Name ………………………………………. Centre/ index No…………………..

Signature …………………………………………………………………………………..

545/2

CHEMISTRY

Paper 2

July – August 2013

BUGIRI DISTRICT SECONDARY SCHOOLS EXAMINATIONS BOARD

(BUDSSEB)

UGANDA CERTIFICATE OF EDUCATION

MOCK EXAMINATIONS 2013

CHEMISTRY

PAPER 2

2 Hours

INSTRUTIONS TOCANDIDATES.

 SECTION A. Consists of 10 structured questions. Answer all questions in this section. Answers

MUST be written in spaces provided.

SECTION B. Consists of four semi structured questions. Answer any two questions from this

Section.

Answers to the questions MUST be written in the answer booklet provided.

In all sections, working MUST be clearly shown.

$$H = 1 \ , \ C = 12 \ , \ N = 14 \ , \ O = 16 \ , \ Na = 23 \ , \ S = 32 \ , \ Cl = 35.5$$

1 mole of gas occupies 24l at room temp.

I mole of gas occupies 22.4l at s.t.p.

FOR EXAMINERS' USE ONLY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL

1. A mixture containing Copper(ii) sulphate and Copper(ii) Carbonate was shaken with excess water and filtered.
   (a) Identify
      (i)   Filtrate ……………………………………………………………………………
      (ii) Residue …………………………………………………………………………...
   (b) The dry residue was heated strongly
      (i)   What observation was made?
      …………………………………………………………………………………………
      …………………………………………………………………………………………..
      (ii) Write the equation for the reaction
      …………………………………………………………………………………………
      …………………………………………………………………………………………
   (c) Name the reagent that can be used to identify the anion the filtrate
      …………………………………………………………………………………………..

2. (a) Write the equation for the manufacture of ammonia on a large scale.
   ……………………………………………………………………………………………………
   ……………………………………………………………………………………………………
   (b) What are the conditions for the reaction in (a) above
   (i) …………………………………………………………………………………………...
   (ii) …………………………………………………………………………………………..
   (iii)…………………………………………………………………………………………..
   (c) Copper (ii) oxide was reacted with ammonia.
      (i)   Write equation of reaction that takes place.
      …………………………………………………………………………………………
      …………………………………………………………………………………………

3. Below is part of the periodic table

I	II	III	IV	V	VI	VII	VIII
			R		S		M
	E	F				T	

   (a) (i) Identify;
      the most reactive metal
      …………………………………………………………………………………………………..
      the most reactive non metal
      …………………………………………………………………………………………………..
      (ii) Which atom forms the largest Anion
      …………………………………………………………………………………………

(iii)   The most non reactive element

(b) (i)   What compound is formed when atom R and T combine

………………………………………………………………………………………………..

(iii)   When atoms S and F combine

………………………………………………………………………………………………...

4. During the preparation of oxygen using hydrogen peroxide in the lab
(a) (i) Name the catalyst used

……………………………………………………………………………………………

(ii)Use equation to show how oxygen is produced

……………………………………………………………………………………………..

(b) What other forms apart from catalyst increase the rate at which oxygen is formed using hydrogen peroxide

(i)   …………………………………………………………………………………

(ii)   …………………………………………………………………………………..

(iii)   …………………………………………………………………………………..

5. Sulphur and Ammonia form oxides

(i)   Write the formulae of oxides formed
Aluminium …………………………………………………………………………

Sulphur ………………………………………………………………………….

(ii)   Name the type of bond formed
(a)(i) above ………………………………………………………………………
(b)(ii) above …………………………………………………………………

(iii)   What is the type of oxide formed when

Aluminium reacts with oxygen

……………………………………………………………………………………………………

Sulphur reacts with oxygen

………………………………………………………………………………………….

6. A gaseous hydrocarbon contains 82.8% carbon and 17.2% hydrogen by mass only.
(a) (i)Calculate the empirical formulae of the hydro carbon

