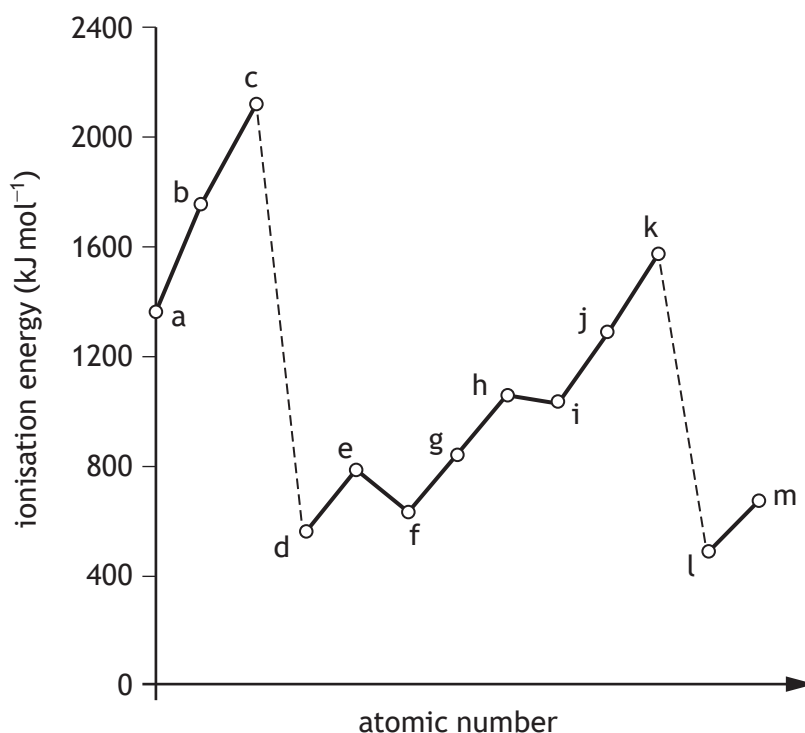


Total marks — 95
Attempt ALL questions

1. Elements are arranged in the periodic table in order of increasing atomic number. Many physical and chemical properties of the elements show periodic trends.

- (a) First ionisation energy is a property that has a periodic trend.

The diagram shows part of a graph of first ionisation energy against atomic number for some elements in the periodic table.



- (i) Explain why there is an increase in first ionisation energy from elements d to k in the diagram.

1

- (ii) State an element from a to m in the diagram that represents an element from group 7.

1



* X 8 1 3 7 6 0 1 0 2 *

1. (a) (continued)

(iii) The table shows four ionisation energies of sodium.

Ionisation energy (kJ mol^{-1})			
First	Second	Third	Fourth
496	4562	6910	9543

(A) Explain **fully** the large increase between the first and second ionisation energies of sodium.

2

(B) Use the information in the table to determine the enthalpy change, in kJ mol^{-1} , for the following reaction.

1



[Turn over



* X 8 1 3 7 6 0 1 0 3 *

1. (continued)

(b) Electronegativity is another property that has a periodic trend.

(i) State what is meant by the term electronegativity.

1

(ii) Explain **fully** why electronegativity decreases going down a group.

2

(iii) Suggest which of the group 2 elements is the best reducing agent.

1

