

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

## 18 Review for Final Exam

### 18.1 Introduction

This lab is designed to start preparing you for the final exam in this class. *You will be responsible for the material you learned in lab on the final exam!* Today you will revisit the most important points from each lab by answering these questions, which you will go over *at the end of today's lab*. Thus, by the end of lab today you should know what kind of questions to expect about the labs, as well as the answers to those questions. The questions are broken down by lab, so it should be clear where you can find the answers if you do not remember them. *Make the most of this class period by making sure you understand the important points from all of the labs!*

### 18.2 Lab Review Questions

#### Lab 2: Scale Model of the Solar System

1. Based on the scale model of the solar system that we built on the football field, describe the *spacing* of the planets relative to the Sun and to one another.
  
2. If the entire solar system were scaled down to 100 yards in size, how big would the Sun be? How about a giant planet (*e.g.* Jupiter)? How about a terrestrial planet (*e.g.* Earth)?

#### Lab 3: Phases of the Moon

1. What is the shape of the 3rd-quarter Moon's appearance, what time of day does it rise, and what time of day is this phase of the Moon at its highest point in the sky?

2. The Moon was most recently at its Full Moon phase on April 13th. When will/did the next New Moon occur? When will the next Full Moon occur?

#### **Lab 4: Density**

1. What is the definition of *density*?
  
  
  
  
  
  
  
  
  
  
2. List the following in order of **decreasing** density: lead, ice, styrofoam, silicate rock, iron

#### **Lab 5: Reflectance Spectroscopy**

1. Describe how the distinction between a red tee-shirt and a blue tee-shirt is different from a red star vs. a blue star. [Think about what causes a star to be red or blue; is this the same cause for a tee-shirt color?]
  
  
  
  
  
  
  
  
  
  
2. Describe the color difference between Mars and Venus in the context of this lab. Why does one (which one?) appear to be much redder in color?

#### **Lab 6: Locating Earthquakes**

1. How is the study of earthquakes used to learn about the interior of the Earth?

2. What causes earthquakes on the Earth?
3. Would you expect to detect earthquakes on any of the other terrestrial planets if you dropped seismometers on them today? Why or why not?
4. Describe how geologists use seismic measurements to determine the exact location of an earthquake's *epicenter*.

### **Lab 7: Surface of the Moon**

1. By looking at images of the Moon's surface, how can you tell which area is older and which area is younger?
2. What caused the *highlands* and the *maria* to look as they do today?
3. Do you think it is a coincidence that the average density and composition of the Moon is a very close match to that of the Earth's mantle? Why or why not?

### **Lab 8: Heating and Cooling of Planets/Daytime Observations**

1. Explain how the following factors can affect a planet's average surface temperature: axial tilt, ellipticity of a planet's orbit, and the rotation rate of a planet.

2. How does the presence of greenhouse gases in an atmosphere affect a planet's surface temperature?
3. If you spend a lot of time in your car in Las Cruces in the summer, would it be better to have light or dark color upholstery? Why?
4. Why does Venus have phases?
5. How did the observations of the phases of Venus help Galileo demonstrate the strength of the heliocentric model of the universe?

#### **Lab 9: Surface Features on Mars**

1. What is the evidence that Mars probably had liquid water on its surface in the past?
2. Mars certainly does not have water on its surface today – where did it go?

#### **Lab 10: Heat Loss from Io**

1. What is the source of the internal heat that powers Io's volcanoes?

2. If Object 2 is twice as hot as Object 1, will it emit more or less radiation than Object 1? [Bonus question: how much more or less?]

### **Lab 11: Building a Comet**

1. Draw a picture of a comet, labeling all of its parts.
2. What causes the tails of a comet, and are they always visible?
3. Describe the two reservoirs of comets. Where are they located?
4. How does the internal strength of a comet compare to that of an asteroid? Why are they different?

### **Lab 12: Extra-Solar Planets**

1. Describe the technique that has been employed to detect the presence of nearly all of the extrasolar planets that we know to be orbiting other stars in our Galaxy.
2. Even if an Earth-like planet exists in orbit around another star, the technique described above would not currently indicate the presence of that Earth-type

planet. Why not?

### **Lab 13: The Sun**

1. What are sunspots, and what leads to their formation?
2. List and describe the three interior regions of the Sun.
3. What is differential rotation?