



**SIR ARTHUR LEWIS COMMUNITY COLLEGE**  
**ACADEMIC YEAR (2024/2025) - SEMESTER ONE**  
**END OF SEMESTER EXAMINATION**

***COURSE CODE*** : CHM108  
***COURSE TITLE*** : Physical Chemistry I Practical  
***LECTURER(S)*** : Mrs. Alberta William-Henry,  
Ms. Jolie Pistol  
***DATE*** : 11<sup>th</sup> December 2024  
***TIME*** : 1 – 3 p.m.  
***DURATION*** : 2 hours  
***STUDENT ID #*** : \_\_\_\_\_

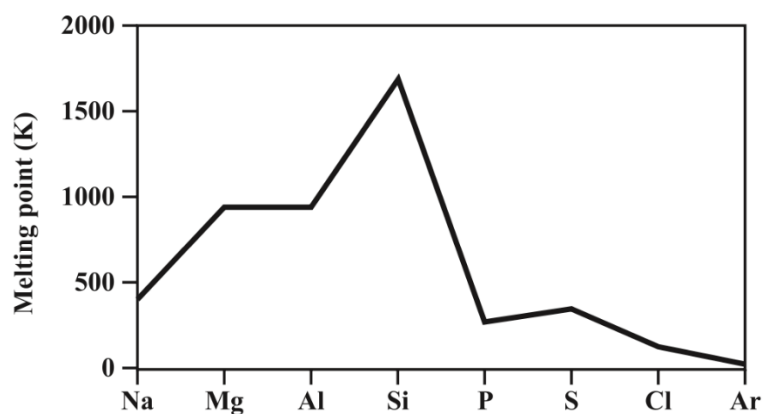
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**GENERAL INFORMATION AND INSTRUCTIONS**

- Students must sign **IN** and **OUT** on the examination class list.
- Write your ID number on the question paper.
- Answer **ALL** questions on this paper.

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO**

1. Figure 1 shows the melting points of the elements in Period 3. Explain in terms of structure and bonding, why



**Figure 1. Melting points of elements in Period 3**

- (i) Aluminum has a higher melting point than sodium. **(2 marks)**
- (ii) Silicon has the highest melting point in the period **(2 marks)**
- (iii) Why does the melting point of the remaining elements get significantly lower after silicon **(2 marks)**

(iv) Sulphur melts at a higher temperature than phosphorus and chlorine **(4 marks)**

2. (a) Radium, Ra, is the last member of the Group II elements. Using a knowledge of Group II chemistry

(i) Comment on the solubility of the sulphate of radium in water **(1 mark)**

(ii) Write the balanced equation for the thermal decomposition of the nitrate of radium,  $\text{Ra}(\text{NO}_3)_2$  **(2 marks)**

(iii) State the steps that should be taken in the investigation of the differences in solubility of the sulphates of magnesium, calcium and barium. **(3 marks)**

(iv) List the names of the reagents that may be used in the investigation **(2 marks)**

(v) List TWO uses of calcium carbonate **(2 marks)**

