

Name: Class: Adm.No.

School: Date:

Sign:.....

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CHEMISTRY**Paper 2****DECEMBER 2021****Time: 2 hours****MOKASA II JOINT EXAMINATION - 2021****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 OFFICIAL USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	13	
2	10	
3	10	
4	11	
5	12	
6	12	
7	12	
TOTAL	80	

This paper consists of **13** printed pages. Candidates are advised to check and to make sure all pages are as indicated and no question is missing.

1.

- I. (a) The grid below represents part of the periodic table. Study the information in it and answer the questions that follow. The letters do not represent the actual symbols of the elements.

								I
	G					A		J
F	B			C		D		E
								K
								L
							H	M

- (i) Select an element that can form an ion with a charge of -2. Give a reason for your answer. **(1 mark)**

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- (ii) What type of structure would the oxide of G have? **(1 mark)**

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- (iii) How does the reactivity of H and E compare? Give a reason for your answer. **(1 mark)**

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- (b) 1.3g of B reacts completely when heated. 1.2 litres of chlorine gas at s.t.p (1 mole of any gas at s.t.p occupies 22.4 litres at s.t.p)

- (i) Write an equation for the reaction between B and chlorine. **(1 mark)**

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- (ii) Determine the relative atomic mass of B. **(2 marks)**

(c) Explain how you would expect the following to compare.

(i) Atomic radius of **F** and **B** **(1 mark)**

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(ii) The pH value of the aqueous solution of the oxide of **A** and **D**. **(2 marks)**

.....

II. Study the information below and answer the questions (the letters do not represent the actual symbols of the elements).

Elements	Electronic configuration	LE (kJ/mol)
J	2.1	519
K	2.8.1	494
L	2.8.8.1	418

(a) What is ionization energy? **(1 mark)**

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(b) Explain why element **L** has the lowest ionization energy. **(1 mark)**

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(c) Write an equation for the reaction between **K** and water. **(1 mark)**

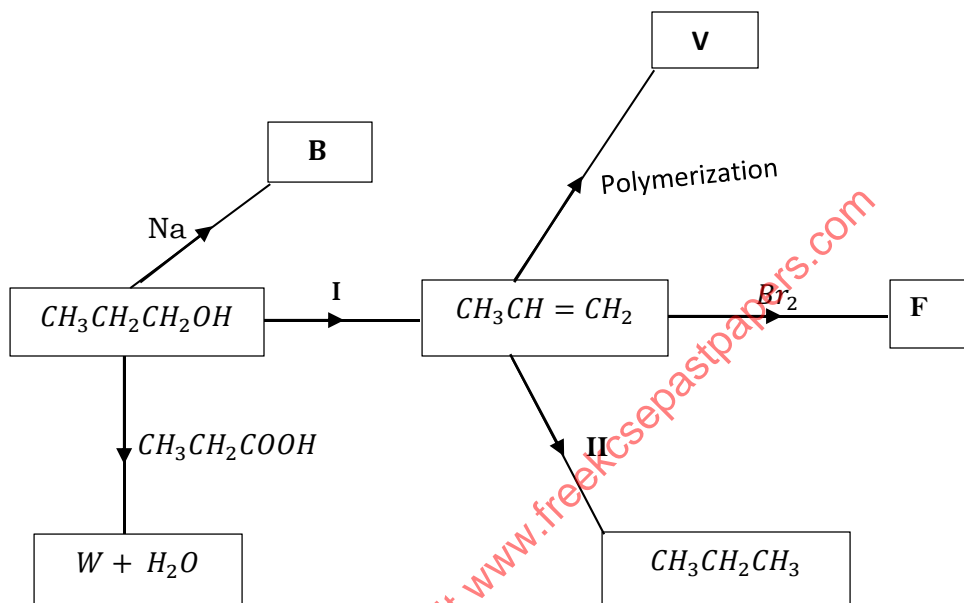
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(d) Using dots (•) and crosses (×) show bonding in the compound between **J** and chlorine. **(1 mark)**

2. (a) Explain how one could distinguish between ethane and ethane gases using bromine water. **(2 marks)**

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



- (i) Identify substances **B** and **F** by giving their names. **(2 marks)**

B

F

- (ii) Write an equation to show how substance **W** and water are formed. **(1 mark)**

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- (iii) Give the general formula of the polymer **V**. **(1 mark)**

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- (iv) Name the process **I** and **II**.

