PHYSICS 121 WORKSHEET 14 11/6/2017

NAME: SECTION:

1. Write down the equations of motion for a rotating object. Write down the definitions of torque, angular momentum, angular velocity, angular acceleration, and angular kinetic energy. What is the expressions for the conservation of angular momentum? What is the expression for conservation of kinetic energy of an object that is both rotating and translating?

2. Giancoli Chapter 8 Problem 29.

29. (II) Determine the net torque on the 2.0-m-long uniform beam shown in Fig. 8–45. All forces are shown. Calculate about (*a*) point C, the CM, and (*b*) point P at one end.

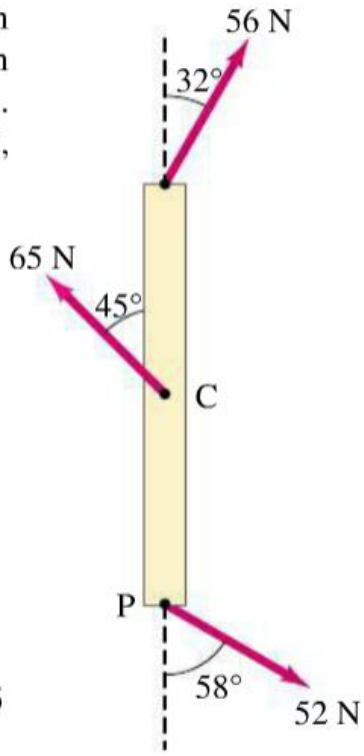

FIGURE 8–45
Problem 29.

3. Giancoli Chapter 8 Problem 25.

25. (II) Calculate the net torque about the axle of the wheel shown in Fig. 8–42. Assume that a friction torque of 0.60 m · N opposes the motion.

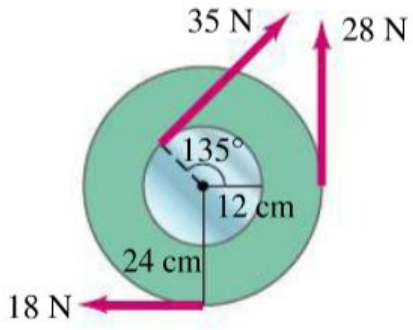

FIGURE 8–42 Problem 25.

4. Giancoli Chapter 8 Problem 45.

45. (II) To get a flat, uniform cylindrical satellite spinning at the correct rate, engineers fire four tangential rockets as shown in Fig. 8–50. Suppose that the satellite has a mass of 3600 kg and a radius of 4.0 m, and that the rockets each add a mass of 250 kg. What is the steady force required of each rocket if the satellite is to reach 32 rpm in 5.0 min, starting from rest?

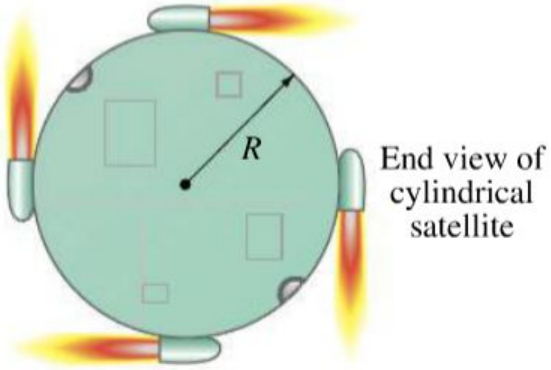

FIGURE 8–50
Problem 45.