Astronomy Stars Study Guide

Directions: Complete the following questions. The problems are in the text book.

1. Describe some ways in which a cool star can be more luminous than a hot star.
2. How do astronomers know that white dwarfs are really small?
3. Which stars are the hottest and which are the coolest? What class is the Sun?
4. What is the H-R diagram and why is it useful.
5. Describe the process by which protostars convert gravity into thermal energy.
6. Describe the four different was a giant molecular cloud can be triggered to contract.
7. What is the principle of hydrostatic equilibrium as it relates to the internal structure of a star.
8. Explain why a star’s life expectancy depends on mass?
9. Why does expanding stars become cooler and more luminous?
10. Why can’t massive stars generate energy from Fe fusion?
11. What are white dwarfs?
12. How do white dwarfs form?
13. How are planetary nebulae different from stellar nebula.
14. Describe the way the sun will die.
15. Describe everything that happens during a supernova.
16. What are neutron stars and what force keeps them from collapsing?
17. Describe a neutron star and how it forms.
18. What are black holes and how do they form?
19. If you were near the event horizon for a black hole, what is the scientific term for gravity’s effect on your body stretching you out into a very long noodle?
20. Which stellar remnant has the lowest gravity: white dwarf, neutron star, or black hole? Which has the highest gravity?
21. What are pulsars?
22. Diagram the cores and energy transfers of a high mass star vs a low mass star.
23. Why are massive stars described as element factories? In other words, how do they produce so many different elements?