

**27** The ground state and the first excited state of a hydrogen atom is 0 and 10.2 eV respectively. The ionisation energy is 13.6 eV. An electron of energy 20.0 eV interacts with the atom. Which of the following processes is **not** possible?

- A** the hydrogen atom remains in the ground state
- B** the hydrogen atom is excited to the first excited state and the bombarding electron carries away 3.4 eV of kinetic energy
- C** the hydrogen atom is ionised, with excess kinetic energy carried away by the the bombarding electron and the electron ejected from the atom
- D** the hydrogen atom is excited to the fifth excited state. The bombarding electron carries away 20.0 eV less the fifth excitation energy