

Biology 375 – Evolution  
Fall 2007 – Dr. Carey – Exam 3

1. Define : (3 pts each)
  - A. hybrid inviability
  - B. polyploidy
  - C. indirect fitness
  - D. vicariance speciation
  - E. cost of anisogamy
  - F. temporal isolation
  - G.  $V_D$
2. Define allopatric speciation. Why is this form of speciation considered to be the most common mean of creating new species in nature? (12 pts)
3. Describe William's hypothesis for the adaptive benefit of sexual reproduction as compared to asexual reproduction. (15 pts)
4. Many estimates of the heritability of human IQ have shown it to be ~0.80. Specifically, what does that mean concerning the trait? A group of tyrannical geneticists take over the world and decide to selectively breed humans for increased IQ. Is it likely that they will have some success in doing so? Why or why not? (Answer these last 2 questions based solely on the evolutionary genetics of the situation) (15 pts)
5. Define genetic homeostasis and give a genetic explanation as to why it occurs. Many times after prolonged selection on a trait genetic homeostasis disappears. Using your previous explanation, explain the possible genetic basis for this disappearance. (20 pts)
6. How do species comparisons attempt to determine the adaptiveness of various traits in organisms? Discuss both applications of the method. (17 pts)