

Name: M/S

Class: Adm.No.....

School:

Date:

Sign:.....

233/2
CHEMISTRY
Paper 2
MARCH/APRIL 2018
Time: 2 hours

MOKASA JOINT EXAMINATION - 2018

Kenya Certificate to Secondary Education

CHEMISTRY PAPER 2

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date and school in the spaces provided.
- Answer **all** the questions in the spaces provided.
- All working must be clearly shown where necessary.
- Scientific calculators may be used.

FOR EXAMINERS' USE ONLY

Questions	Maximum Score	Candidate's Score
1	12	
2	12	
3	10	
4	10	
5	13	
6	13	
7	10	
TOTAL	80	

This paper consists of 11 printed pages. Candidates are advised to check and to make sure all pages are as indicated and no question is missing.

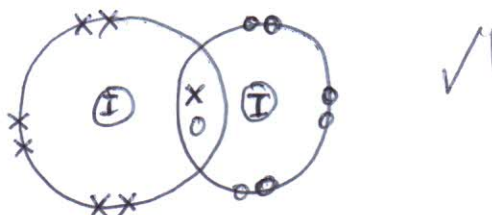
1. Below is a grid representing part of the periodic table. The letters do not represent the actual chemical symbols of the elements. Study it and answer the questions that follow.

F			G			H	I	J
	K		L	M		N	Y	
P								

- (a) Using dots (•) and crosses (×) to represent electrons, show bonding in;

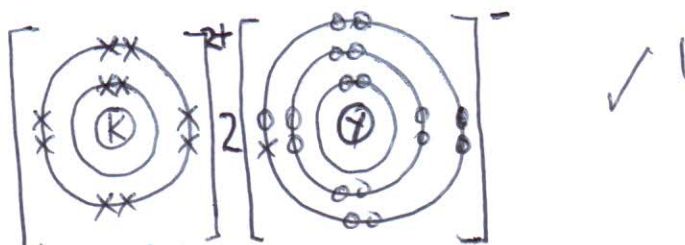
I. Molecule of I

(1 mark)



II. Compound formed between K and Y.

(1 mark)



III. Name the types of bonds formed in (a) above.

(1 mark)

- I - covalent ✓
 II - ionic ✓

- (b) A chloride of M was dissolved in water and the resultant solution tested using litmus papers. State and explain the observations made.

(2 marks)

Observations: Blue litmus paper changed to red and red remained red. ✓

Explanation: Chloride of M, hydrolyses in water forming an acidic solution showing the observations. ✓

(c) Compare the atomic radius of K and N. Explain. (2 marks)

N has a smaller atomic radius than K! N has more protons which increases nuclear attraction making it smaller.

(d) Explain why element L is used in overhead electric cables whereas K is not. (1 mark)

L is a better conductor of electricity than K. It is also lighter, hence used in overhead, than K.

(e) What is the name of the chemical family to which J belongs? (1 mark)

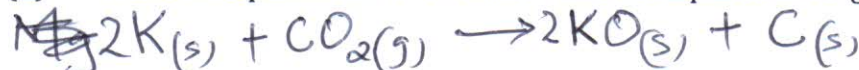
Noble gases.

(f) A burning piece of element K was lowered in a gas jar containing carbon (IV) oxide gas.

(i) State and explain the observations made. (2 marks)

It continues to burn, forming a white solid and a black substance. The heat produced decomposes CO_2 to C and O_2 , which enabled K to continue burning forming white oxide of K.

(ii) Write an equation for the reaction that took place in the gas jar. (1 mark)

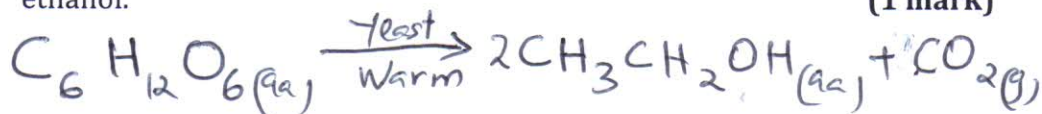


2. (a) In order to obtain some dilute aqueous ethanol, a solution of sugar and yeast is made. The mixture is then kept under warm conditions for some time. The sugar is broken down into simpler sugars, glucose by enzymes in the yeast to produce ethanol.

