


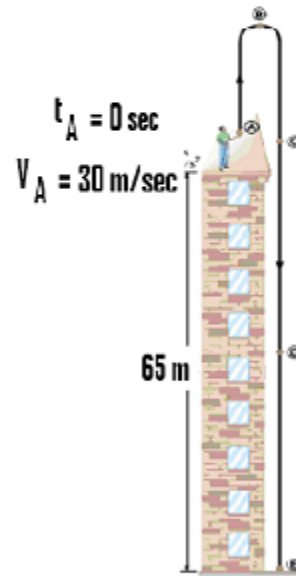
Course No: ENG 1302  
Course Title: Physics 1 Mech.  
Date: 4 /1 / 2012  
No. of Questions: six  
Time: 2:00  
Using Calculator (Yes)

University of Palestine  
  
Final Exam.  
2011/2012  
Total Grade: 60

Instructor: \_\_\_\_\_  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: \_\_\_\_\_  
Dep. / Specialist: General  
Using Dictionary (No)

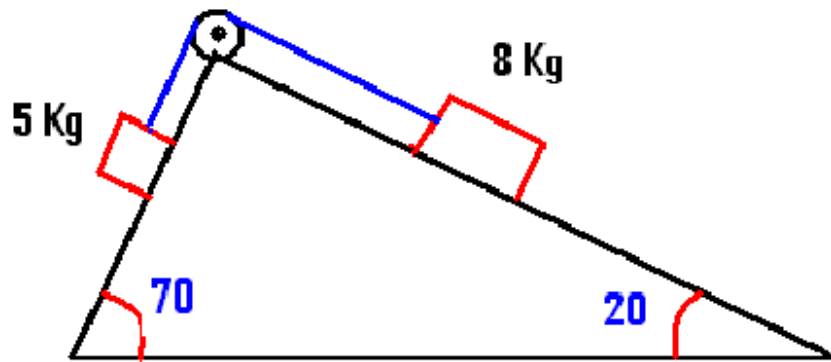
**Answer five questions out of the following Questions.**

Q<sub>1</sub>) A stone thrown from the top of a building is given an initial velocity of 30.0 m/s straight upward. The building is 65.0 m high, and the stone just misses the edge of the roof on its way down, as shown in Figure. Using  $t_A = 0$  as the time the stone leaves the thrower's hand at position A, determine  
(A) the time at which the stone reaches its maximum height,  
(B) the maximum height,  
(C) the time at which the stone returns to the height from which it was thrown,  
(D) the velocity of the stone at this instant, and  
(E) the velocity and position of the stone at  $t = 4.00$  s.

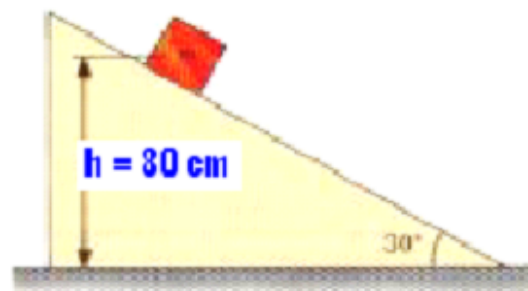


Q<sub>2</sub>) A 35.0-kg block is initially at rest on a horizontal surface. A horizontal force of 85.0 N is required to set the block in motion. After it is in motion, a horizontal force of 65.0 N is required to keep the block moving with constant speed. Find the coefficients of static and kinetic friction from this information

Q<sub>3</sub>) Two blocks of mass 5 kg and 8.00 kg are connected by a mass less string that passes over a frictionless pulley. The inclines are frictionless. Find (a) Draw a free-body diagram of the system. b) The direction of the motion of the system. c) the magnitude of the acceleration of each block and (d) the tension in the string.



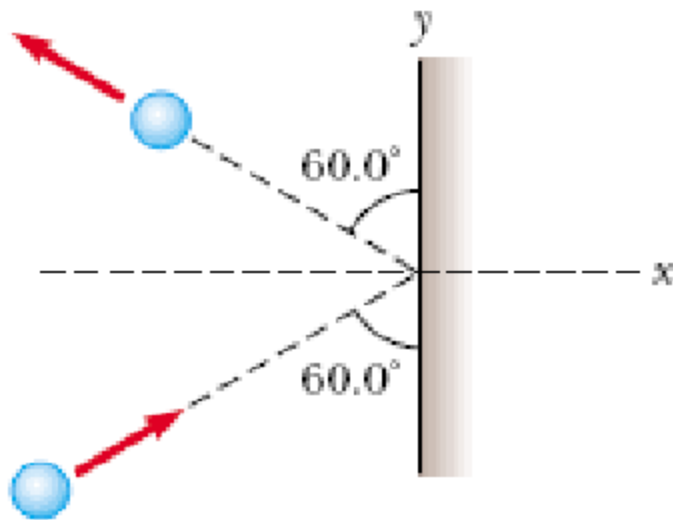
Q<sub>4</sub>) A block with a mass of 5 kg starts at a height  $h = 80$  cm on a plane with an inclination angle of  $30^\circ$ , as shown in Figure. Upon reaching the bottom of the ramp, the block slides along a horizontal surface. If the coefficient of friction on both surfaces is  $\mu_k = 0.20$ , how far will the block slide on the horizontal surface before coming to rest?



Q<sub>5</sub>) A 0.3-kg hockey puck moves on frictionless ice at 9 m/s toward the wall. It bounces back away from the wall at 5 m/s. The puck is in contact with the wall for 0.3 s.

- What is the change in momentum of the hockey puck during the bounce?
- What is the impulse on the hockey puck during the bounce?
- What is the average force of the wall on the hockey puck during the bounce?

**Q<sub>6</sub>)** A 3.00-kg steel ball strikes a wall with a speed of 10.0 m/s at an angle of  $60.0^\circ$  with the surface. It bounces off with the same speed and angle (Fig. ). If the ball is in contact with the wall for 0.200 s, what is the average force exerted by the wall on the ball ?



**Good Luck**