

[Total: 6]

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- A diagram of a positronium atom. It features a central nucleus composed of a proton (represented by a red circle with a plus sign) and a neutron (represented by a blue circle with a minus sign). Two electrons, represented by small black circles, are shown in circular orbits around the nucleus. One electron is labeled 'electron' and the other is labeled 'positron'.

**(a)** Explain why the centripetal forces on the electron and positron are equal in magnitude.

[1]

- centripetal force = ..... N [2]

(ii) the time taken for one revolution of the electron.

time taken = ..... s [2]

(c) State and explain whether there would be any difference to the circular orbit if it were a proton in place of the positron.

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[2]

[Total: 7]