ASUMBI GIRLS HIGH SCHOOL
TERM 2 – DECEMBER 2021
FORM 4

CHEMISTRY PAPER 2

Name: …… **Adm No**: ……

Class: …… **Candidate's Sign**: ……

Date: ……

233/2
CHEMISTRY
PAPER 2

TIME: 2 HOURS

Kenya Certificate of Secondary Education (K.C.S.E.)

FORM FOUR

Chemistry
Paper 2

INSTRUCTIONS TO THE CANDIDATES:

- Write your **name** and **admission number** in the spaces provided above
- **Sign** and write the **date** of examination in the spaces provided.
- Answer ***all*** the questions in the spaces provided.
- All working **must** be clearly shown where necessary.
- Mathematical tables and electronic calculators can be used.

For Examiners Use Only

Question	Maximum score	Candidate's score
1	14	
2	12	

3	11	
4	12	
5	9	
6	12	
7	10	
Total	**80**	

1. The grid below shows a section of the periodic table, the letters are not the actual chemical symbol.

K	L				M		N	P
	Q		R	S		T	V	
W								

a) Name the family into which element P belongs to (1mk)

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b) Which two elements forms the most soluble carbonates (2mks)

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c) With a reason, identify elements in period 3 with the largest atomic radius (2mks)

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d) Write the formula of the compound formed between Q and M (1mk)

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e) State two uses of element R and for each use , state property of element R that makes lts possible for the use

(i) Use (1mk)

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Property (1mk)

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(ii) Use (1mk)

……

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Property (1mk)

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f) Using dots and cross ,show bonding in the compound formed between R and oxygen (2mks)

g) In terms of structure and bonding explain why the oxides of element Thas relatively low boiling points (2mks)

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2. (a) name the following compounds (3mks)

(i) **$CH_3CH_2CH_2COOH$**

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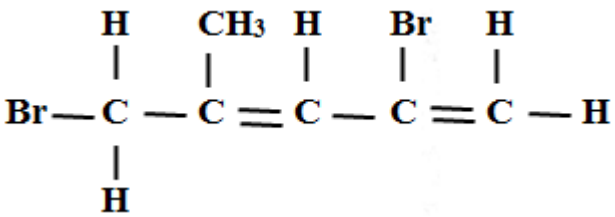
(ii)



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(iii)**$CH_3CH_2OOCCH_2CH_3$**

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b) Two types of detergents P and Q can be represented as

P: R −COONa

Q : R —  **— OSO_3Na**

(i) Identify each type of the detergent (2mks)

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(ii) Which of the two detergents is the best to use with hard water? Give a reason (2mks)

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(iii) State one advantage of detergent P (1mk)

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(iv) State one disadvantage of detergent Q (1mk)

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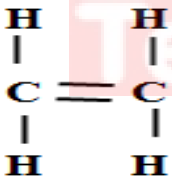
(c) An hydrocarbon can be represented as follows



(i) Identify the hydrocarbon (1mk)

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(ii) Name two reagents that can reacted together to generate the hydrocarbon (2mks)

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3. (a) Name two apparatuses that can be used for determining mass in a laboratory (2mks)

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(b) One of the flames produced by Bunsen burner is the luminous flame

i) Explain why this flame is very bright (1mk)

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ii) State two disadvantages of the luminous flame (2mks)

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(c) Air is usually one of the substances that is considered as a mixture

(i) Identify the two most abundant component of air (2mks)

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(ii) Give two reasons why the air is considered as a mixture (2mks)

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(iii) One of the components of air is carbon (iv) oxide. Describe an experiment that can be used to prove the presence of carbon (iv) oxide in the air (2mks)

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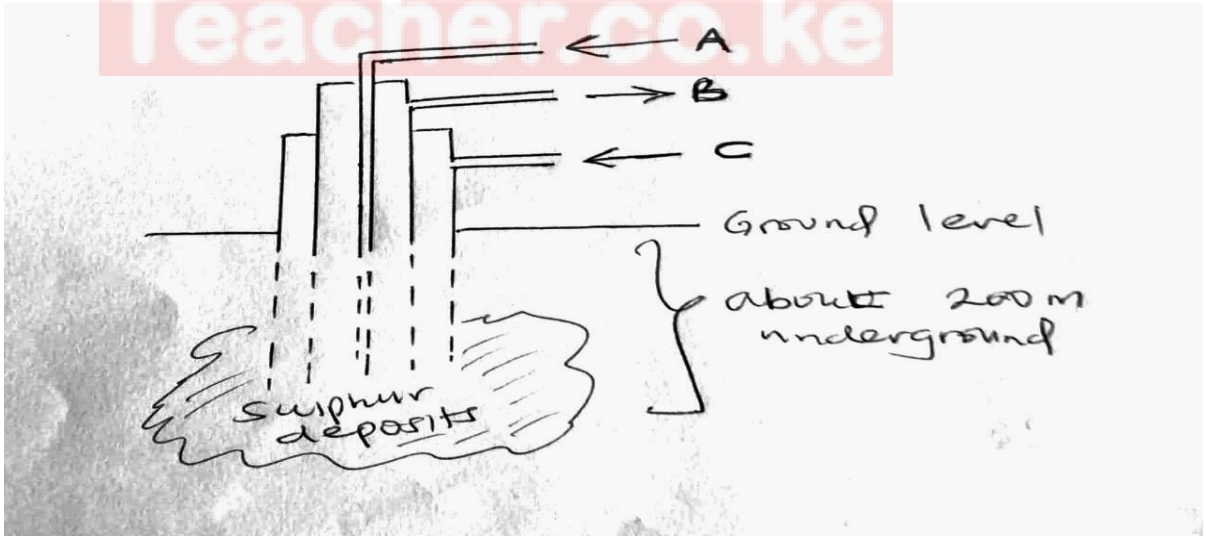
4. (a) The diagram below shows the process used to obtain Sulphur from underground deposits



i) Name the above process used to obtain sulphur from the underground deposits (1mk)

