**Marks
3**

- Explain why the electron on an H atom does not crash into the nucleus.

**The negatively charged electron is attracted to the positively charged nucleus.
The electron behaves like a standing wave (a matter wave) and as it approaches
the nucleus it becomes more confined (or localised) and its wavelength decreases.
As shown by the de Broglie equation ($\lambda = h/m\upsilon$), as the wavelength of a matter
wave decreases, its momentum (and hence kinetic energy) increases. If it were at
nucleus, its wavelength would become zero and its position would be known
exactly. To do this, it would need to have infinite kinetic energy.**

THE REMAINDER OF THIS PAGE IS FOR ROUGH WORKING ONLY.