**Competition Homework [ANSWER ON SEPARATE SHEET OF PAPER!]**

1. Define the following terms:
   1. **Niche**
   2. **Fundamental Niche**
   3. **Realized Niche**
   4. **Generalist Species**
   5. **Specialist Species**
   6. **Non-Native Species**
2. Why is it important for conservation biologists to study the niches of species? Give and explain three reasons.
3. Explain why a cockroach is more likely to survive than a panda. Give at least two reasons.
4. Why do species tend not to live in their entire niche, and instead settle for a particular piece of it?
5. Where do non-native species come from, and why are most of them such a threat to native species?
6. Draw a standard bell curve, and show what happens to that bell curve in each of the three forms of Selection.
   1. **Directional**
   2. **Stabilizing**
   3. **Disruptive**

Use the scenario to answer the corresponding questions.

1. A certain species of clown fish has a certain tolerance for salinity levels in an estuary. Due to competition from another fish species that can survive in moderate levels of salinity, the clown fish is forced to adapt in order to survive.
   1. Are salinity levels an example of a physical or a chemical condition?
   2. Using prior knowledge along with the scenario’s description, what is an estuary?
   3. If the clown fish was able to successfully adapt, what type of selection would be seen here? How do you know?
   4. Draw two bell curves, using Salinity Levels as your X-axis. Show the shape of the bell curve BEFORE and AFTER the introduction of the non-native species.
2. A species of earthworm is dying off in response to the acid rain (rain with a pH below 5.5) that is plaguing its niche.
   1. Is the acidity of the rain considered to be a physical or chemical condition?
   2. Using the terms “limiting factor,” “zone of tolerance” and “stress levels,” describe what is happening to the earthworm.
   3. If the earthworm is able to adapt to this environmental change, what type of selection would this be? How do you know?
   4. Draw two bell curves, using pH Levels as your X-Axis. Show the shape of the bell curve BEFORE and AFTER the acid rain.
3. Birth weight has become very particular for the human species. The mortality rates are high if the baby is born too light (less than 5 lbs), or too heavy (more than 8 lbs).
   1. Using this scenario, how can the human species become more generalized? How would this help in the survival of the human race?
   2. Using this scenario, what appears to be the zone of tolerance for birth weights? Represent this using a bell curve, with Birth Weight as the X-Axis.
   3. What type of selection is being seen in this particular scenario? How do you know?
   4. Draw two bell curves, using Birth Weight as your X-Axis. Show the shape of the bell curve BEFORE and AFTER birth weight became this particular.