This is a Pre-Course Assessment. Incorrect answers will not impact your grade

Your Name: _____

1. Name four evolutionary forces: _____, _____, _____, & _____
   ◯ Can't think of any more

2. If a new allele arose that made it impossible for homozygotes with this allele to have offspring, selection could increase this allele's frequency in the population.
   ◯ True ◯ False ◯ Insufficient information ◯ Don't know

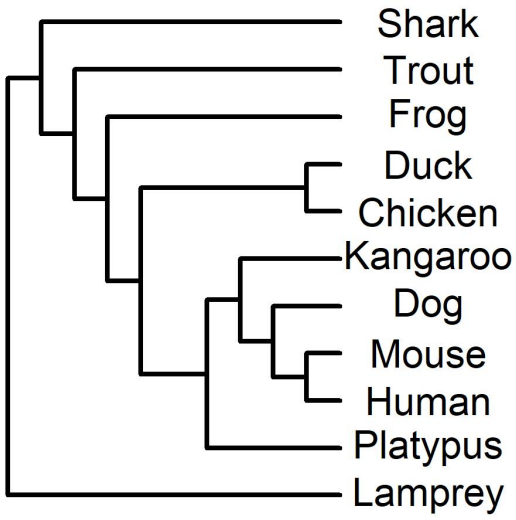
3. You do a genetic analysis of a frog species, looking at populations from the East Coast to the West Coast. You find two competing alleles, a & b. Populations in the East have high frequencies of a, while populations in the West have high frequencies of b. Both alleles are present everywhere. What evolutionary force is most likely the primary driver of the different alleles in East and West? _____

4. A very large population of mice has lived on a remote island for hundreds of thousands of years. These mice are completely isolated from all other mice. You do a genetic analysis of a particular locus with two alleles (a & b) and find that 36% of the mice are aa, 48% are ab, and 16% are bb. Ten generations from now, what should you *expect* the frequency of aa to be?
   ◯ 0% because I expect selection to favor b
   ◯ 36% because I expect no change
   ◯ 50% because I expect the two alleles to become even
   ◯ 84% because I expect the heterozygotes to disappear
   ◯ 100% because I expect selection to favor a
   ◯ Insufficient information
   ◯ Don't know

5. Indicate which of the following statements are true: ◯ there are multiple loci per allele ◯ there are multiple alleles per locus ◯ both of the above are true ◯ neither is true ◯ Insufficient information ◯ Don't know

6. If a population is large, but undergoes a strong bottleneck, then for alleles in that population the: ◯ time to fixation will increase ◯ time to fixation will decrease ◯ time to mutation will decrease ◯ time to fixation will increase and to mutation will decrease ◯ Insufficient information ◯ Don't know

7. What does a large F_{st} value indicate? ◯ High gene flow between populations ◯ Strong selection ◯ Moderate inbreeding ◯ Weak selection ◯ Low gene flow between populations ◯ Insufficient information ◯ Don't know



8. Based on the phylogeny shown above, is the shark or kangaroo more closely related to the trout:
◯ Shark ◯ Kangaroo ◯ Shark and Kangaroo are equally close to the trout ◯ Neither
◯ Don't know

9. On the phylogeny above, underline any species that are more primitive than the frog.

10. On the phylogeny above, mark the most recent common ancestor of humans and ducks with a large, dark circle.