Name: …….Stream:……

545/2
Chemistry
Paper 2
2 Hours

UGANDA CERTIFICATE OF EDUCATION
RESOURCEFUL MOCK EXAMINATIONS 2019
Chemistry
Paper 2
Time: 2 Hours

INSTRUCTIONS TO CANDIDATES

- Section A consists of 10 structured questions.
- Answer all questions in this section in the spaces provided.
- Section B consists of 4 semi-structured questions.
- Answer any **TWO**questions from the section. Answers to these questions must be written in the answer booklets provided.

FOR EXAMINER'S USE ONLY														
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**TOTAL**

SECTION A (50 Marks)

1. A mixture of copper (II) carbonate and zinc nitrate was placed in a test tube. Water was added, mixture shaken and then filtered.

   (a) Identify the:

   (i) filtrate (½mk)

   ……

   (ii) residue (½mk)

   ……

   (b) State reagents and observations when testing for

   (i) cation in the filtrate (1½mk)

   ……

   (ii) anion in the residue (1½mk)

   ……

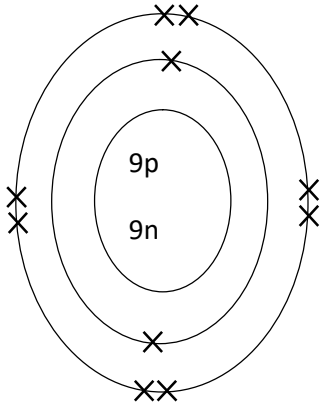
(c) State one importance of separating components in mixtures. (1mk)

……

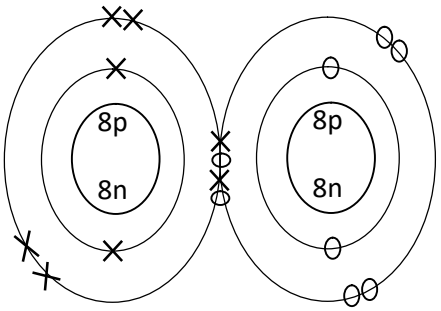
……

2. Below are structures of unknowns identified as X, T, Q and R. P=protons, n= neutrons X and O =electrons. Use the structures to answer questions that follow.

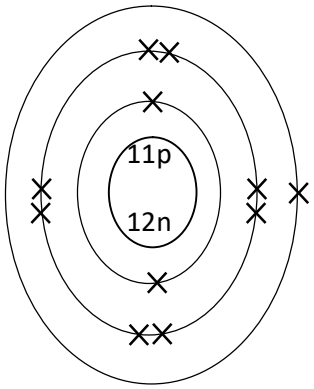
X



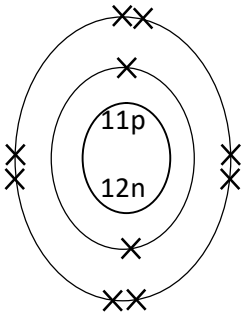
Y



Q



R



(a) With a reason identify,

(i) Neutral metal atom (1mk)

……

Reason:……

(ii) Diatomic molecule (1mk)

……

Reason:……

(iii) cation (1mk)

……

Reason:……

(iv) Anion (1mk)

……

Reason:……

3. Hydrogen gas can be prepared by reacting zinc metal with dilute hydrochloric acid.

a) Write an ionic equation for the reaction. (1½mk)

……

……

b) State reasons why each of the following is not suitable in the preparation of hydrogen gas.

(i) Concentrated hydrochloric acid instead of dilute hydrochloric acid (2mks)

……

……

(ii) Copper metal instead of zinc (1½mk)

……

……

4. Excess carbon dioxide was bubbled through a solution of calcium hydroxide solution.

(a) State what was observed and write a balanced equation for the reaction.

Observation (1mk)

……

Equation (1½ mk)

……

(b) To resultant solution (a) ordinary soap was added. Briefly explain the observation.

……

……

……(1½ mk)

(c) State one physical method of eliminating the effect that caused observation in (b) above. (1mk)

……

……

5. Hydrogen gas was reacted with copper (II) oxide.

(a) State two conditions for the reaction. (1 mks)

……

……

(b) Write a balanced equation for the reaction that took place (1 ½ mk)

……

……

……

(c) Excess hydrogen gas was bubbled over 8.0g of copper oxide and 6.4g of solid residue was deposited. Calculate for the empirical formula of copper oxide. (Cu=64, O=16) (2½ mk)

……

……

6. Sulphur dioxide gas can be prepared using dilute hydrochloric acid and substance Q.

(a) Identify Q……..(1mk)

(b) Write a balanced ionic equation for the reaction above. (1 ½ mk)

……

……

(c) Write a balanced equation for the reaction of excess Sulphur dioxide with sodium hydroxide. (1 ½ mk)

……

……

(d) State the reaction and observation when testing for sulphurdioxide in the laboratory……..

