

1. Nitrogen and phosphorus are group 5 elements.

(a) The first ionisation energy of phosphorus is lower than the first ionisation energy of nitrogen.

(i) State what is meant by the term **first ionisation energy**.

1

(ii) Write the equation for the first ionisation of phosphorus.

1

(b) The melting points of phosphorus and nitrogen are shown.

| Element | Melting point (°C) |
|------------|--------------------|
| Nitrogen | −210 |
| Phosphorus | 44 |

Explain why the melting point of phosphorus, P_4 , is much higher than that of nitrogen, N_2 .

3

In your answer you should refer to the intermolecular forces involved.





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| MARKS | DO NOT WRITE IN THIS |
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