ASTRONOMY 150 – FINAL

Name: _____

June 7, 2006 – Spring 2006

TA's Name & Section: _____

Answer all questions in the space provided. If you have any questions, raise your hand. 100 points possible. No calculators.

1 (2 pts) How do we know some asteroids have differentiated?

(a) We have observed that most asteroids are very small.
(b) We have iron meteorites.
(c) We have detected a magnetic field around some asteroids.
(d) We have observed that no asteroids spin faster than about 2 hours.
(e) We have carbonaceous chondrite meteorites.

2 (15 pts) Explain what is/was the heat source for **most** solid worlds in our solar system and why geological activity scales with size.

3 (2 pts) Which of the following would you have to change about Venus for it to have a magnetic field today?

(a) Level of geological activity.
(b) Rotation rate.
(c) Composition of the core.
(d) Distance from the Sun.
(e) Composition of the atmosphere.

4 (15 pts) Describe how **secondary atmospheres** are formed and explain why their composition is different in the inner solar system as compared to the outer solar system.

5 (2 pts) What does it mean for an asteroid to be in a 3:1 resonance with Jupiter?

(a) The asteroid orbits Jupiter 3 times for every time Jupiter rotates once.
(b) The asteroid orbits the Sun 3 times for every time Jupiter orbits once.
(c) The asteroid is 1/3 the size of Jupiter.
(d) The asteroid is 3 times closer to the Sun than Jupiter.
(e) The asteroid rotates 3 times for every time Jupiter rotates once.

6 (15 pts) Trace the path of a **short-period** comet from birth to death.