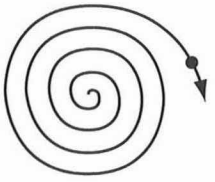
12 A proton (of mass 1.67×10^{-27} kg) is accelerated from rest in a particle accelerator (cyclotron).

It travels in a very nearly circular path whose diameter very gradually increases over many revolutions to a final value of 1.2 m when the proton reaches a kinetic energy of 5.0×10^{-13} J.



What is the centripetal acceleration of the proton in its final circular orbit?

A $1.25 \times 10^{14}\,\text{m s}^{-2}$

B $2.50 \times 10^{14}\,\text{m s}^{-2}$

C $5.00 \times 10^{14}\,\text{m s}^{-2}$

D $10.0 \times 10^{14}\,\text{m s}^{-2}$