

Name: Index No:

Candidate's signature.....

Date.....

Muungano KCSE Trial Exam

233/2

CHEMISTRY**PAPER 2**

July 2017

2 Hours

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the space provided
- Answer **All** the questions in the space provided
- Mathematical tables and electronic calculators may be used
- All working **must** be clearly shown where necessary.

For Examiner's Use Only

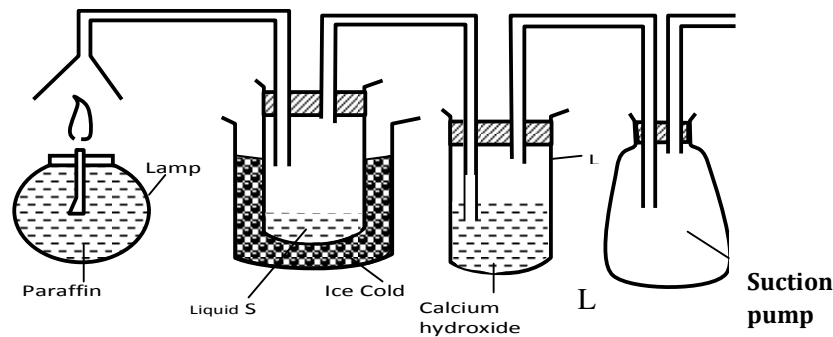
Question	Maximum Score	Candidates Score
1	12	
2	13	
3	10	
4	9	
5	11	
6	13	
7	12	
TOTAL	80	

This paper consists of 10 printed Pages

*Candidates should check the question paper to ensure that all the pages are printed as indicated
and no questions are missing*

Turn Over

1. Study the set-up of apparatus below and answer the questions that follow.



- a) **State** and **explain** the observation that would be made in tube **L** as the experiment progresses in the first few minutes. (2mks)

.....

- b) **How** would the observations in the tube **L** change if the experiment is carried out for a long time. **Explain** using a chemical equation. (2mks)

.....

- c) **State three observations** made when liquid **S** is reacted with sodium metal. (3mks)

.....

- d) **State the use** of the suction pump in this experiment. (1mk)

.....

- e) Diamond and graphite are allotropes of carbon. Graphite conducts electricity and diamond does not. **Explain** this phenomenon. (2mks)

.....

- f) State two uses of carbon (IV) oxide. (2mks)

.....

Turn Over

2. Study the information in the table below and answer the question that follow, letters do not represent actual symbols of the element.

<i>Element</i>	<i>Atomic No.</i>	<i>Melting point</i>	<i>Boiling point</i>	<i>Atomic radii</i>	<i>Ionic Radii</i>
<i>L</i>	3	-179	1340	0.108	0.100
<i>M</i>	9	-220	-188	0.101	0.105
<i>N</i>	11	98	890	0.135	0.132
<i>P</i>	12	650	1110	0.126	0.124
<i>Q</i>	13	660	2470	0.125	0.120
<i>R</i>	15	442/590	280	0.111	0.119
<i>S</i>	16	113/119	445	0.103	0.109
<i>T</i>	17	-101	-3	0.109	0.120
<i>U</i>	19	63.5	-775	0.167	0.160

- (a) **Write** the electronic configuration of an ion of elements *T* and *U*. (1mk)

.....

- (b) Why do the elements represented by *R* and *S* have two values of melting point? (1mk)

.....

- (c) **Select** an element:

- (i) Which is the most electronegative? (1mk)

.....

- (ii) That belongs to period 4, **explain**. (2mks)

.....

- (d) **Explain** why:

- (i) Ionic radius of *R* is bigger than its atomic radius. (1mk)

.....

Turn Over

- (ii) The atomic radius of L is bigger than that of R yet they are in the same period. (1mk)

.....

.....

- (e) Using dots (.) and cross (x) to **represent** outermost electron show bonding in the compound formed between L and M . (2mks)

.....

.....

.....

- (f) **Write an equation** for the reaction that occurs between U and water. (2mks)

.....

.....

