ESS 100 (Stapleton) Name: Key

Practice Quiz: Medium Star Life Cycles + Earth Formation

1. What process gives stars their energy?

   Nuclear Fusion

2. What is a star's main fuel?

   Hydrogen

3. What new substance is produced inside a star when that fuel is used up?

   Helium

4. Put these star life stages in order, from earliest to latest:

   5 3 2 7 1 4 6

   Planetary Nebula, Main Sequence Star, Protostar, Black Dwarf, Nebula, Red Giant, White Dwarf,

5. Describe the source(s) of energy for each of these stages in a star's life:

   a. Red giant Hydrogen and Helium Fusing

   b. White dwarf Gravitational Compression

   c. Main sequence star Hydrogen fusing

6. a. How is a star's temperature related to its mass?

   More mass ⇒ hotter less Mass ⇒ cooler

   b. Explain why a star's temperature is related to its mass in this way.

   More mass means stronger gravity, which means more compression.

7. List the common star colors from hottest to coolest.

   Hottest ⇒ Blue white yellow red ↑ coolest

8. Where does the helium in a medium star end up, and why does it go there?

   It sinks to the center, because it's more dense than hydrogen

9. When our Sun becomes a red giant why will it turn red?

The surface gets cooler

10. When our Sun becomes a red giant why will it get bigger?

The core heats up - Gas pressure pushes the outer layers outward.

11. a. When our Sun becomes a white dwarf, what will happen to its surface temperature?

Heats up [It turns from red to white]

b. Why will that happen to its temperature?

Gravity compresses it

12. Approximately how old is the Sun?

4.6 billion years

13. Approximately how many years does the Sun have before it turns into a red giant?

5 billion years