

Exam 3 Review

1. Review the Summary at the end of each chapter (pp.144, 171-172, 194, 220-221) and the quizzes.
2. Review the answers to the second homework exercise on topics from Chapters 7-10.
3. Be able to describe what an atom, ion and isotope are.
4. You should be able to explain how a spectrum is formed using the concept of energy levels in the atom being quantized and ground and excited states.
5. Know the definitions of Heat, Temperature and Thermal Energy.
6. What is a blackbody? What happens to the intensity and maximum wavelength of the radiation emitted by a blackbody at different temperatures?
7. What are Kirchhoff's Laws? You should know how the three types of spectra form.
8. What does a star's spectrum tell us about it?
9. Why do spectral lines shift? What does this tell us about the star in question?
10. You should be able to draw and label a picture of the Sun, showing its layered structure from the core to the outermost reaches of its atmosphere.
11. What are some features of the photosphere? What are their origins?
12. What are some features of the chromosphere? What are their origins?
13. What are some features of the corona? What are their origins?
14. Why are sunspots dark?
15. Why does the corona and chromosphere have a much higher temperature than the sun's surface?
16. What is the sunspot cycle? The Maunder Minimum? What is the name of the hypothesis that has been proposed to explain sunspots, and how does it work?
17. Why does limb darkening occur?
18. The solar corona can be viewed best in x-rays because of its high temperature. The corona's spectra consists of a continuous spectrum with a superimposed emission spectrum from ionized gases at temperatures of up to 2,000,000 K.
19. What is Helioseismology?
20. At which element does nuclear fusion begin to take more energy to create the element than is gained from the process?
21. Where do the atoms in your body come from?
22. Describe the birth of stars (p.176-177).
23. What do stars in the main sequence have in common?
24. What are a red dwarf, a white dwarf and a giant star? Describe how a white dwarf might form from a giant star.
25. On page 183 is a diagram showing where the main sequence is relative to other groupings of stars. This is called a Hertzsprung-Russell diagram.
26. What are the main types of galaxies?
27. What are the general characteristics of the Solar System? (See p.211).
28. What were some early hypotheses of the origin of the solar system?
29. What evidence do we have for the solar system forming from supernova remnants?
30. What is the condensation sequence?
31. What is the difference between growth by condensation and growth by accretion?
32. What is a planetesimal? A protoplanet? How are they similar? Different?
33. What is the Jovian problem?
34. How did the solar nebula get cleared after planet formation?
35. What is outgassing?
36. What is differentiation? Where did the energy come from for planetary differentiation?