I **(1 mark)**

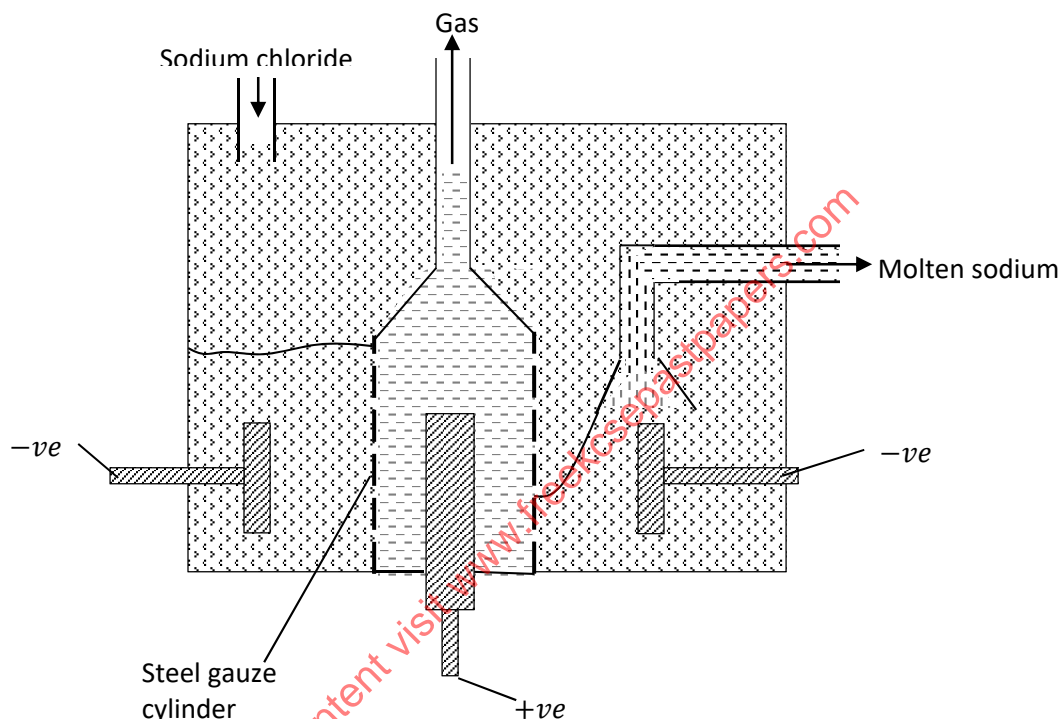
II **(1 mark)**

(v) Give the conditions required for the process named above to occur.

I (1 mark)

II (1 mark)

3. The diagram below shows the extraction of sodium metal using the Down's cell. Study it and answer the questions that follow.



(a) Explain why in this process sodium chloride is mixed with calcium chloride. (2 marks)

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(b) Why is the anode made of graphite and not iron? (1 mark)

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(c) State **two** properties of sodium metal that make it possible for it to be collected as shown in the diagram. (2 marks)

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(d) What is the function of the steel gauze cylinder? **(1 mark)**

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(e) Write ionic equations for the reactions which take place at;

I Cathode **(1 mark)**

.....

II Anode **(1 mark)**

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(f) Give one industrial use of sodium metal. **(1 mark)**

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(g) Why is sodium metal stored under kerosene? **(1 mark)**

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4. (a) In an experiment, hydrogen chloride gas was prepared and reacted with aluminium turnings to form a solid P and gas L as shown in the diagram.

