A particle $P$ of mass $0.05\,\text{kg}$ is attached to one end of a light inextensible string of length $1\,\text{m}$. The other end of the string is attached to a fixed point $O$. A particle $Q$ of mass $0.04\,\text{kg}$ is attached to one end of a second light inextensible string. The other end of this string is attached to $P$.

The particle $P$ moves in a horizontal circle of radius $0.8\,\text{m}$ with angular speed $\omega\,\text{rad s}^{-1}$. The particle $Q$ moves in a horizontal circle of radius $1.4\,\text{m}$ also with angular speed $\omega\,\text{rad s}^{-1}$. The centres of the circles are vertically below $O$, and $O$, $P$ and $Q$ are always in the same vertical plane. The strings $OP$ and $PQ$ remain at constant angles $\alpha$ and $\beta$ respectively to the vertical (see diagram).

(a)  Find the tension in the string $OP$.  [3]

(b)  Find the value of $\omega$.  [3]

(c)  Find the value of $\beta$.  [2]