

CANDIDATE NAME: _____



SOUTH EAST EDUCATION DIVISION EXAMINATIONS

2026 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATION

CHEMISTRY

Tuesday, 24 March

Subject Number: M038/I

Time Allowed: 2 hours

8:00 - 10:00 am

PAPER I

(100 marks)

Theory

Instructions:

1. This paper contains 12 printed pages.
Please check.
2. Fill in your **Examination number** at the top of each page.
3. This paper has **two** sections, **A** and **B**. In Section **A** there are **ten** short questions while in section **B** there are **three** restricted essay questions.
4. Answer **all** the thirteen questions in the spaces provided.
5. Use of electronic calculators is allowed
6. The maximum number of marks for each answer is indicated against each question.
7. In the table provided on this page, **tick** against the number of the question you have answered.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			
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12			
13			

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Turn over



SECTION A (70 marks)

1. a. Explain why bond breaking is endothermic and bond making is exothermic.

(2 marks)

b. State any **two** importance of endothermic reactions in everyday life.

(2 marks)

2. a. Define a polymer.

(1 mark)

b. **Figure 1** shows polymerisation process of one of the monomers.

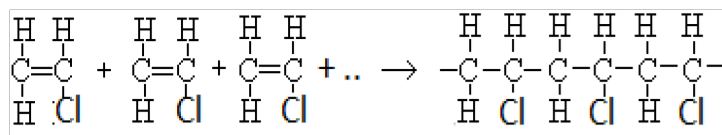


Figure 1

i. Name the type of polymerisation shown by the reaction above.

(1 mark)

ii. Name the polymer formed in 2b. above.

(1 mark)

iii. Describe how the polymer mentioned in 2b (ii) is formed.

(2 marks)

Continued/...

3. a. **Figure 2** shows allotropes of carbon labelled **P** and **Q**.

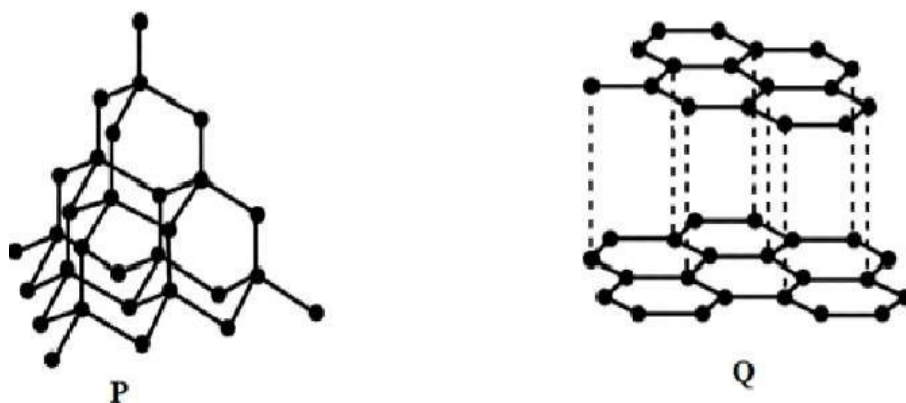


Figure 2

i, Identify the allotrope that conducts electricity.

_____ (1 mark)

ii, Which allotrope is used to make surgery instruments?

_____ (1 mark)

iii, Explain why the allotrope mentioned in **3 a (ii)** is used to make surgery instruments.

_____ (1mark)

b. Explain why ionic compounds conduct electricity in molten state and not in solid state.

_____ (2 marks)

c. State any **one** use of Perspex.

_____ (1mark)

4. a. Define oxidation in terms of electron transfer.

_____ (1 mark)

Continued/...

b. The electrode potential of copper and iron are as given below:



Find the e.m.f of the cell obtained when copper and iron are combined.

(3 marks)

c. State any **one** use of propanone.

(1 mark)

d. Define an alloy.

(1 mark)

e. Which alloy is used to manufacture airplane parts?

(1 mark)

5. **Figure 3** is a diagram showing chromatography process of ink spots **X** and **Y**.

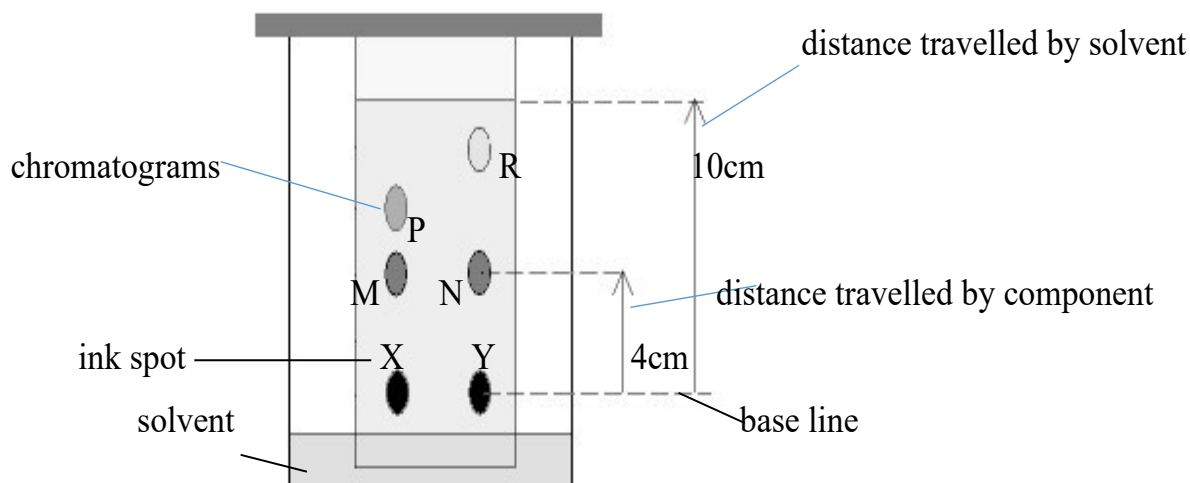


Figure 3

Continued/...

a, Which **two** components are absorbed more strongly by the stationary phase?

