

STEP II, 2000, Q10

- 10 A long light inextensible string passes over a fixed smooth light pulley. A particle of mass 4 kg is attached to one end A of this string and the other end is attached to a second smooth light pulley. A long light inextensible string BC passes over the second pulley and has a particle of mass 2 kg attached at B and a particle of mass of 1 kg attached at C . The system is held in equilibrium in a vertical plane. The string BC is then released from rest. Find the accelerations of the two moving particles.

After T seconds, the end A is released so that all three particles are now moving in a vertical plane. Find the accelerations of A , B and C in this second phase of the motion. Find also, in terms of g and T , the speed of A when B has moved through a total distance of $0.6gT^2$ metres.



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