Astro 118 – Physics of Planetary Systems
Final Exam *Practice Questions*, Winter 2014

1) Why can't the Bond albedo of Uranus be determined with observations made from Earth?

2) Which time is longer---the orbital period of 1 M_J planet at 0.01 AU around a Sun-like star, or the maximum possible transit duration of a 1 M_J planet at 5 AU around that same star?

3) Assume an isothermal, ideal gas atmosphere. On Planet X, a twin of Earth in another solar system, the planet's atmospheric composition is exactly the same as on real Earth, and the number density of atmosphere molecules at the surface of the planet is the same as well. However, the atmospheric temperature on Planet X is twice as high. By what factor does the total vertical infrared optical depth differ?

The main topics of interest in our class:

Star formation and the Jean Mass
Accretion of planetesimals to form planets
All methods of exoplanet detection and characterization
Mass-radius as a window into the structure of planets
Planetary energy balance and albedos
Atmospheric structure, greenhouse effect, and radiative transport
Habitability
Physics of Tides