**Physics 174** 1 December, 2006
**Study Guide for Exam II**

Exam II will have a format very similar to Exam I. The sample questions below provide a guide for the more important concepts most likely to appear on the exam. Students should prepare for it by seeing if they can answer (1) the sample questions below, (2) the self-tests in the back of each chapter, and (3) the concept checks interspersed within each chapter. If the textbook is not sufficiently up-to-date to answer some of the sample questions, students should refer to class notes or even the internet.

**Sample questions**

Make a brief inventory of the Solar System.

List the eight major planets and classify them.

In what ways does Pluto differ from the eight major planets?

Name the seven moons larger than Pluto and briefly describe them.

What determines the density and composition of the atmospheres of the terrestrial worlds?

How do the compositions of the atmospheres of Venus, Earth, and Mars differ? Why?

What is the greenhouse effect? Where is it most noticeable?

Why do climatologists believe the Earth is experiencing global warming?

What are the dominant greenhouse gases on the terrestrial planets with atmospheres?

Compare and contrast the evidence for geologic activity on Earth, Venus, and Mars.

How have astronomers studied the surface of Venus?

How do astronomers determine ages of surfaces from studying craters?

How do astronomers determine absolute ages for rocks on the Earth and Moon?

What evidence do we have that water has flowed on the Martian surface?

Describe the orbital properties of a typical asteroid. How do these differ from a typical major planet? Why?

Why didn't the asteroids form a planet? How did this happen? What evidence do we have?

What are Trojan asteroids?

Describe the dwarf planet Ceres.

Describe the typical internal structure of a jovian planet.

What is the Great Red Spot?

Describe a typical ring system around a jovian planet.

What are the causes of the detailed structure of Saturn's rings?

How do the four Galilean satellites resemble a planetary system?

Compare the surface features and levels of geologic activity of the Galilean satellites.

Explain the mechanism that drives the geologic activity of the Galilean satellites.

Which Galilean satellites might have water beneath their surfaces? What evidence do we have for liquid water?

Which of the Galilean satellites has the thinnest ice layer over the liquid water underneath? How do we know?

How have astronomers studied the surface of Titan?

What evidence do we have for a methane cycle on Titan?

What makes Enceladus so interesting for a small 500-km moon?

How does Miranda differ from the other moons of Uranus?

How is Triton like and unlike Pluto?

Where do the typical tiny moons of the jovian planets come from?

What is the Kuiper Belt?

Compare the Kuiper Belt and Asteroid Belt.

What is the largest known object in the Kuiper Belt? (Hint: it's not Eris.)

What is Eris?

What is a Centaur?

How do the orbits of long-period comets differ from the orbits of short-period comets?

How do the orbits of short-period comets differ from the orbits of the major planets?

What is the Oort Cloud?

What causes a meteor shower?

How does a meteorite differ from the typical object we see as a meteor?

What three models have been proposed for the formation of the Solar System? Why have two of them been discarded?

How does the accretion model of the formation of the Solar System account for the observed properties of the planets?

List some observations of young stellar objects that support the accretion model of the Solar System.