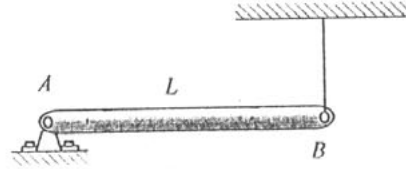
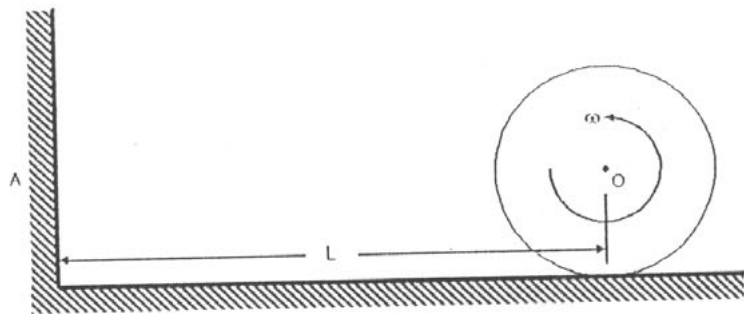


- (15%) 1. A circular rigid body of mass M and radius of gyration k is released from stationary in an incline plane of incline angle θ and coefficient of friction μ . Determine the normal reaction force, friction force, linear and angular accelerations when it is in
- pure rolling motion.
 - rolling with slipping motion.

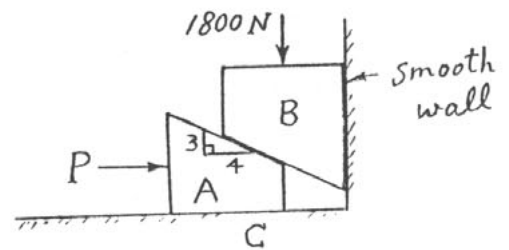
- (15%) 2. A uniform rod of mass M and length L is supported by a pin connection at A and a wire at B . What is the reaction force at A when the rod has rotated 30° after the wire is cut?



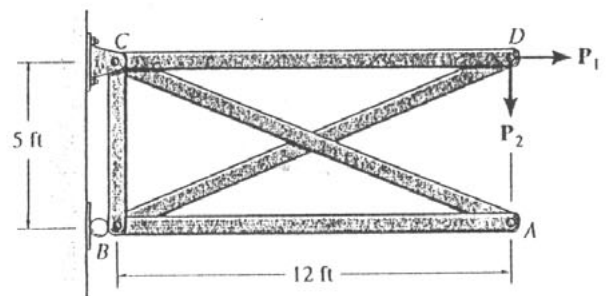
- (20%) 3. A flywheel of mass M rotating at a angular speed ω falls on the floor. If the coefficient of dynamic friction between the floor and the flywheel surface is μ . At what speed will it hit the wall A ? The radius of gyration of the flywheel is R and its diameter is d . Neglect rolling resistance and wind friction losses. The initial position of the flywheel is at the distance of L from the wall A .



- (15%) 4. The static coefficient of friction between wedges A and B and between A and C is $\mu_s = 1/3$. Neglect the weight of each wedge. Determine the smallest force P needed to lift the 1800-N load.



- (15%) 5. Determine the force in each member of the truss and state if the members are in tension or compression. Set $P_1 = 240$ lb, $P_2 = 100$ lb.



- (20%) 6. Cable $ABCD$ supports the uniform beam with a weight of 2000 N. Determine the maximum tension in this cable.