(i) What name is given to the process described above? (1 mark)

Fermentation

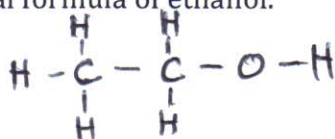
(ii) Write the equation for the formation of the dilute aqueous solution of ethanol. (1 mark)



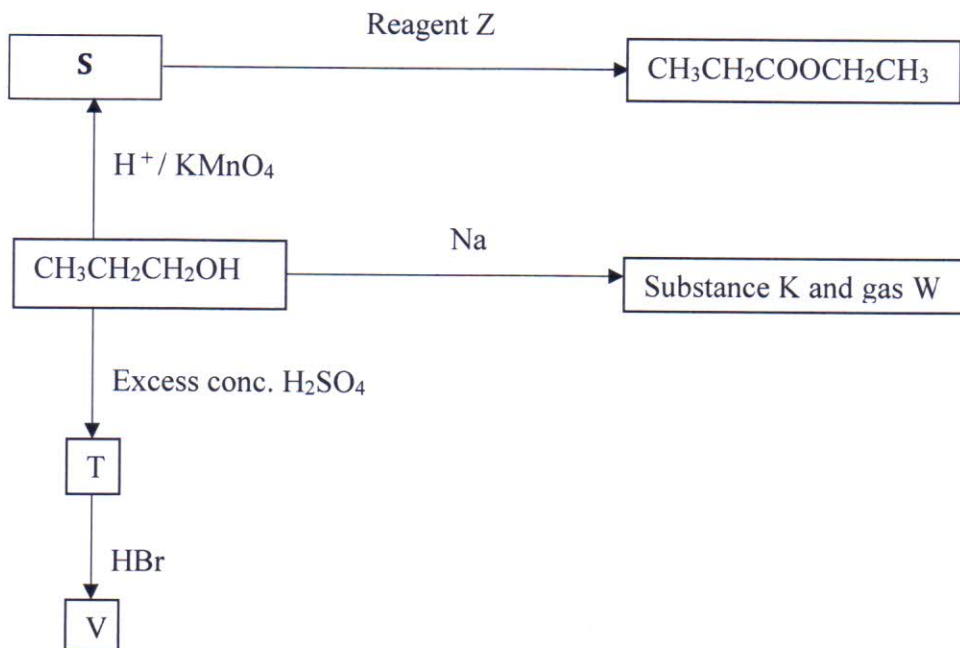
(iii) About 10% by volume of ethanol is produced by the method described. What process would the 95% by volume of ethanol be obtained? (1mk)

Fractional distillation

(iv) Write the structural formula of ethanol. (1mk)

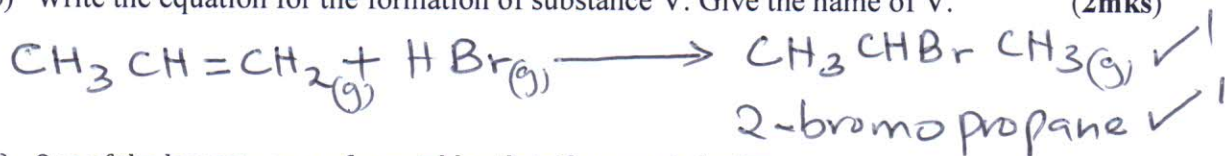


(b) Study the flow chart below and answer the questions that follow.



