ESSAY QUESTIONS FOR TEST 3, March 9th, 2010

The first part of the exam will consist of 40 multiple choice questions, ½ point each (I provide a ‘bubble’ sheet, YOU provide a pencil). The second part of the exam is essay, two questions, 5 pts each. The essay questions are taken directly from the Learning Objectives given for each lecture, however I have limited it to just six as possibly being included in the ESSAY test. For learning objectives not listed here or not used in the essay section, those will appear instead in the multiple choice section of the test. It is wise to know all the learning objectives and study questions, but PARTICULARLY wise to know the six listed below since they make 1/3 of the test.

You will be given THREE OF THESE and you must answer TWO for the essay section. It would be good to know them all since you do not know which ones you will be asked to answer. If they are not on the essay, they will appear in the multiple choice section.

1. Describe the history of volcanism on Mars’s surface and provide two pieces of evidence indicating past volcanism. Provide an approximate date of when volcanism began to decline and why. (Class 12)
2. Explain how Mars was initially capable of surface water (what happened early on), and then how its small size is responsible for the loss of its warm and wet climate. (Class 13)
3. The meteorite, ALH84001. Explain where it came from, how it got here and why it is uniquely important compared to all other Mars meteorites found, in testing for the presence of life on a very YOUNG Mars. (Class 13)
4. Explain the three key requirements for life found at the base of the Europan ocean that could support the origin of simple life. List which key requirement is likely insufficient to sustain abundant life (like as seen on Earth’s ocean bottom) and why? (Class 14)
5. Describe the early history of SETI, the first failed searches (how they were done and why they were unsuccessful). Explain the logic behind why most modern SETI efforts are aimed at listening (searching), rather than transmitting (sending out) signals. (Class 15)
6. Provide the two statements which Fermi put forth, which are extraordinarily contradictory, and create the Fermi paradox. Describe the three categories of solutions to this paradox given in your book. (Class 15)