1. A. optimization theory  
   B. temporal isolation  
   C. species (biological definition)  
   D. epigamic selection  
   E. $V_D$  
   F. adaptation (applied to individual traits)

2. Distinguish between sympatry, allopatry, and parapatry. Of the three which is most likely to be associated with speciation? Why? (16 pts)

3. What is it about typical speciation processes that makes it likely to find “missing links” or gaps in the fossil record associated with the appearance of new species in the record? (14 pts)

4. Define genetic homeostasis. Describe the basic theory used to explain why this homeostasis occurs. Using the concept of linkage, explain why genetic homeostasis sometimes disappears after prolonged selection. (25 pts)

5. Define altruism. How can such a trait increase the fitness of individual organisms that show it? Given your explanation, would you be more likely, less likely, or equally likely to show altruism toward your grandparents as compared to your grandchildren? Logically support your answer. (18 pts)

6. Define heritability. (3 pts)

   Many estimates have suggested that the heritability of human IQ (broad sense) is $\sim0.80$. Given that number:

   A. What is a common misuse of this number that people have made in using it to describe human intelligence? Very generally, explain why this application is a misuse of the heritability estimate. (12 pts)

   B. Given that heritability value, is it likely that IQ that has been strongly related to human fitness? Why or why not? (12 pts)