- a) Name; S propanoic acid (4mks)
 K sodium propoxide
 T prop-1-ene/propene
 Z Ethanol

b) Write the equation for the formation of substance V. Give the name of V. (2mks)

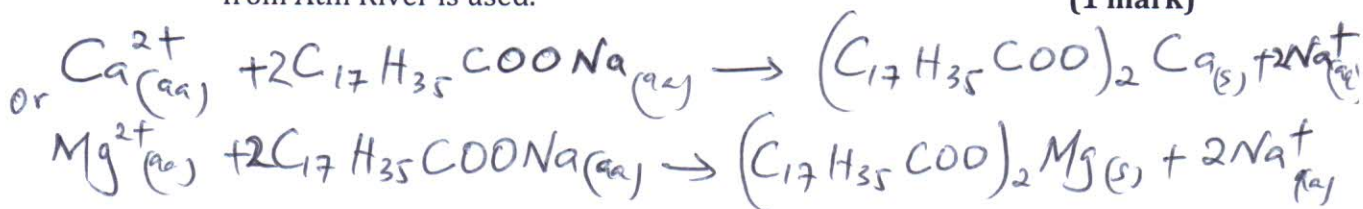


c) One of the largest users of vegetable oils is the soap industry.

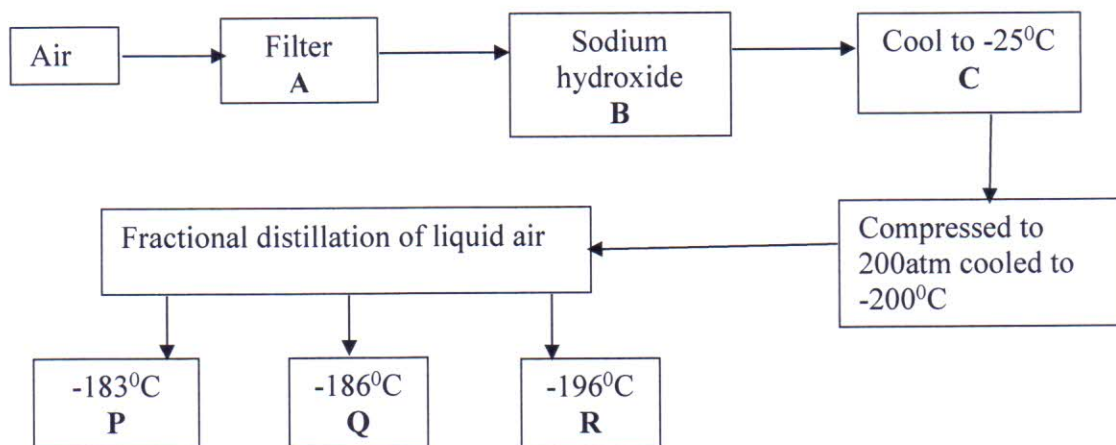
(i) Name the process of manufacturing soap. (1 mark)

Saponification

(ii) Using an equation, explain why the efficiency of soap is reduced when water from Athi River is used. (1 mark)

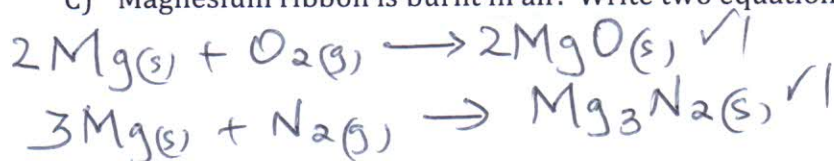


3. (a) Liquid A has a boiling of 56°C while liquid B has a boiling point of 110°C . State the method used to separate the two liquids. Give a reason. **(2 marks)**
- Simple distillation ✓
 - Boiling points range is wide $> 40^{\circ}\text{C}$.
- (b) Study the flow chart below showing the main stages involved in fractional distillation of liquid air.



- (i) Name substances removed through A, B and C. **(1 ½ mark)**
- A - Dust particles
 - B - Carbon (iv) oxide
 - C - Water vapour
- (ii) What is the role of the compressor? **(1 mark)**
- To liquify the air
- (iii) Name **one** other substance that can be used in place of sodium hydroxide. **(1 mark)**
- Potassium hydroxide
- (iv) Name the gases P, Q, R. **(1 ½ mark)**
- P - Oxygen
 - Q - Argon
 - R - Nitrogen
- (v) What colour is liquid air? **(1 mark)**
- Pale blue

C) Magnesium ribbon is burnt in air. Write two equations for the products formed.



(2 marks)

