

Name.....

Index No...../.....

School.....

Candidates Signature.....

Date .....

233/3

**CHEMISTRY**

**Paper 3**

PRACTICAL

**July/August 2009**

2 ¼ Hours

## MANGA DISTRICT JOINT EVALUATION TEST - 2009

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

233/3

**CHEMISTRY**

Paper 3

PRACTICAL

July/August 2009

2¼ Hours

### Instructions to candidates

- Write your name and Index Number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **ALL** questions in the spaces provided in the question paper.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 2 ¼ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
- All workings **MUST** be clearly shown where necessary.
- Mathematical tables and silent electronic calculators may be used.

### For Examiners use only.

Question	Maximum Score	Candidates Score
1	15	
2	10	
3	15	
<b>TOTAL SCORE</b>	40	

*This paper consists of 6 Printed pages.*

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

1. (15 marks)

You are provided with

Solution **A**, containing 39.2g $l^{-1}$  of  $FeSO_4(NH_4)_2SO_4 \cdot nH_2O$ .

Solution **B**, containing 3.0g $l^{-1}$  of  $KMnO_4$

You are required to determine the

(a) Concentration of solution **A** in moles per litre.

(b) Number of moles of (**n**) of water of crystallization in  $FeSO_4(NH_4)_2SO_4 \cdot nH_2O$

### Procedure

Fill the Burette with **A**. Using a pipette filler, pipette 25.0cm<sup>3</sup> of solution **B** into a conical flask and titrate it with solution **A** until the pink colour just disappears.

Record the volume of solution **A** used in the table below. Repeat the experiment twice and fill the **Table I**

	1	2	3
<b>Final Burette reading (cm<sup>3</sup>)</b>			
<b>Initial Burette reading (cm<sup>3</sup>)</b>			
<b>Volume of solution A used (cm<sup>3</sup>)</b>			

(4mks)

Calculate the average volume of solution A used?

(1mk)

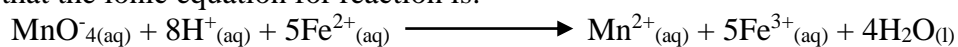
(a) Determine:

(i) Concentration of solution B in moles per litre, ( K = 39, Mn = 55, O = 16). (1mk)

(ii) Number of moles of solution B used.

(1mk)

(b) Given that the ionic equation for reaction is:



Determine the number of moles of solution A used.

(2mks)

- (c) Determine the:
- (i) Concentration of solution A in moles per litre (2mks)
- (ii) The relative formulae mass of  $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot n\text{H}_2\text{O}$   
(Fe = 56, S = 32, O = 16, N = 14, H = 1) (2mks)
- (iii) The number of moles of water of crystallisation (**n**) in  $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot n\text{H}_2\text{O}$ . (2mks)

2. (10 marks)

You are provided with substance **W**  
You are required to determine its melting point.

