

ASTRONOMY 20 (LLOYD)    **STUDY GUIDE EXAM #3**    FALL 2019  
**TUE. Nov. 12 & Thu. Nov. 14**

**Notes:** You may use notes written on **one** 3x5 inch file card, written in your own hand.

**Planets Origin/ Terrestrial Planets** (Astropedia Ch.9 & Ch. 6 "Comparative Planetology" thru "Internal Heat and Geological Activity"; Reader 31, 33; L-T "Temperature & Formation of Planets")

1. What patterns exist in the motions and rotation of the planets?
2. Define solar nebula. Describe the Solar Nebula Theory.
3. Distinguish gas giant, ice giant, and Terrestrial planets in terms of composition and size. Explain how the solar nebula theory accounts for these differences.
4. What does the Solar Nebula Theory suggest about how common planets are in the Galaxy?
5. Diagram the internal structure of a terrestrial planet.
6. Explain the mechanisms by which planetary interiors get hot and how they cool down.
7. Describe the 4 processes that shape a planet's surface.

**Moon** (Astropedia Ch. 5 Moon sections)

1. Discuss the surface processes that are most important on the Moon and give examples of each.
2. Describe the internal structure of the Moon. Compare its size (diameter) with Earth.
3. Explain the effect of the Moon's small size on its atmosphere and its volcanic activity.
4. Explain how **synchronous rotation** means there is a near side, and a far side.  
Explain why it is a fallacy that the Moon has a "dark side."
5. Contrast the **maria** with the **highlands**. Compare the near side with the far side of Moon.
6. Compare the theories of the origin of the Moon. Which theory is accepted today? Why?
7. Compare the orbital period, rotation period, and solar day (noon to noon) on the Moon.
8. Name the eight phases of the Moon in order. What time of day does the full moon rise?

**Mercury; the Tidal Force** (Astropedia Ch. 6: Mercury sections)

1. Compare the theories that account for Mercury's large iron core.
2. Compare Mercury's surface with the Moon's surface. Compare Mercury's internal composition with the Moon's.
3. Compare the length of day with the length of the year on Mercury.
4. Explain how scarps were formed on Mercury.
5. Discuss the effect of the tidal force on planets and moons. What is **tidal braking**?

**Atmospheres of Terrestrial Planets/Greenhouse Effect** (Reader 34 & 35; Lecture-Tutorial "Greenhouse Effect; Astropedia Ch. 5 "Environmental change on Earth")

1. Define: Kelvin scale, air pressure, the bar.
3. How are atmospheres created? How are atmospheres destroyed?
4. What are the most abundant gasses in the atmospheres of Earth, Venus, and Mars?
5. Explain how the greenhouse effect works.
6. What are the most important greenhouse gasses on Earth? Which are natural and which are man-made?

**Mars** (Astropedia Ch. 6)

1. Compare Mars with the Earth in size.
2. Explain why liquid water cannot exist on the surface of Mars.
3. Discuss the evidence for liquid water on the surface of Mars in the past.
4. Argue for and against the presence of life on Mars.
5. Describe the surface features on Mars. What is Mt. Olympus?

**Venus** (Astropedia Ch. 6)

1. Compare Venus with the Earth in size.
2. Explain how Venus's rotation is opposite to the Earth's. Compare the length of day with the length of the year on Venus.

3. Why is Venus so hot?
4. Explain how the oceans were lost (runaway greenhouse effect).
5. Discuss the clouds of Venus: their composition and their effect on the surface temperature.
6. Discuss the processes that have shaped the surface of Venus.
7. Explain how crater counts show that the entire surface is the same age, about 500 Myr, and how this may be due to catastrophic volcanism.