EEES 4150/5150, Evolution
Spring 2012

Practice examples for Exam I

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1. Opponents of evolutionary theory often contend that the study of evolution is not a real science because there is no experimental evidence that supports evolutionary theory. In this course, we have investigated several lines of evidence that support the theory of evolution. Please list **two** concepts we discussed in class that support the theory of evolution AND the data, evidence or experimentation that support it (4 points)

2. The metabolic processes conducted by Earth's early organisms were likely mediated only by a limited number of biomolecules. Fully explain what impact a relatively limited library of biomolecules would have on the (i) efficiency and (ii) specificity of early bioprocesses. (4 points)

3. a. What was the main criticism against the likelihood of autotrophy on early Earth? (3 points)

   b. What two lines of evidence resulting from modern investigations suggest that autotrophy might have evolved earlier than was once thought? (4 points)

   c. Compare AND contrast the early anaerobic glycolytic pathway with that of the Calvin cycle. (4 points)

4. Mutation and recombination are the key avenues by which genetic variability arises. Compare and contrast the process/results of mutation with those of recombination (provide a feature that the two processes have in common as well as one that differentiates them).

5. How might the hypothesis of retrograde evolution explain the evolution of the Embden-Meyerhof glycolytic pathway?

6. Compare and contrast incomplete dominance and co-dominance. (**1 point**)