Third Examination Practice Questions: Fall 2009

Astronomy 1010 — Prof. Paul J. Wiita

These are sample exam questions — some will reappear in the same, or nearly the same, form on the third exam. On Tuesday, Dec. 1st, I will go over the answers so you can mark the correct answers on this original sheet and use it to help you study for the Third Exam on Dec. 3rd.

Remember: a statement is true if and only if all its components are true.

1. Venus has a nearly constant surface temperature thanks to its thick CO_2 atmosphere.
2. Mars has the largest canyon and the largest active volcano in the solar system.
3. Jupiter has over 300 times the mass of the earth, but not quite 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 but only discovered Neptune about 60 years later.
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 only one large moon.
8. Tails of comets always lie along the path of their orbits.

Choose the letter corresponding to the best answer to the question or the best way to complete the statement. As previously, 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. Planet Plugie has a 2.00 earth day prograde rotational (sidereal) period and a 8.00 earth day orbital period about its star, Strugie. What is the length of a "Strugie day" – i.e., local noon to local noon – on Plugie?
   A. 0.375 earth days
   B. 1.60 earth days
   C. 2.67 earth days
   D. 6.00 earth days
   E. 10.00 earth days
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. The escape velocity from planet Goojam is 12.0 km/s. The temperature of Goojam's atmosphere is such that the thermal velocity of O_2 gas on Goojam is 1.0 km/s. Since the atomic mass of an Oxygen atom is 16 times that of a Hydrogen atom, the thermal velocity of H_2 gas on Goojam is . . . . km/s and therefore Hydrogen gas . . . . . Goojam.
   A. 16 km/s . . . . . quickly escapes
   B. 4 km/s . . . . . quickly escapes
   C. 4 km/s . . . . . eventually escapes
   D. 2 km/s . . . . . eventually escapes
   E. 2 km/s . . . . . never escapes