(1mk)

7. (a) Write a balanced equation for the reaction of hot iron metal with dry hydrogen chloride gas. (1½ mk)

……

……

(b) Calculate the volume of hydrogen chloride gas required at s.t.p to yield 2.5g of solid residue after reaction with iron metal (1 mole of gas at s.t.p= 22.4l, Fe=53, Cl=35.5, H=1)

……

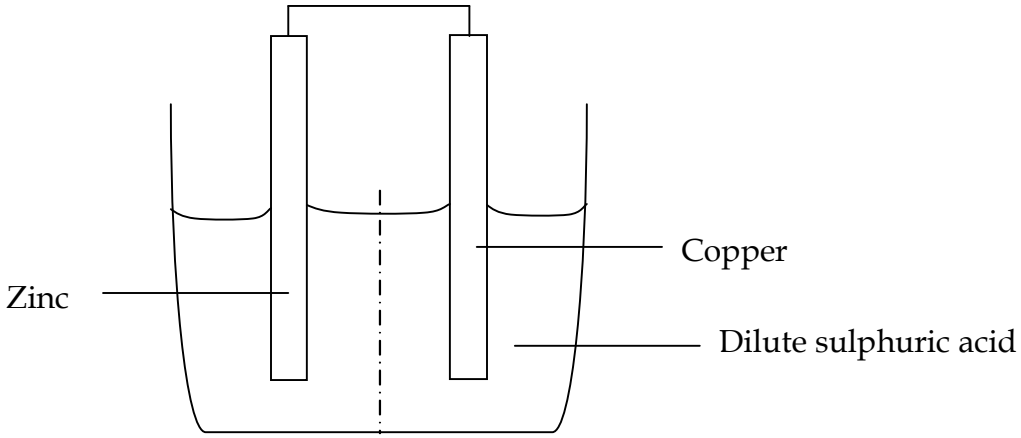
……(2 ½ mk)

(c) State one use of hydrogen chloride gas to man.

(1mk)……

……

8. Study the electrochemical cell below and answer the question.



(a) Write an equation at:

(i) Anode: (1mk)

……

(ii) Cathode: (1½ mk)

……

(b) Write overall cell equation for the reaction. (1 ½ mks)

……

……

(c) State two applications of electrolysis (1 mk)

……

……

9. (a) Define the term heat of combustion.

……

……

(b) Q burns in air completely as shown in the equation below.

$$Q_{(s)} + O_2 \longrightarrow QO_2 + -54Kj$$

Given that molar mass of Q is 14 specific heat capacity of water = 4.2^0C

Calculate the temperature change that occur when 100g of water was heated using 50g of Q in an insulated environment. (3 mks)

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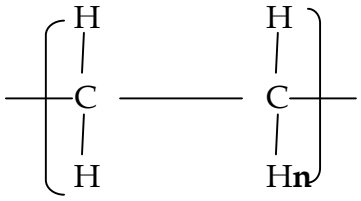
(c) State reasons why insulation was necessary. (1mk)

……

……

……

10. (a) Identify monomer for the polymer with a formula (½mk)



……

……

(b) Write equation that yields polymer above. (1½mk)

……

……

(c) What does **n** represent in the structural formula in (a) above? (1mk)

……

(d) Write a balanced equation for the reaction that yields monomer stated in (a) above from ethanol. (1 ½ mk)

……

……

(e) State one use of polymer in (a) to man. (½mk)

……

……

SECTION B (30 Marks)

Attempt any TWO questions from this section

11. (a) Without using a diagram describe the laboratory preparation of dry ammonia.(7mks)

(b) Write equations to show how ammonia can be converted into nitric acid. (6 mk)

(c) State one reason why nitric acid is a strong oxidizing agent. (2 mk)

12. (a) Describe the preparation of ethanol in your home area. (8mks)

(b) Write equations to show how ethanol can be converted into poly ethene (4mks)

(c) Outline three uses of ethanol apart from being a component in strong drinks. (3mks)

13. (a) Define the term acid basicity. (2mks)

(b) Describe experimental procedures in preparation of lead (II) nitrate crystals from lead (II) oxide. (7 mks)

(c) Write balanced equation for the decomposition of each of the nitrate compounds below using heat.

i). Nitric acid (1½ mks)

ii). Sodium nitrate (1½ mks)

iii). Silver nitrate (1½ mks)

(d) State what is observed when iron (II) sulphate followed by concentrated sulphuric acid are added to a nitrate solution. (1½ mks)

14. Briefly explain how each of the following affects the rate of reaction.

a) Temperature (4mks)

b) Concentration (4mks)

c) Surface area (4mks)

d) Catalyst (3mks)

END