous is kept under water (2mks)

4. Sulphur is soluble in ethanol but not in water while common salt is soluble in water but not in ethanol

a) Explain why sulphur is soluble in ethanol but hot in water (1mk)

b) Explain how a pure sample of sodium chloride can be obtained from a mixture of the two (1mk)

5. Ammonia gas is prepared by harber process according to the equation below

$N_{2(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)} + Heat$

Complete the table below by stating the effect of equilibrium when the following conditions are applied. Give explanation in each case

Condition	Effect on equilibrium	Explanation
a) Pressure increased	½ mk	1mk
b) Temperature increased	½ mk	1mk

6. Alkaline earth metals are generally less reactive than alkali metals, explain. (2mks)

7. A fixed mass of an ideal gas occupies $200cm^3$ at a pressure of 740 mmHg

a) State Charles's law (1mk)

b) Calculate the volume of the gas at 77-mmHg pressure (2mks)

8. State what would be observed if concentrated sulphuric acid is added to

a) Sugar crystals. (1mk)

. b) Hydrated copper (II) sulphate solution (1mk)

c) What type of reaction has taken place above (1mk)

9. Two gases X and Y have relative densities 1.98 and 2.90 respectively. They diffuse under the same conditions

a) How do their rate of diffusion compare? (2mks)

b) Determine the relative molecular mass of X given that the relative molecular mass of Y is 64 (1mk)

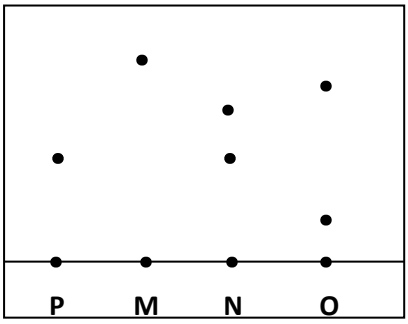
10. A mass of 2.5g of acid HX was dissolved in water and the resulting solution was diluted to a total of $250cm^3$, $15cm^3$ of the final solution was required to neutralize $25.0cm^3$ of 0.1M aqueous potassium hydroxide. Calculate the relative molecular mass of the acid (3mks)

11. Name three sub – atomic particles found in an atom and state where they are found (3mks)

12. a) Using dots (•) and cross (x) show the formation of Carbon (II) oxide gas (1mk)
    b) Name two types of bonds present in the molecule in 'a' above (2mks)

13. When a certain hydrocarbon burnt completely in excess oxygen 5.28g of Carbon (IV) oxide and 2.16g of water were formed. If the molecular mass of the hydrocarbon is 84, determine the molecular formula of the hydrocarbon (3mks)

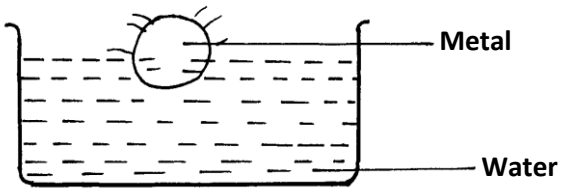
14. Three brands of inks M, N and O were suspected to be contaminated with substance P. The result is shown below;



    i) Which ink was contaminated with substance P (1mk)
    ii) Name the ink which was pure (1mk)
    iii) Identify the other ink which was not pure (1mk)

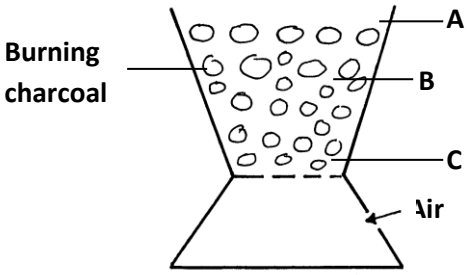
15. a) Name one gas used together with oxygen in welding other than acetylene gas (1mk)
    b) State two other uses of the gas named above (2mks)

16. Study the experiment below and answer the questions that follow. The gas produced ignites spontaneously



    i) Which metal is used above (1mk)
    ii) Which gas was produced (1mk)
    iii) What will be the colour of phenolpthalein indicator in the resulting solution? (1mk)

17. The following diagram represents a charcoal burner. Study it and answer the questions that follow



    Write the equations for the reaction at; (3mks)

18. 75g of a saturated solution contains 30g of salt calculate
    a) The solubility of the salt (2mks)
    b) The percentage of the salt in the saturated solution (1mk)

19. State two disadvantages of hard water (2mks)

20. a) Define oxidation and reduction in terms of electrons (1mk)
b) Calculate the oxidation number of Chromium in $Cr_2O_7^{2-}$ (1mk)

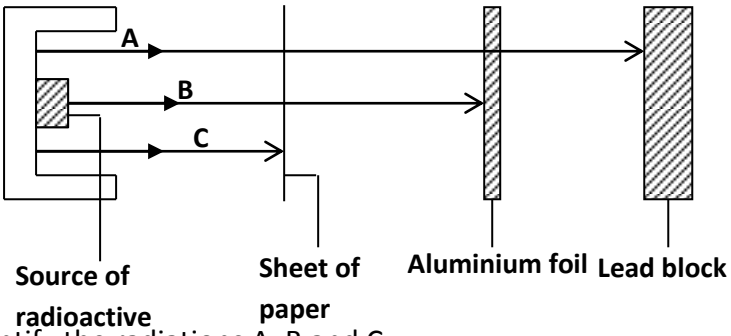
21. The cell convention for an electrochemical cell is shown below
$Zn_{(s)} / Zn^{2+}_{(aq)} // Pb^{2+}_{(aq)} / Pb_{(s)}$
a) Name two substances that can be used as electrolytes in the above cell (2mks)
b) Which of the electrodes is the anode? (2mks)

22. a) Name one chief ore of copper and give its formula (2mks)
b) Calculate the mass of copper that would be deposited on the cathode when a steady current of one ampere flows for 20 minutes through copper (II) sulphate solution (Cu = 63.5; Faraday Constance = 96500Cmol^{-1}) (3mks)

23. a) Give a reasons why ethanoic acid has a higher boiling point than ethanol which has the same number of Carbon atoms (1mk)
b) Draw the structural formula of ethanoic acid (1mk)

24. $RCOO - Na^+$ and $RCH_2OSO_3 - Na^+$ represent two types of cleansing agents
a) Name the class of cleansing agent to which each belongs (1mk)
b) Which one of the two cleansing agents is likely to polute the environment. Explain.(2mks)

25. a) State three differences between chemical and nuclear reactions. (3mks)
b) Study the figure below and answer the questions that follow



Identify the radiations A, B and C (3mks)

26. A volume of 80cm^3 of a mixture of propane (C_3H_8) and oxygen were ignited in an experiment. The products were cooled and passed through an aqueous sodium hydroxide. The final volume was reduced by 30cm^3
a) Write the equation for the combustion of propane (1mk)
b) Determine the volume of;
i) The component of the original mixture (2mks)
ii) Residual oxygen (1mk)

27. Use the information below to answer the questions that follow
Ethanol is formed as shown below
$2C_{(s)} + 3H_{2(g)} + ½\ O_{2(g)} \longrightarrow C_2H_5OH_{(l)}$
ΔHc carbon = -393kJmol^{-1}
ΔHc Hydrogen = - 286kJmol^{-1}
ΔHc ethanol = - 1368kJmol^{-1}
Draw the energy cycle diagram and for the formation and combustion of ethanol and calculate the heat of formation of ethanol (3mks)

28. Differentiate between empirical and molecular formula (2mks