**Procedure**

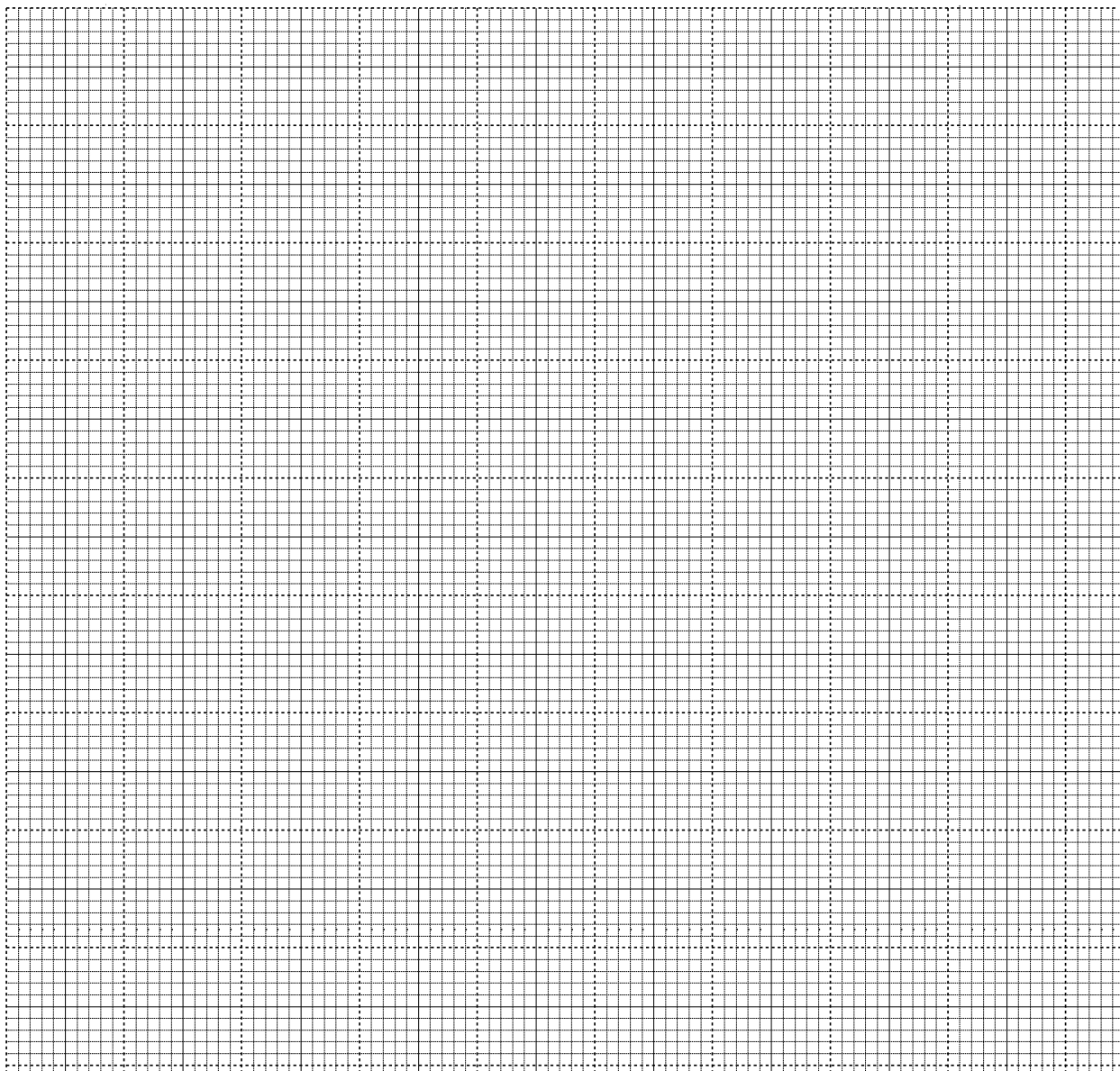
Place substance **W** in a boiling tube to about one third of its depth.  
Place the boiling tube in a 250ml glass beaker containing water standing on a wire gauze and a tripod. Heat the water to boil. Continue heating the water until all substances **W** melts. Remove the boiling tube and clamp it upright. As soon as possible, record the temperature of substance **W**. Record the temperature every half minute for about 5 ½ minutes. Record your results in **table II** below.

**Table II**

Time (min)	0	½	1	1 ½	2	2 ½	3	3 ½	4	4 ½	5	5 ½

(6mks)

- (a) Plot a graph of temperature (y-axis) against time (use graph paper provided) (3mks)



- b) From the graph, determine the melting point of substance W. (1mk)

3. (15marks)

You are provided with substance **S**. carry out the tests below and record your observations in the spaces provided.

- (a) Place about one third of solid **S** in a dry test tube. Heat the solid gently and then strongly

<u>Observation</u>	<u>Inferences</u>
(1mk)	(1mk)

- (b) Place the remaining portion of solid **S** in a boiling tube and add about 8cm<sup>3</sup> of distilled water and shake.  
Divide the solution into four equal portions.

<u>Observations</u>	<u>Inferences</u>
(1mk)	(1mk)

- (c) To the first portion add aqueous sodium hydroxide drop wise until in excess

<u>Observations</u>	<u>Inferences</u>
(2mks)	(1mk)

- (d) To the second portion, add aqueous ammonia dropwise until in excess

<u>Observations</u>	<u>Inferences</u>
(2mks)	(1mk)

- (e) To the third portion add two drops of sodium sulphate solution

Observations

Inferences

(1mk)

(1mk)

- (f) To the fourth portion add three drops of Barium chloride solution followed by four drops of dilute hydrochloric acid.

Observations

Inferences

(2mks)

(1mks)