A particle P of mass $0.2\,\text{kg}$ moves with speed $4\,\text{m s}^{-1}$ and angular speed $5\,\text{rad s}^{-1}$ in a horizontal circle on a smooth surface. P is attached to one end of a light elastic string of natural length $0.6\,\text{m}$. The other end of the string is attached to the point on the surface which is the centre of the circular motion of P.

(i) Find the radius of this circle. [1]

(ii) Find the modulus of elasticity of the string. [4]