

Name:

### Astronomy 3 - Problem Set 4

1. Based on Table 6.1, a) which planet has the shortest day. b) which planet would you expect to have widely contrasting seasons? why? c) suppose your weight is 100kg, how would it change when you go to Mars or Jupiter?
2. Name three properties which scientists use to classify planets into two populations. What are these two groups?
3. Name three properties which differentiate between comets and asteroids.
4. What are the three important processes which led to the formation of protostellar disks during the collapse of gas clouds into young stars?
5. Why is almost every solid surface in our solar system scarred by craters?
6. Describe the four categories of materials in the solar nebula by their condensation properties and abundance. Which ingredients are present in terrestrial planets? In Jovian planets?
7. Why is it necessary for the solid cores to assemble several earth masses before they can capture nebula gas.
8. Astronauts collected some lunar rocks to be analyzed in a lab. The result of the analysis indicate the presence of a small amount of uranium 238, which decays into lead with a half life about 4.5 billion years. a) In a rock from the lunar high-land, we find 55% of the original uranium remains while the other 45% has decayed into lead. How old is this rock? b) In a rock from the lunar maria, 63% of the original uranium remains while the other 37% has decayed into lead. Is this rock older or younger than the highland rocks? by how much?