3.1 A student has a beaker of water at 20 °C which is placed on a tripod. A Bunsen burner is placed underneath the beaker and a lid is then placed on top of the beaker. The Bunsen burner is turned on, heating the water until it starts to boil at 100 °C.

Describe and explain the changes in the arrangement and movement of the particles as the water's temperature rises and then boils.

In a liquid the particles are close ✓ together, moving randomly ✓ and are free to move around one another.

As the temperature increases the particles move faster as they gain kinetic and potential energy. ✓

When the liquid starts boiling the temperature remains constant. This is because all the energy supplied isn't increasing the kinetic energy of the particles, it is increasing their potential energy. ✓

As it turns into a gas the particles spread out and move randomly ✓ in all directions with a range of speeds. ✓

6 marks (6)

3.2 Boiling is an example of a physical change.

Explain how a physical change is different to a chemical change.

A physical change can be reversed ✓ and the material retains its original properties.

1 mark (1)

3.3 State what happens to the mass of the water as it boils to become a gas.

The mass of water remains the same ✓ (it has just changed state).

1 mark (1)

8

8