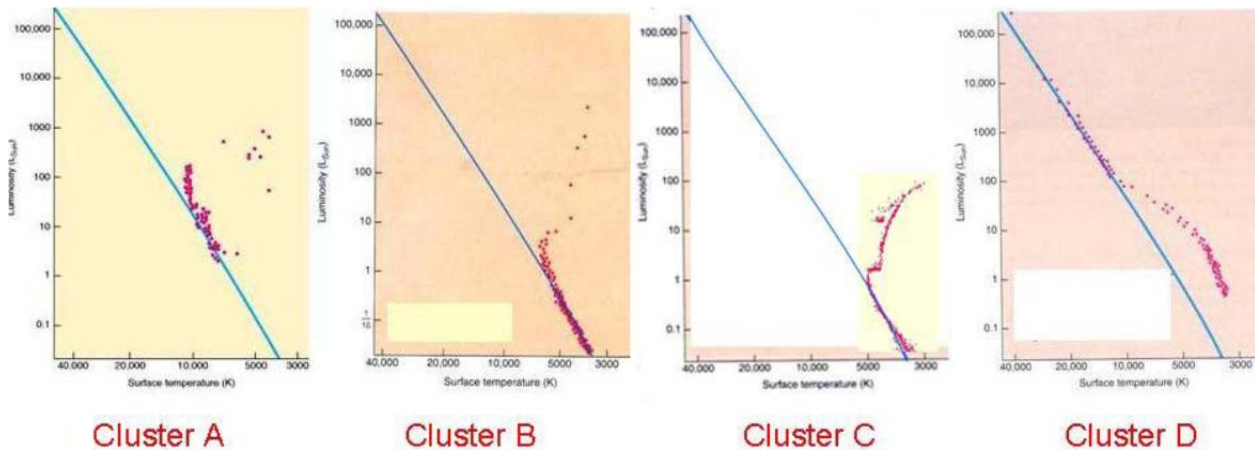


ISP 205

Review Questions, Week 11

This is not required homework. It will not be graded. Answers will be supplied on Monday afternoon.

1. The Sun will spend 10 billion years on the main sequence (i.e. converting H into He in its central core). Another star has a mass of 20 solar masses, and a luminosity of 100,000 solar luminosities. How long will it survive on the main sequence? Use the fact that a star's lifetime is proportional to mass/luminosity to make the calculation.
2. The following figure shows the Hertzsprung-Russell diagrams of star clusters A, B, C and D. Order the clusters in age, from youngest = 1 to oldest = 4.



3. What are the three possible end states for stars? What determines which end befalls a particular star?
4. What is meant by “electron degeneracy”?
5. State the Principle of Equivalence. Why is this important?
6. What is the description of gravity that comes from the General Theory of Relativity?
7. Name three “proofs” (= experimental verifications) that General Relativity gives a better description of the effects of gravity than is given by Newton’s Law of Gravity.
8. A simple way to calculate the size of a black hole is to say that it is the point where the escape velocity becomes larger than the speed of light. What does this mean for light that is emitted from inside the black hole, if we are looking from the outside?