(2 marks)

b.i, Which component is most soluble in the solvent?

(1 mark)

ii, Give a reason for the answer in 2b.i. above.

(1 mark)

c. Calculate the relative flow value for component M.

(3 marks)

6. Methane (CH_4) react completely with oxygen (O_2) to produce carbon dioxide and water.

a. Write a balanced chemical equation for the reaction.

(2 marks)

b. If 3.2g of methane reacted with oxygen, how much carbon dioxide was produced?

(RAM: C = 12, H = 1, O = 16).

(3 marks)



Continued/...

- c. Calculate the volume of oxygen required to burn 3.2g of methane completely at room temperature and pressure? (Molar volume at r.t.p = 24dm^3).

(4 marks)

7. a. Define water pollution.

(1 mark)

- b. State any **two** pollutants of water.

(2 marks)

- c, Mention any **two** health benefits of hard water?

(2 marks)

- d, State any **one** advantage of “reduction at source” as one way of minimizing wastes.

(1 mark)

8. a. What is meant by “empirical formula of a compound”?

(1 mark)



Continued/...

- b. Work out the empirical formula of a compound that has the following percentage composition by mass of elements: C = 40%, H=6.67%, and O = 53.33%.
(RAM C = 12, H = 1, O = 16)

(6 marks)

- c. State any **two** uses of phosphoric acid.

(2 marks)

9. a. Below are condensed formulae of some organic compounds.

- A. $\text{CH}_3\text{CH}_2\text{COCH}(\text{CH}_3)\text{CH}_3$
B. $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{COOH}$
C. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$
D. $\text{CH}_3\text{CH}_2\text{CHOHCH}_2\text{CH}_3$

- i. Name organic compounds A and B.

A: _____ (1 mark)

B: _____ (1 mark)

- b. Draw the structural formula of a compound which is a conformer to organic compound C.

(1 mark)



Continued/...

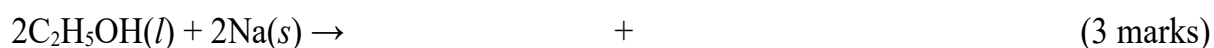
c. Which organic compound can react with compound B to produce an ester.

_____ (1 mark)

d. Which organic compound can give positive results with Tollens test.

_____ (1 mark)

e. Write the products of the following chemical equation.



10. a. **Figure 4** shows a graph of volume of gas collected against time for the reaction of magnesium with hydrochloric acid at a certain concentration.

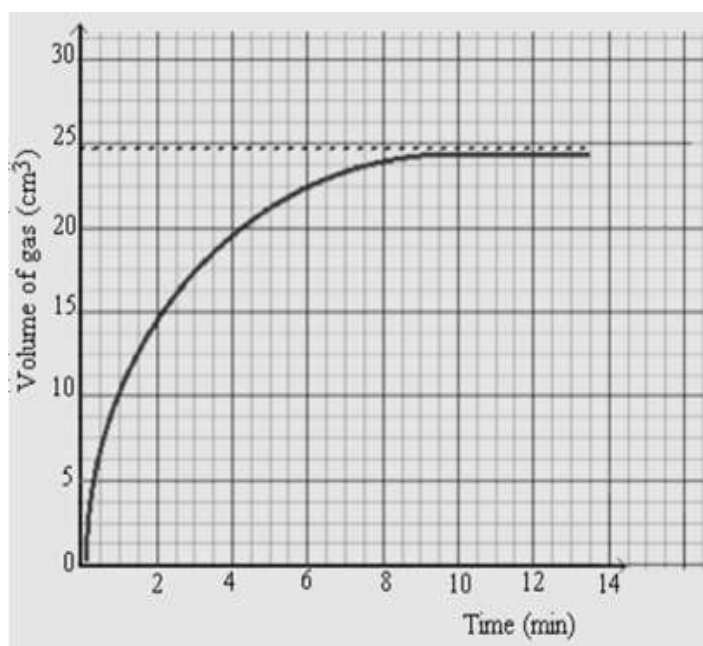


Figure 4. Graph for the reaction of magnesium and hydrochloric acid against time.

i. What was the maximum volume of the gas collected from the reaction?

_____ (1 mark)

ii. After how many minutes did the reaction stop?

_____ (1 mark)

Continued/...

iii. Calculate the rate of reaction between 1 and 3 minutes?

(5 marks)

c. Explain how burning of fuels causes global warming.

(2 marks)

Continued/...



SECTION B (30 marks)

11.a. Describe how deforestation increases the concentration of carbon dioxide in the atmosphere.

[illegible]

(5 marks)

b. Describe how nitrogen is isolated from air in the laboratory.

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(5 marks)



Continued/...

12. With the aid of a well labelled diagram, describe how copper can be refined using electrolysis process.

[illegible]

(10 marks)



Continued/...

13. In a laboratory, labels fell off from the bottles containing an alkane, alkene, alkanol and alkanolic acid. Describe an experiment that could be done to identify the contents of the bottle.

(10 marks)

END OF QUESTION PAPER



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NB: This paper contains 12 printed pages.

