Hack the North Test Test [11]

Answer the following questions **in the box provided**. Complete solutions and sentences must be shown for full marks.

1. When $2x^4 + 3x^3 + ax^2 + bx + 7$ is divided by $x - 1$ the remainder is 15. When it is divided by $x + 2$ the remainder is -3. Determine the values of a and b. [5]

2. Give the full electron configuration of the selenium atom ($_{34}$Se). [1]

3. Give the full electron configuration of this ion and explain why this electron arrangement is stable. [2]

4. Explain, in terms of the energy of its molecules, why the temperature of a pure substance does not change during melting. [3]