1. Consider a tall building of height h at a latitude θ. Consider a ball left to fall down from the top. Where does it fall? Assume that the world is a rotating perfect sphere with radius R and angular speed ω.

2. Consider a uniform hemisphere of radius R_h and mass M_h attached to the end of a uniform rod of mass M_r and length L_r. (The flat side of the hemisphere is attached to the rod). What is the moment of inertia of this system for rotations around the other end of the rod?

3. Consider the helicopter that we discussed during the lecture. The helicopter has a propeller of diameter R, which can uniformly propel air downwards at a constant rate of m kilograms per second. If the rear propeller is at a distance of d meter from the axis of the rotor, what should be the force that it should provide in order to stabilize the helicopter?

4. Calculate the downward acceleration of a Yo-yo. (For information on Yo-yo's check the web page http://www.yo-yo.com/NOVEMBER.HTML). Explain how the Yo-yo works.