Assessment Performance Criteria

Section 2 – Atomic Structure and Bonding

Students will be able to:

2.1 describe electronic structure in the spdf notation for atoms and ions.

2.2 draw a planetary model and an energy-level diagram characterizing electrons in a single atom.

2.3 relate the origin of characteristic X-rays or light to electron transitions between well-defined energy levels (states) in an atom and be able to represent X-rays or light either in units of wavelength or energy.

2.4 define and differentiate between ionic, covalent, mixed ionic-covalent, and metallic bonds

2.5 draw a schematic curve which shows energy as a function of interparticle (e.g. inter*atomic* or inter*ionic*) separation and use this to explain: (i) why bonds form between particles; (ii) how strong these bonds are; (iii) why there is an equilibrium interparticle spacing; and (iv) why most materials expand when they are heated.

2.6 Draw an energy-band diagram for a solid containing N atoms and be able to compare and contrast this diagram to an energy-level diagram characteristic of a single atom.