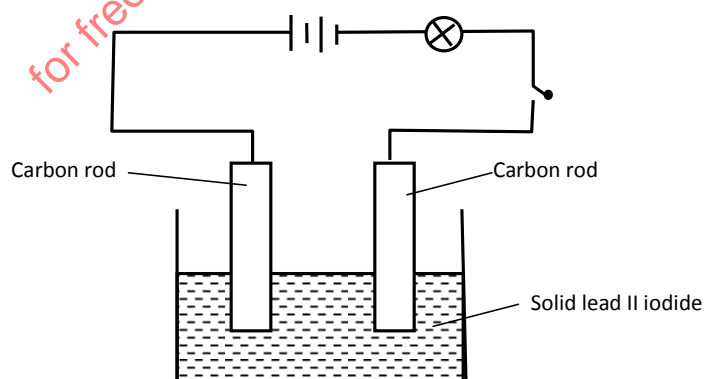
- (g) **Describe how** a solid mixture of the sulphate of element N and lead (II) sulphate can be separated into solid sample of dry lead (II) sulphate. (2mks)

.....

.....

.....

3. The arrangements below show a set-up to investigate the effect of an electric current on molten lead (II) iodide.



- (a) **Identify two** mistakes in the set-up. (2mks)

.....

.....

Turn Over

- (b) **State three observations** made after correcting the mistakes. (2mks)

.....

.....

.....

- (c) **What particles** are responsible for electrical conductivity? (1mk)

.....

.....

- (d) **Write the equations** for the reactions taking place at the electrodes. (2mks)

.....

.....

- (e) **Indicate** on the diagram direction of flow of electric current. (1mk)

- (f) **State two industrial applications** of electrolysis process. (2mks)

.....

.....

4. a) **State Boyle's law.** (2mks)

.....

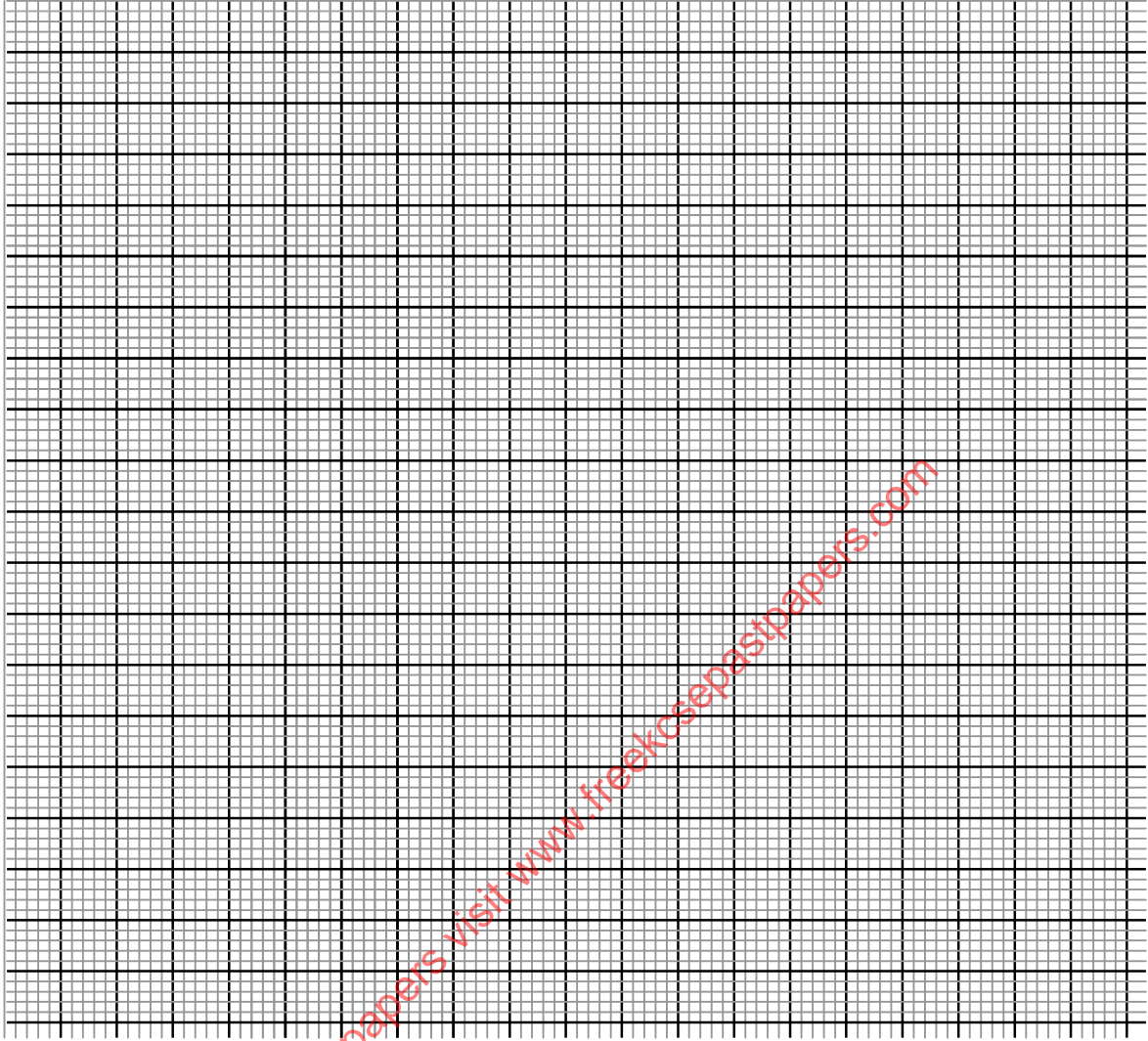
.....

