

Final Exam: Tuesday, May 13th

Time : 8:30-11:00 am (Arrive by 8:15 am)

Room: 107 KUPF (different from Common Exams)

Bring scientific calculators

Covers everything learned in this semester

Understand how to solve all problems in Exam 1, 2, 3.

Solutions for Exam 1,2,3, old exams, sample problems, formula posted on

<http://web.njit.edu/~kenahn/08spring/phy105.htm>

"No-bathroom policy during exam"

Today : Last lecture

From Sample Problem

19. A 0.2-kg rubber ball is dropped from the window of a building. It strikes the sidewalk below at 30m/s and rebounds up at 20m/s. The impulse on the ball during the collision is:

- A. 10N · s upward
- B. 10N · s downward
- C. 2.0N · s upward
- D. 2.0N · s downward
- E. 9.8N · s upward

From Sample Problem

23. A vertical spring stretches 8 cm when a 1.6 kg block is hung from its end.

(a) What is the spring constant of the spring?

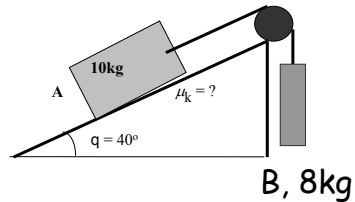
(b) What is the Elastic Potential Energy of the spring?

From Sample Problem

29. A bullet of mass 10 g strikes a ballistic pendulum of mass 2.0 kg. The center of mass of the pendulum rises a vertical distance of 12 cm. Assuming that the bullet remains embedded in the pendulum, calculate the bullet's initial speed.

From Common Exam 2-A:

Two blocks are connected over a pulley as shown in the figure. The mass of the block A is 10 kg and the mass of the hanging block B is 8 kg.

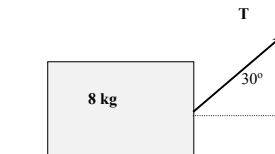


The block A *slides up the 40 degree -incline at a constant speed*. There is a friction force between the incline and the block A.

- Find the tension in the string .
- Find the x -component of the weight of block A, where x is taken parallel to the incline.
- Find the normal force that the incline exerts on block A.
- Determine the coefficient of kinetic friction between the block A and the incline.

From Common Exam 2

8. A 8-kg block is pulled along a rough horizontal surface ($\mu_k = 0.2$) by a rope that exerts an 30 N tension force directed 30 degree above the horizontal. What is the magnitude of the friction force on the block?



From common exam 3

11. An athlete of mass 70 kg on a trampoline leaps straight up into the air with an initial speed of 9.0 m/s. Find the kinetic energy of the athlete when she is halfway up to her maximum height.