California State Polytechnic University, Pomona, Aerospace Engineering Department

**ARO 406 – Advance Dynamics and Vibration of Aerospace System**

Winter 2016, Try Lam

**Pop Quiz / HW#1**

1. A 200 lb man is in an elevator that weighs 1000 lb. The elevator accelerates upward vertically at 10 ft/sec2. What is the apparent weight of the man?
2. A frictionless pulley has 10 kg mass tied to one end and an 8 kg mass on another end. Neglect the moment of inertia of the pulley.
   1. Find the tension on the cord connecting the masses.
   2. Find the acceleration of the masses.
3. A brick is released with an initial speed of 5 ft/sec up an inclined plane at an angle of 30 deg (from the horizon). The coefficient of friction is μ = 0.144. How far is the brick from it’s original location after 0.5 seconds. Note: At some point the brick will side back down; you should find out how long it takes for the brick to reach maximum height first. g = 32.2 ft/sec2.
4. Assume a frictionless system (between all contacts). What force, F, is needed such that all relative motion is zero.

