**MID-TERM TWO EXAM 2024**

**CHEMISTRY FORM THREE**

**NAME………………………………………....ADM……….CLASS…………...**

**TIME: 1 HOUR 20 MINUTES**

**INSTRUCTION: ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED**

1. Explain the following:

 **(i)** It is always advisable to scoop chemical substances using a clean spatula. (1mark)

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 **(ii)** Flammable substances should always be kept away from flames in the laboratory. (1mark)

2. Use the information in the table below to answer the questions that follow.



1. Write the electron arrangement of: **(2 mark)**
2. (i) ion of S

 (ii) atom of T

1. Explain why the melting point of T is higher than that of U. **(2 marks)**

3. (a) When magnesium metal is burnt in air, it reacts with both oxygen and nitrogen gases giving a white ash.

Write two equations for the reactions that take place. (2 marks)

4. (a) State the Graham’s law. (1 mark)

 (b) A volume of 80cm3 of nitrogen gas diffused through an oriffice in 40 seconds. How long will 170cm3 of carbon (IV) oxide take to diffuse through the same oriffice? (N = 14, C = 12, O = 16) (3 marks)

5. (a) Define allotropy (1 mark)

(b) Graphite is an allotrope of carbon, which conducts electricity although carbon is a non-metal. Explain.(2marks

(c) Sulphur is extracted from underground deposits by the process shown below.



1. Water at 1700C is pumped down the outer pipe. Explain how it is possible to obtain water with temperature of 1700C. (1 mark)
2. Name the substances passed through;
3. Pipe A (1 mark)
4. Pipe B (1 mark)

d)Other than Sulphur, give two other elements that exhibit allotropy . (2mk)

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



b) Name

 (i) Compound T (1mk)

ii) Gas U (1mk)

c) The equation below shows the reaction between sulphur (IV) oxide gas and oxygen gas to produce sulphur (VI) oxide in contact process.



i)State two conditions that are necessary for maximum production of SO3. (2mks)

ii) Name the catalyst used for this reaction. (1mk)

d) State one use of sulphuric (IV) acid. (1mk)

7. A student burnt magnesium ribbon in a gas jar full of sulphur (IV) oxide gas.

i) State two observation made in the gas jar. (1 mark)

ii) Write the equation for the reaction which took place (l mark)

8. Study the flow chart below and answer the questions that follow.



1. Name the substance A and B (1 mark)

b) State the property of SO2 exhibited in step 2. (1 mark)

9.Below is a chart showing the commercial production of compound D. Study it and answer the questions that follow.



1. Write an equation for the reaction that takes place in the burner. (1mk)
2. Why is it important to purify the products from the burner before being used in the stages that follow? (1mk)
3. Give one function of heat exchange. (1mk)

d) Give two reasons why Vanadium pentoxide is preferred to Platinised absestos in the process. (2mks)

e) i) Name gas A. (1mk)

ii) Why is water not used in place of concentrated sulphuric acid in the absorption tower. (1mk)

f) i) Name substances K ,D ( 2 marks)

ii) Give one large scale use of compound D. (1mk)

h) Explain the environmental effect of gas A if released to the atmosphere. (2mks)

Two elements X and Y are represented as shown below.



1. Write the formula of the compound formed when X and Y react. (1 mark)
2. State the family name to which element X belongs. (1 mark)
3. Element Y has a mass number of 40, how many neutrons are present in its nucleus ? (1 mark)

10. a)Define the following terms :

 i) Atomicity (1 mark)

 ii. Molar gas volume (1 mark)

b) i) State Gay-Lussac‟s law. (1 mark)

ii) A sample of 10cm3 of hydrogen sulphide was burned in 40cm3 of oxygen. Calculate the volume and composition of residual gas (assume all volumes are measured at s.t.p) (2 marks)