

Fig. 1

One end of a light inextensible string is attached to a fixed point A . The other end of the string is attached to a particle P of mass m kg which hangs vertically below A . The particle is also attached to one end of a light elastic string of natural length 0.25 m. The other end of this string is attached to a point B which is 0.6 m from P and on the same horizontal level as P . Equilibrium is maintained by a horizontal force of magnitude 7 N applied to P (see Fig. 1).

- (i) Calculate the modulus of elasticity of the elastic string. [2]

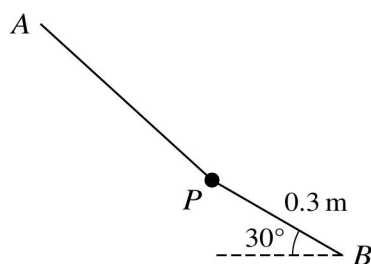


Fig. 2

P is released from rest by removing the 7 N force. In its subsequent motion P first comes to instantaneous rest at a point where $BP = 0.3$ m and the elastic string makes an angle of 30° with the horizontal (see Fig. 2).

- (ii) Find the value of m . [4]