

Things to know:

*This meant as a guide to what you should know. I make no guarantees that this material will be on the test, or that there won't be additional material on the test.*

1. What are white dwarfs, neutron stars and black holes?
2. What kind of pressure supports a normal star (thermal) and what kind of pressure supports a white dwarf and neutron star?
3. What are the two types of supernova?
4. How and where can you find a black hole in our galaxy?
5. What is a pulsar?
6. How do binaries create novae and white dwarf supernova?
7. What are the components of the interstellar medium?
8. How do we detect gas in the interstellar medium?  
(absorption lines, emission lines, bremsstrahlung, synchrotron emission, 21 cm, molecular lines)
9. What are planetary nebulae and supernova remnants?

10. Cosmic recycling – how does it work and how does it enrich the interstellar medium?
11. What are superbubbles and galactic fountains?
12. What is the structure of a spiral galaxy: bulge and halo (aka the spheroidal components), disk with spiral arms
13. What are spiral arms?
14. Why do spiral galaxies tend to look blue and ellipticals look red?
15. Know Hubble's tuning fork and the classification of galaxies by their morphology!!!!!!!!!!!!!!!!!!!!
16. What is Hubble's law and why does it mean the universe is expanding?
17. How do you use Hubble's law to measure the age of the universe?
18. What are standard candles?
19. What are the rungs of the cosmic distance ladder (don't forget Cepheids and White Dwarf Supernova!!!)?

20. What are groups and clusters of galaxies? In which do you find spiral galaxies, and where do you find elliptical galaxies?
21. What is dark matter?
22. What is the difference between a blackbody, dark cloud and dark matter?
23. How do you measure the amount of dark matter?
24. What percentage of the mass of a galaxy cluster is in stars, hot gas and dark matter?
25. What are wimps and machos?
26. What are interacting galaxies?
27. How do galaxies form?
28. How are elliptical galaxies formed through collisions of Galaxies?
29. What are starburst galaxies?
30. What are galactic winds?
31. What are AGNs and Quasars; what is their energy source?

32. What is the difference between a blackbody, dark cloud and dark matter?
33. How does dark matter create cosmic structure?
34. What does it mean that the universe is isotropic and homogenous?
35. What is the cosmic web?
36. What are voids? (there is no dark matter in voids!!).