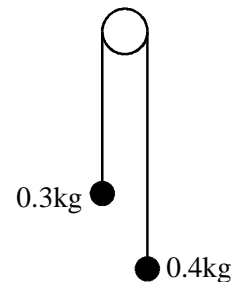


Pulleys – Flip Learning Questions

1. Two particles, of masses 0.3 kg and 0.4 kg, are connected by a light inextensible string which hangs over a smooth fixed peg, as shown in the diagram. The system is released from rest.



- (a) (i) Show that, in the subsequent motion, the acceleration of the particles is of magnitude 1.4 m s^{-2} .

(5)

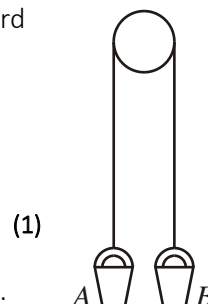
- (ii) Find the tension in the string during this motion.

(2)

2. Two identical buckets, *A* and *B*, are attached to the ends of a light, inextensible cord. The cord hangs over a smooth beam and the system is at rest, as shown in the diagram.

The buckets are each of mass 0.4 kg.

- (a) State the magnitude of the tension in the cord.



- (b) A lump of clay, of mass 0.2 kg, is pressed against the underside of bucket *A*, and sticks there. The system is then released from rest and, in the subsequent motion, bucket *A* moves vertically downwards with the clay attached.

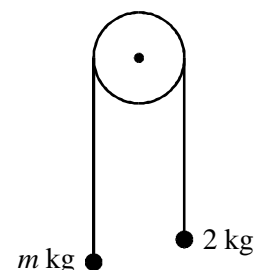
Show that the magnitude of the acceleration of the buckets during the subsequent motion is 1.96 m s^{-2} .

(5)

3. Two particles of mass 2 kg and mass m kg are connected by a light inextensible string that passes over a smooth light pulley, as shown in the diagram below.

The particles are released from rest with the string taut.

- (a) The 2kg particle moves vertically downwards, travelling 0.8 metres in 2 seconds. Find its acceleration.



(3)

- (b) Find the tension in the string.

(3)

- (c) Find m , giving your answer to two significant figures.

(4)