* + 1. **Exercise 2 – Ionisation Energies**

1. a) Plot a graph to show the successive ionisations of the element silicon:

|  |  |  |
| --- | --- | --- |
| Ionisation Number | Ionisation Energy (kjmol-1) | Log (ionisation energy) |
| 1 | 789 |  |
| 2 | 1577 |  |
| 3 | 3232 |  |
| 4 | 4356 |  |
| 5 | 16091 |  |
| 6 | 19785 |  |
| 7 | 23787 |  |
| 8 | 29253 |  |
| 9 | 33878 |  |
| 10 | 38734 |  |
| 11 | 45935 |  |
| 12 | 50512 |  |
| 13 | 235211 |  |
| 14 | 257928 |  |

b) Explain the trends in the graph

2. Sketch graphs to show the variation in successive ionisation energies of the following elements:

1. Na (ii) Cl (iii) P

3. Identify the following elements (all of which are in Period 3) from their ionisation energies:

a)

|  |  |
| --- | --- |
| Ionisation Number | Ionisation Energy (kjmol-1) |
| 1 | 738 |
| 2 | 1451 |
| 3 | 7733 |
| 4 | 10541 |
| 5 | 13629 |
| 6 | 17995 |
| 7 | 21704 |
| 8 | 27460 |

b)

|  |  |
| --- | --- |
| Ionisation Number | Ionisation Energy (kjmol-1) |
| 1 | 1000 |
| 2 | 2251 |
| 3 | 3361 |
| 4 | 4564 |
| 5 | 7012 |
| 6 | 8496 |
| 7 | 27107 |
| 8 | 31671 |

c)

|  |  |
| --- | --- |
| Ionisation Number | Ionisation Energy (kjmol-1) |
| 1 | 578 |
| 2 | 1817 |
| 3 | 2745 |
| 4 | 11578 |
| 5 | 14831 |
| 6 | 18378 |
| 7 | 23296 |
| 8 | 27460 |