Quiz 4 BSC 2011 Fall 2004

NAME_____

Circle the BEST answer to each question (3 pt each, except # 3, which is 4 pt)

1. Which of the following does **not** contribute to the maintenance of genetic variation in natural populations?
   a. heterozygote advantage
   b. response to artificial selection
   c. sexual reproduction
   d. frequency-dependent natural selection
   e. epistasis

2. Which of the following makes the Morphological Species Concept **more** difficult to apply than the Biological Species Concept?
   a. the presence of different genetically determined phenotypes in a species
   b. species that are known only from fossils
   c. species that do not reproduce by sexual reproduction
   d. species in which populations can interbreed with nearby populations but not distant ones
   e. species that don't breed in captivity

3. In a population of Humans that is in Hardy-Weinberg equilibrium, the alleles for ABO blood type occur in the following frequencies: $I^A = 0.2$, $I^B = 0.2$, $i = 0.6$. What blood type is expected to be **LEAST** common in this population?
   a. Type A
   b. Type B
   c. Type O
   d. Type AB
   e. they will all be equally common

4. In a population of politicians that is in Hardy-Weinberg equilibrium, a single locus with two alleles showing simple dominance controls flag color with blue being dominant to white. If 84% of the politicians have blue flags, what is the frequency of the **dominant** allele at the flag color locus in the population?
   a. 0.04
   b. 0.16
   c. 0.25
   d. 0.60
   e. 0.91

5. Kettlewell's experiment showing differences in the survival of light and dark colored moths in England demonstrated
   a. that non-random mating does not lead to evolution
   b. that melanism is a heritable trait
   c. natural selection
   d. genetic drift
   e. none of the above

6. In a population of fish, the smallest individuals are eaten by invertebrate predators and the largest are eaten by birds. Medium sized fish are too big for the invertebrates to eat and too small for the birds to notice and therefore are more likely to survive. What kind of natural selection is operating on body size in this population?

   a. positive directional selection
   b. negative directional selection
   c. stabilizing selection
   d. diversifying selection
   e. frequency-dependent selection

7. Which of the following was demonstrated by the application of electrophoresis to the study of protein samples from individuals in natural populations?

   a. there is natural selection on even small differences in protein structure
   b. variation is required for natural selection to occur
   c. mutation is the primary source of new genetic variation
   d**. there is substantial genetic variation in many natural populations**
   e. none of the above

8. Body size in gray squirrels varies in a cline from north to south in the US, with squirrels in the north being larger than those in the south. If the cline is due entirely to environmental differences between the north and south then if I move a pregnant female from Boston to Tallahassee and allow her to give birth and raise her offspring here, how would I expect those offspring to compare to native born and bred Tallahassee squirrels?

   a. The Boston offspring will have the same body size as the native squirrels
   b. The Boston offspring will be larger than the native squirrels
   c. The Boston offspring will be smaller than the native squirrels
   d. The Boston offspring will be reproductively isolated from the natives
   e. The Boston squirrels will thoroughly embarrass the Yankees and go on to clobber the Cardinals