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ii) Name the substance passed through pipe

A (1mk)

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B (1mk)

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iii) State two properties of Sulphur that makes it possible to extract using the above process (2mks)

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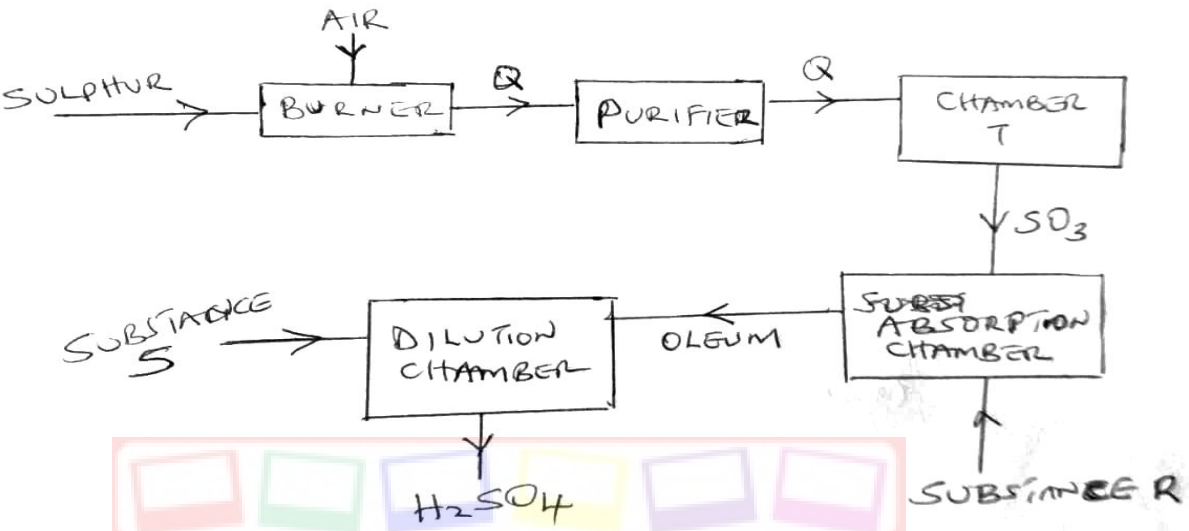
b) The diagram below shows the contact process used in the manufacture of concentrated sulphuric(vi) acid



i) Identify the following:

a) Substance Q formed in the burner (1mk)

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b) Chamber T (1mk)

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c) Substance R (1mk)

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d) Substance S (1mk)

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ii) Write the chemical equation occurring in the dilution chamber (1mk)

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iii) Why is it necessary to pass substance Q though a purifier (1mk)

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iv) State one use of sulphuric (VI) acid (1mk)

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5. (a) Calamine is one of the ores from which zinc can be extracted from

(i) Name any other ore from which zinc can be extracted from (1mk)

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(ii) The calamine is usually decomposed by heating to obtain substance M as shown below

$ZnCO_3 \longrightarrow M + CO_2$

Identify substance M (1mk)

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(iii) Identify two methods that can be used to obtain zinc from substance M (2mks)

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(b) During the extraction of zinc, name two gases likely to emitted into the air and that are likely to cause pollution (2mk)

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(c) State one likely pollution effects of each of the gases you have mentioned in (a) above (2mks)

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(d) State one possible use of zinc metal (1mk)

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6. (a) define the term electrolysis (1mk)

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(b) State two functions of a salt bridge during electrolysis (2mks)

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(c) The reduction potential of elements K, L, M, and P are as given below.

$K^{+}_{(aq)} + e^{-} \rightleftharpoons K_{(S)}$, E = -1.46v

$L^{2+} + 2e^{-} \rightleftharpoons L_{(S)}$, E = +0.49V

$M^{2+} \rightleftharpoons M_{(S),\ E}$ = -2.69V

$N^{+}_{(aq)} + e^{-} \rightleftharpoons N_{(s)}$, E = +0.52 V

$P^{+}_{(aq)} \rightleftharpoons P_{(s),\ E}$= - 0.86V

(i) Which letter represents the, strongest reducing agent? give a reason (2mks)

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(ii) Which two letters represent elements whose half cells would form an electrochemical cell with the largest e.m.f? (1mk)

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(iii) Calculate the e.m.f of the cell formed in (ii) above (2mks)

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(d) During the electrolysis of a molten chloride of metal Q, a current of 0.25A was passed though the molten chloride for 2 hours and 10minutes. Given that 0.9grams of metal Q were deposited at the cathode.

(i) Calculate the quantity of electricity passed (1mk)

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(ii) Charge carried by the ions of metal Q given that R.A.M of metal Q is 84 (3mks)

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7 (a) starting with magnesium oxide, describe how you can obtain a dry sample of magnesium Carbonate (3mks)

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(b) (i) Give one example of an acid salt (1mk)

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(ii) When sodium nitrate was heated a solid A and gas B were produced identify solid A and gas B (2mks)

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(iii) State two uses of gas B produced in (ii) above (2mks)

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(c) State two factors that should be considered when choosing a fuel (2mks)

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**********END**********