EPS 200 (Stapleton) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Useful Formula: $L=mvr$

1. At one point, our solar system was a cold, hazy, cloud-like thing.

1. Approximately how long ago was the solar system in this condition?
2. What is the term for that stage in our solar system’s development?
3. What were the two primary constituents of the solar system at that point? Give specific examples.

2. In its early development, our solar system began to shrink. Why?

3. a. What does each letter stand for in the formula $=mvr$ ?

 b. Rearrange that formula to solve for (to isolate) velocity.

 c. When our solar system began to contract (shrink), what happened to its rotational speed?

 d. Why did the speed of rotation change?

4. a. As the solar system’s speed of rotation changed, what happened to its shape?

 b. Why did a change in speed cause this change in shape?

 c. Does the Earth have a bigger circumference if you measure it around the equator or if you measure it from pole to pole? Why?

5. Even before there was any nuclear fusion going on in the sun the solar system began to heat up. Why?

6. At some point, nuclear fusion began in our solar system.

1. Where did nuclear fusion begin?
2. Why did it begin in that location? [and why could it not have occurred anywhere else]

7. a. What is the primary “fuel” for nuclear fusion in the sun?

b. What is the primary product of fusion in the sun?

8. a. Explain how nuclear fusion produces energy.

b. Explain the meaning of each of the letters in *E = mc2*, and explain how the formula relates to part A of this question.

9. a. Explain the difference between the *terrestrial planets* and the *gas giants.*

 b. Where are the gas giants and the terrestrial planets located?

c. Why did each type of planet form in its particular location?

9. a. How much longer do scientists estimate that our sun will continue to shine?

 b. Describe the sun in its final expected life phase.