Astronomy 101 Section 1 **14 November, 2016**
Unit IV Study Guide

Mid-Term 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.)

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

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

Describe the typical internal structure of a jovian planet.

Compare the composition of the jovian planets to the Sun.

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

Describe the atmosphere of Jupiter.

How do gas giants differ from ice giants?

Describe a typical ring system around a jovian planet.

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

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

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?

Which of the moons of Saturn show evidence for sub-surface water? What is that evidence?

Describe Mimas, Iapetus, and Miranda.

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

What produces a comet's tail?

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

Where do short-period comets come from? Long-period comets? How can we tell?

What causes a meteor shower?

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

What is the Kuiper Belt?

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

What is Eris, and why is its discovery important?

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

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

Compare the physical properties of Triton and Pluto.

What has the New Horizons mission taught us about Pluto's geology and atmosphere?

Compare the orbital properties of:

- Major planets;
- Objects in the Main Asteroid Belt;
- Kuiper Belt Objects;
- Objects in the Oort Cloud.

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?

How do the four Galilean satellites resemble a planetary system?

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