The questions of this assignment are sample exam questions — some will reappear in (nearly) the same form on the upcoming exam. CLEARLY PRINT your name on the UPPER RIGHT corner of a separate piece of paper which you will use to answer these questions — but also mark your answers on this sheet which you will keep. On Tuesday, December 9th, you will hand in your answer sheet at the beginning of class and I will go over the answers later that day so you can mark the correct answers on this original sheet and use it to help you study for the Third Exam on December 11th. If you cannot attend class on the 9th, you can e-mail your answers to me (typed in plain ASCII in the body of your e-mail – NOT as a Word attachment) BEFORE class begins at 9:30 that day; be sure to include your name and time of class in such an e-mail.

For the first 8, if the statement is completely true write T after its number; otherwise write an X (NOT an F, which can be confused with T) after its number.

1. Venus has a highly variable surface temperature thanks to its thick CO$_2$ atmosphere.
2. Mars has the largest volcano in the solar system.
3. Jupiter has over 300 times the mass of the earth, and more than twice the mass of all other planets combined.
4. The rotation of Saturn is unlike Jupiter’s; Saturn is much slower and doesn’t show differential rotation.
5. After the discovery of Uranus, astronomers immediately started looking for other planets and very quickly discovered Neptune.
6. Io, Europa and Ganymede are in orbital resonances that lead to substantial heating of Io and Europa.
7. Saturn has many small and mid-sized moons, but no large moons.
8. Tails of comets always lie along the path of their orbits.

Write the letter corresponding to the best answer to the question or the best way to complete the statement. There will be more multiple choice than true/false questions on the exam.

9. The red color of Mars is due to
   A. a form of iron rust
   B. microscopic vegetation with a red color
   C. absorption and scattering of light by the thin Martian atmosphere
   D. a substance in the Martian soil, carbon suboxide, unknown before the Viking landers
   E. red paint spilled by the ancient, but now extinct, Martian civilization

10. The majority of outer solar system satellites have densities that are:
    A. about the same as uncompressed rock
    B. a little less than that of the Earth
    C. less than that of water
    D. less than that of any Jovian planets
    E. between those of rock and water

11. Roughly . . . . . asteroids (of > 100m diameter) are thought to reside in the asteroid belt.
    A. $10^3$
    B. $10^4$
    C. $10^5$
    D. $10^6$

12. The interior and atmosphere of Jupiter probably mostly consists of (in order from the center to the surface)
    A. a rocky core, liquid water, liquid H$_2$, gaseous H$_2$
    B. a metallic core, liquid H$_2$, liquid metallic H, gaseous H$_2$
    C. a rocky core, liquid metallic H, liquid H$_2$, gaseous H$_2$
    D. a rocky core, liquid metallic H, liquid water, liquid H$_2$
    E. a rocky core, liquid water, liquid metallic H, gaseous H$_2$

13. Most of what we know about the gross surface features of Venus comes from
    A. earth based radar observations
    B. photographs taken by Venera landers
    C. “fly-by” radar maps of the surface
    D. orbiter photographs of the surface
    E. orbiter radar maps of the surface