Astronomy 1102/1104 13 April, 2009
Study Guide for Exam 3

Exam 3 will have a format much like the first two exams. As before, use the sample questions below as a guide for the more important concepts which are most likely to appear on the exam. Don't forget to supplement these questions with the review questions at the end of each chapter of the textbook. And don't forget that your lecture notes may contain more up-to-date information than the textbook. (The internet, if used wisely, can be a another very helpful resource.) *Students should also be prepared to identify the jovian worlds and some of the more noteworthy moons from either global images or close-ups of their surfaces.*

Sample questions

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

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

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

What are Trojan asteroids?

Describe the physical properties of some of the other asteroids observed from space probes.

Describe the typical internal structure of a jovian planet.

Compare the atmospheric composition of the jovian planets to the Sun, in terms of both molecular and elemental abundances.

What is the Great Red Spot? What is the Great Dark Spot?

Describe the atmosphere of Jupiter.

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.

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

Compare the amounts of subsurface water on the Galilean satellites. Which one has the most water?

How have astronomers studied the surface of Titan?

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

What observations of Titan suggest that the surface is young and geologically active?

What makes Enceladus so interesting for a moon only 500 km across?

Describe Mimas and Iapetus.

How does Miranda differ from the other moons of Uranus?

How is Triton like and unlike Pluto?

Describe the most interesting sites of possible life in the outer Solar System?

How have we mapped the surface of Pluto?

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

How does one measure the size of Trans-Neptunian Objects?

What is the Kuiper Belt?

Compare the physical properties of typical objects in the Kuiper Belt and the Asteroid Belt.

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

What is Eris, and why is its discovery important?

What is a centaur?

What is the Oort Cloud? What evidence do we have for its existence?

Describe the physical properties of cometary nuclei observed from space probes.

Compare the orbital properties of:
- Major planets;
- Objects in the Asteroid Belt;
- Kuiper Belt Objects;
- Scattered Disk Objects;
- Objects in the Oort Cloud.

Where do short-period comets come from? Long-period comets?

What causes a meteor shower?

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

What is the difference between a typical meteorite "fall" and "find"?

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.

What are some of the lingering questions about the formation of the Solar System?