

AST103
Spring 2008

Home work #4
Due Monday May 5th

1. (20%) a) What are the differences between Pop I and Pop II stars? Describe at least 3.
b) What are Pop III stars. What do we know about them and why?
2. (10%) Name the three primary types of galaxies and describe their differences.
3. (20%) What do Astronomers believe powers the light we see from Quasars? Why do we believe that are small relative to galaxies?
4. (10%) (Sample Exam Question) The surprising observational fact about quasars is that they appear
 - A. to be associated with ancient supernova explosions
 - B. to produce the luminosity of 100 galaxies in a volume similar to the solar system
 - C. to be the largest known structures in our Universe, while producing modest amounts of energy
 - D. to be moving rapidly towards us, while emitting large amounts of energy
5. (20%) a) What is meant by "critical density" in the universe?
b) If the Hubble constant is as large as 100 km/sec/Mpc, what is the maximum age of anything in the Universe?
6. (20%)
 - a) What is "Olber's Paradox" in an unbounded universe (one with no edge)?
 - b) Explain how an evolving, expanding universe can help explain the paradox