(ii)The molecular formula of hydrocarbon given that its formula mass is 58

(b) The hydrocarbon shows isomerism.
Write the formulae of two possible isomers

7. Element M and E have atomic numbers 12 and respectively to form
    (a) Compound R
        (i)   Write the electronic configuration of M
                 ……………………………………………………………………………………
        (ii)   Electronic configuration of E
                 ……………………………………………………………………………………
    (b) State the nature of R at room temperature
        Whether gas, liquid, solid
        ……………………………………………………………………………………
    (c) State the type of bond in R
        ……………………………………………………………………………………………..
8. Ammonia chloride dissolves in water according to the equation
    $NH_4Cl_{(S)} + H_2O_{(l)}$ ⟶ $NH_4OH_{(aq)} + HCl_{(aq)}$
    (a) Explain why the solution is acidic
    ....
    ....
    ....
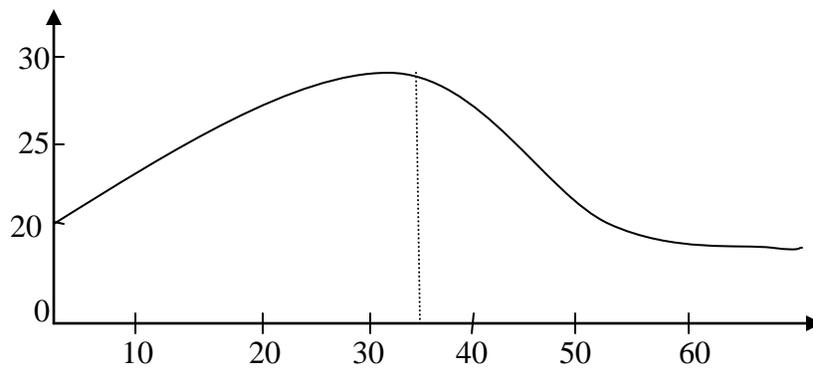
(b) A solid mixture contains Ammonia chloride and Sodium chloride. Explain how pure ammonia chloride is separated from mixture

....
....
....
....

(c)Write an equation for the reaction that takes place when ammonia chloride is heated with sodium hydroxide

………
………

9.

The graph in figure above shows the change in temperature when sodium hydroxide solution was added to 20 cm^3 of 1M Sulphuric acid.

………
………
……………………………………………………………………………………….............................

(b)Calculate the concentration of sodium hydroxide in moles per litre

………
………
………
………
………

10. (a) Name one substance that causes
   (i)   Permanent hardness of water

   ……

   (ii)   Temporary hardness of water

   ……

   (b)State one advantage of using hard water

……

……

(c)Explain the permutit method of removing permanent hardness

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SECTION B

11. (a) Copper (ii) Carbonate was heated strongly until there was no further change
    (i)   What was the observation
    (ii)   Explain using equations the observation in (i) above
    (iii)   Name the reagent that can be used to identify the gaseous product

   (b)Dilute hydrochloric acid was added to residue in (a) above and the mixture warmed.

    (i)   State what was observed

    (ii)   Write the equation for the reaction.

12. (a) Name one reagent that can be used to distinguish between each of the following pairs
    of species.
       In each case state what would be observed if each member of the pair is treated with
    the reagent and write equation for the reaction that takes place
    (i)   Lead (ii) ions and Zinc ions.
    (ii)   Carbonate ions and chloride ions
    (iii)   Ethane and Ethene

   (b)Describe a test that can be used to confirm the presence of $Cu^{2+}_{(aq)}$ ions in solution.

       Write the observation and equation of reactions that take place.

13. When a certain volume of 0.1M Hydrochloric acid was reacted at room temperature with
    excess Iron fillings 120 cm^{3}of gas were produced.
    (a) Draw a labelled diagram to show how rate of reaction was determined.
    (b) Write the equation of the reaction that took place.
    (c) Calculate the;
                (i)   Volume of 0.1M hydrochloric acid required to produce 120 cm^{3}of
                        the gas.
                (ii)   The mass of iron fillings that reacted.
    (d) Draw a sketch graph of the volume of the gas against time.
    (e) State how the rate of reaction would change if the reaction was carried out at a
        temperature above room temperature.

14. Define the terms
   (i)   Solute
   (ii)   Saturated solution

   (b)The solubilities of Potassium chloride and potassium nitrate at a certain temperature are shown in the table below.

Temperature /^{0}C	0	11	15	30	40	50	57
Solubility of KCl per 100g of water	27.7	310	32.0	36.5	40.0	43.0	45.0
Solubility of KNO$_3$ per 100g of water	14.0	21.5	25.0	43.0	63.0	84.0	102.0

   (i)   Plot a graph on the same axes. A graph of solubility against temperature for the solubilities of potassium chloride and potassium nitrate.
   (ii)   State which one of the two salts has solubility which increases less rapidly with increase in temperature.
   (iii)   Determine the temperature at which the solubilities of the two salts are equal.
   (iv)   A saturated solution of potassium Nitrate at 30^{0}C was cooled to 5^{0}C.Calculate the number of moles of potassium nitrate crystals formed.

END.