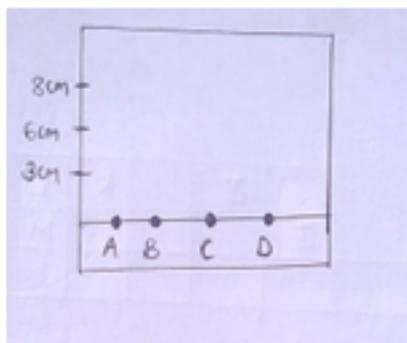


CHEMISTRY PAPER 2 - KCSE 2019 MARANDA MOCK EXAMINATION

1. The diagram below shows spots of pure substance A,B and C on a chromatography paper. Spot D is that of a mixture. After development ,A,B and C were found to have moved 8cm,3cm and 6cm respectively D was separated into two spots which had moved 6cm and 8cm. On the diagram

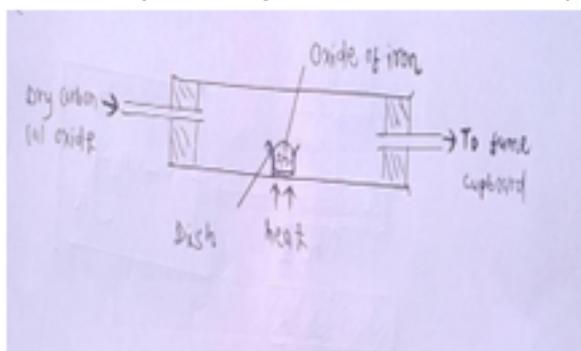


- a.
- Label the baseline (origin). [1mk]
 - Show the positions of all the spots after development. [3mks]
- b. Identify the substances present in the mixture D. [2mks]
- c. Describe how solid ammonium chloride can be separated from a solid mixture of ammonium chloride and anhydrous calcium chloride. [2mks]
- d. The table below shows liquids that are miscible and those that are immiscible.

liquid	L3	L4
L1	Miscible	Miscible
L2	Miscible	Immiscible

Use the information given to answer the questions that follow

- Name the method that can be used to separate L1 and L3 from the mixture of the two. [1mk]
 - Describe how a mixture of L2 and L4 can be separated. [2mks]
2. An ore is suspected to contain mainly iron.
- Describe a method that can be used to confirm the presence of iron in the ore. [3mks]
 - Excess carbon (ii) oxide gas was passed over a heated sample of an oxide of iron as shown below. Study the diagram and answer the questions that follow.



Mass of empty dish = 10.98g

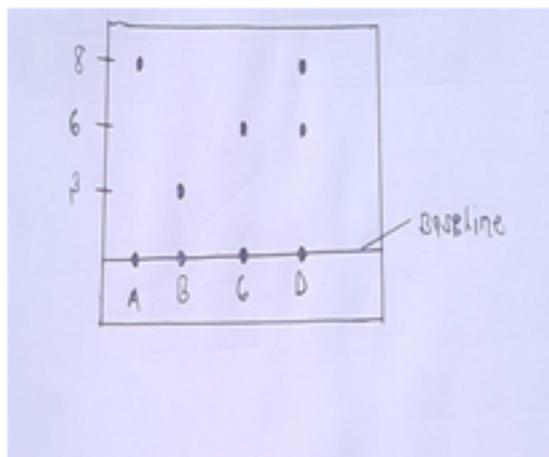
Mass of empty dish + oxide of iron = 13.30g

MARKING SCHEME

1.

a.

i. I & II



ii. A and C

b. Submission would separate the two since ammonium (NH_4Cl) sublimes but calcium chloride (CaCl_2) does not. Heat the mixture. Ammonium chloride sublimes into vapour and deposited on the cooler part of the boiling tube.

c.

i. Fractional distillation

ii. Separating funnel/density separation method since the two liquids are immiscible, pour both the liquids in a separating funnel and allow to settle, the denser liquid will settle down and less dense will form a second layer on top. Open the tap and run out the liquid in the second layer in the funnel.

2.

a. To a sample of the ore add dilute sulphuric acid or hydrochloric acid and warm. Filter the mixture.

To a portion of the filtrate, add sodium hydroxide or ammonium hydroxide drop wise until in excess. Formation of the green precipitate or brown precipitate shows presence of iron.

b.

i. Mass of oxygen = $13.30 - 12.66 = 0.64\text{g}$

Mass of iron = $12.66 - 10.98 = 1.68\text{g}$

FE	O
0.03	0.04
3	4

Molecular formula = Fe_3O_4

ii. $\text{Fe}_3\text{O}_4_{[s]} + 4\text{CO}_{[g]} \rightarrow 3\text{Fe}_{[s]} + 4\text{CO}_{2[g]}$

c.

i. Oxygen, water

ii. Galvanizing, painting, electroplating

d. Sea water is salty. Salty water accelerates the rate of corrosion.

3.

a. The heat change of a reaction is the same regardless of the route (path) followed.

b.

i. $\text{Ca}_{[s]} + \text{C}_{[s]} + \text{O}_{2[g]} \rightarrow \text{CaCO}_{3[s]}$

ii. $\text{CaO}_{[s]} + \text{CO}_{2[g]}$