ASTR-1020 Exam 2 Review Questions

1. What is the nearest stellar system to the solar system? How many stars are in this system?

2. What is the Doppler Effect? Which direction do spectral lines shift if an object is approaching us? Receding from us?

3. Star A has a parallax of 0.12 arcsec and star B has a parallax of 0.0098 arcsec. Which of these two stars are farther from Earth? (Remember that the parallax angle is inversely proportional to the distance.)

4. What is the moving cluster method? Which star cluster is the foundation of the distance indicator method of figuring out the distance to external galaxies?

5. What is the difference between apparent and absolute magnitudes and how are they related to the distance modulus?

6. What is meant by the color index of a star? To what physical parameter of a star (*e.g.*, luminosity, chemical composition, temperature, size, etc.) is the color index related to?

7. Describe the Hertzsprung-Russell Diagram and draw a picture of it labeling the 4 main stellar groups on it. Give the spectral classifications from hottest to coolest stars. List the luminosity classification scheme of stars. What is the Sun's spectral-luminosity class?

8. What is the difference between an observational and theoretical H-R diagram? What is meant by spectroscopic parallax?

9. What are the strongest spectral features in **A** stars? What are the strongest spectral features in **M** stars? What are the strongest optical spectral lines in the Sun?

10. What three major things can be determined about a star from its spectrum? What is meant by **metalicity**? What is the difference between Population I and Population II stars? Describe a Population III star.

11. Can H III exist? Why or why not? What about He III?

12. List the 3 different types of binary stars? How are stellar masses measured?

13. Describe each of the following close binary stars: detached, semidetached, contact, and overcontact. What do each of these have to do with the Roche lobe and define the Roche lobe.

14. Describe the structure of the ISM. What is meant by interstellar reddening?

15. What is an H II region? Why are these sometimes called stellar nurseries? Why do H II regions look red in photographs? Be specific and give details. What type of stars must be present for H II regions to form?

16. Who is Annie Jump Cannon and what did she do that is so important to astronomers?

17. List at least three ways to ascertain the temperature of a star.

18. List at least three ways to ascertain the luminosity of a star.

19. List at least three ways to ascertain the distance of a star.

20. Assume we have measured a star's luminosity and temperature. How do we determine its diameter from this information?

21. How do we determine the chemical composition of a star?

22. How do we measure the magnetic field strength of a star? What is meant by the Zeeman effect?