- b) The table below shows the relationship between the pressure and volume of a fixed mass of ozone gas.

Pressure (K pa)	1	4	8	16	20	160
Volume (cm ³)	140	40	20	10	8	1
Inverse of volume 1/v (cm ⁻³)						

- i) Complete the table by filling the inverse of volume. (3mks)

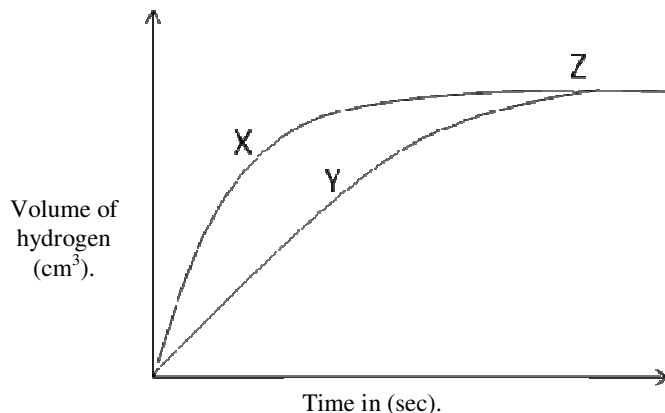
- ii) **Draw** a graph of pressure against the reciprocal (*inverse*) of volume. (3mks)



- (c) Using the graph, **determine** the volume of ozone if pressure is 12Kpa. (2mks)

.....
.....

5. Equal masses of magnesium ribbon were reacted separately with equal volumes of 1M hydrochloric acid and 1M methanoic acid. The results were plotted on a graph as shown below. Two curves X and Y were obtained.



(a) **Explain** which curves represents:

i) 1M hydrochloric acid.

(1mk)

.....

ii) 1M Methanoic acid.

(1mk)

.....

(b) **State** the significance of point Z.

(1mk)

.....

(c) On the same axes, **sketch the curve** you would obtain if the same mass of powdered magnesium were reacted with same quantity of 1M hydrochloric acid. Mark the curve W.

(2mks)

(d) **Write ionic equation** for the reaction between magnesium and dilute hydrochloric acid.

(1mk)

.....

(e) **Calculate** the maximum mass of the gas that would be liberated if 1.2g of magnesium reacted with excess hydrochloric acid. ($M_g = 24$, $H = 1$).

