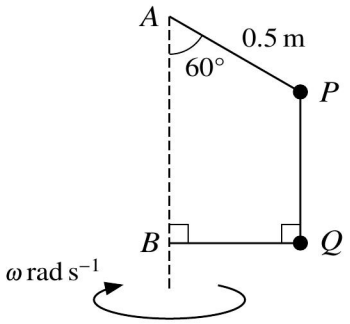

Two particles P and Q have masses 0.4 kg and m kg respectively. P is attached to a fixed point A by a light inextensible string of length 0.5 m which is inclined at an angle of 60° to the vertical. P and Q are joined to each other by a light inextensible vertical string. Q is attached to a fixed point B, which is vertically below A, by a light inextensible string. The string BQ is taut and horizontal. The particles rotate in horizontal circles about an axis through A and B with constant angular speed ω rad s^{-1} (see diagram). The tension in the string joining P and Q is 1.5 N.

(i) Find the tension in the string AP and the value of ω. [4]

(ii) Find m and the tension in the string BQ. [3]