Physics 107: Astronomy, Written HW 4. Due Fri Nov 15 at beginning of class

Write up neatly on a separate sheet(s) of paper solutions for the following problems.

Complete solutions use complete sentences; explain all reasoning; show all steps for any calculations.

1) Calculate the density of Jupiter's Galilean moons (Io, Europa, Ganymede, Callisto). For each of them, use the value of the density to make a determination of its composition. Show all your work and reasoning.
(see Appendix G for data on moons and use this list of densities for common moon "building materials"):

   Granite 2750 kg/m^3
   Iron 8000 kg/m^3
   Water/Ice 1000 kg/m^3
   CO_2 Ice 1600 kg/m^3
   Methane (CH_4) 500 kg/m^3
   Amonia (NH_3) 800 kg/m^3

2) It is often said that a comet is not forever, meaning that while comet's have periodic orbits like everything orbiting the sun, they won't be there forever. There are at least 2 reasons this may be so. One is thermal, one is gravitational. Please describe the two reasons in a few sentences.