(2mks)

.....

Turn Over

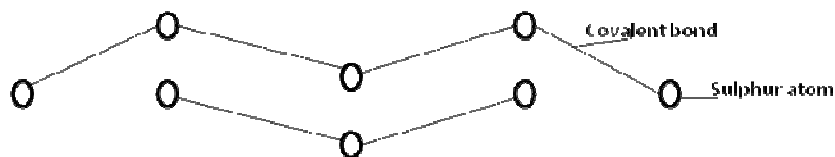
- (f) **Calculate** the volume of the gas produced in (e) above at r.t.p (*molar gas volume at r.t.p*) = 24dm^3 . (3mks)

.....

.....

.....

6. I. Study the structure below and answer questions that follow



- (a) **What** observation is made when the molecule above is heated to a temperature of 113°C ? (2mks)

.....

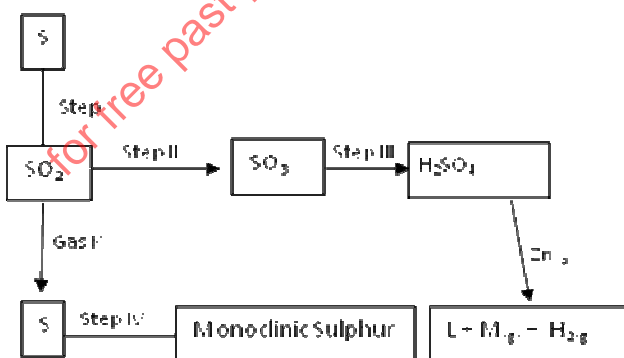
.....

- (b) **Write an equation** for the reaction of atom of the above structure with hydrogen. (1mk)

.....

.....

II. Study the scheme below and answer questions that follow.



(a)

i) **Name**

Gas **K** (1mk)

Gas **M** (1mk)

Turn Over

ii) **State** the observation made in

Step I (1mk)

.....

Step II (1mk)

.....

iii) **State the conditions** necessary for step II to occur. (2mks)

.....

.....

(b) **Write an equation** to show how pollution effect of sulphur (IV) oxide is controlled in contact process. (2mks)

.....

.....

(c) **Explain** the role of sulphur in vulcanization of rubber. (2mks)

.....

.....

7. a) Study the table below and answer the questions that follows

Formula of hydrocarbon	Boiling points (K)
C ₂ H ₄	-104
C ₃ H ₆	-47.7
C ₄ H ₈	-62
C ₅ H ₁₀	30
C ₆ H ₁₂	63.9

(i) **What name** is given to a series of organic compounds like the ones in the table? (1mk)

.....

(ii) **To what class** of organic compounds does the above hydrocarbon belongs? (1mk)

.....

Turn Over

(iii) **Select one** hydrocarbon that would be a gas at room temperature (298K); give a reason for your answer. (2mks)

.....

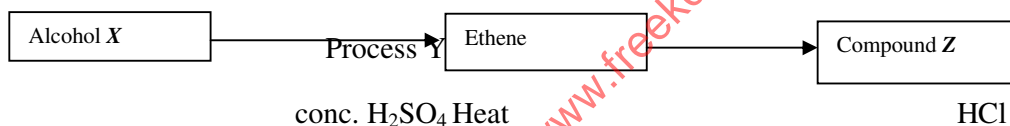
iv) **Give the formula** of the seventh member of the above series. (1mk)

.....

v) **What is** the relationship between the boiling point and the relative molecular masses of the hydrocarbons in the table above? **Explain** your answer. (2mks)

.....

b. Study the flow chart below and answer the questions that follow



i. Write the formula of Alcohol X, Compound Z and name process Y. (3mks)

.....

ii. Propane and Chlorine react as shown below:
 $\text{CH}_3\text{CH}_2\text{CH}_3 \longrightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{Cl} + \text{HCl}$

Name the type of reaction that takes place. (1mk)

.....

iii **State** the condition under which this reaction takes place. (1mk)

.....
