4

Fig. 4.1 shows two bodies X and Y connected by a light inextensible cord that passes through a frictionless pulley. X starts from rest and moves up a rough plane inclined at 30° to the horizontal. The masses of X and Y are 4.0 kg and 5.0 kg respectively. Ignore effects of air resistance.

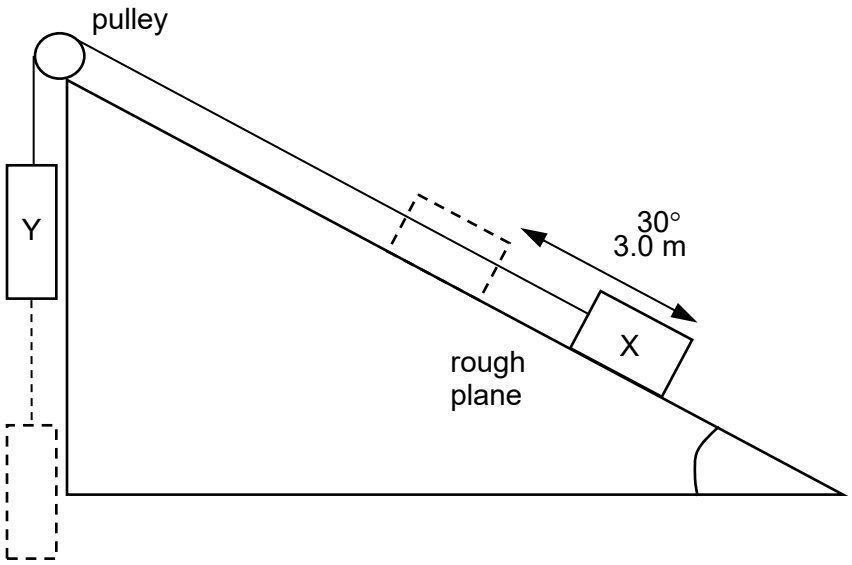

Fig. 4.1

Given that the average frictional force acting on X is 10.0 N, when X has travelled 3.0 m along the plane, determine

(a)

the total kinetic energy of the system,

kinetic energy = ... J

[3]

(b)

the speed attained by Y.

speed = ... m s^{-1}

[1]

[Total: 4]