

Physics U111 – Introduction to Astronomy – Fall 2007
Professor Vaughn
Quiz #5 – 31 October 2007

Your name _____

True or False (2 points each)

1. The sidereal day of Mercury is $2/3$ of its solar year.
2. Venus has an atmosphere similar to that of Earth.
3. The Martian canals were used by farmers to irrigate their crops.
4. It is never possible to see the planet Mercury at midnight.
5. Saturn radiates more energy than it receives from the Sun.
6. The surface of Jupiter has been mapped using radar.

Fill in the blanks (3 points each)

1. The most abundant gas in the atmosphere of Venus is _____.
2. The warming of a planet due to absorption of radiation from its surface by atmospheric gases is called _____.
3. (4 points) Name the gas giant planets in order of increasing distance from the Sun.
(a) _____ (b) _____ (c) _____ (d) _____

Problems. (be sure to show your work here)

1. (6 points) The mass of Mercury is 0.055 times the mass of Earth, and the radius of Mercury is 2400 km. Find the ratio of the force of gravity on the surface of Mercury to that on the surface of Earth (Earth radius = 6400 km).

2. (6 points) The planet Neptune is at a distance 30.1 AU from the Sun.

(i) How long does it take a radio signal from Earth to reach Neptune when it is at its closest distance to Earth?

(ii) How far does a spacecraft orbiting Neptune at a speed of 12 km/sec travel during this time?