
Horizontal & Vertical String - Exam Style Questions

1. Two particles A and B of masses 2 kg and 3 kg respectively are connected by a light inextensible string passing over a small smooth pulley. Particle A lies on a rough horizontal table and experiences a frictional force 0.98 N. Particle B hangs freely, with the string taut, and is 0.8 m above the horizontal ground. The system is released from rest. Find:
- a) the acceleration of the system (3 marks)
 - b) the tension in the string (3 marks)
 - c) the speed of B as it hits the ground (2 marks)
 - d) the total distance travelled by A before it comes to rest. (5 marks)
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2. A block A of mass 600 g rests on a rough horizontal table and is connected by a light inextensible string passing over a smooth pulley fixed at the edge of the table. The other end of the string is attached to a ball of mass 700 g which hangs freely below the pulley. Block A experiences a resistance force of constant magnitude F N. The system is released from rest with the string taut. After release, B descends a distance of 0.3 m in 0.4 s. By writing down separate equations of motion A and B, calculate:
- a) the tension in the string (4 marks)
 - b) the value of F (3 marks)

Assuming that B does not rebound when it hits the ground,

- (c) find the total distance travelled by A before it comes to rest. (6 marks)
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