**Biosphere Test 3 Review: Populations, Intro to Human Population Growth**

*This test review is due the day of our exam, Thursday October 15, 2015, for a 20 point grade. Please answer all questions thoroughly on a separate sheet of paper for full credit. The attached Cambridge question is due on Wednesday, October 14 for an additional 10 points.*

**General Populations**  
1. What is a niche?  
2. What are the four qualities we use to describe populations? Describe each.  
3. Describe two ways we can estimate the size of a population.  
4. What factors affect population growth and how do these factors affect populations? (List and describe at least three)  
5. Describe the difference between arithmetic and geometric growth. Draw graphs to approximate each type of population growth. What causes each of these growth trends?  
6. Describe the difference between r and k strategists.  
7. Define carrying capacity and draw a carrying capacity curve.  
8. Compare and contrast density-dependent and density-independent limiting factors, using definitions and at least three examples of each type.  
9. How do predator and prey populations interact?  
10. How have predators adapted to better hunt their prey? Describe at least 3 ways.  
11. How have prey adapted to better hide from predators? Describe at least 3 ways.  
12. What is the difference between interspecific and intraspecific competition?  
13. Describe Gause’s law (law of competitive exclusion).  
14. What is resource partitioning?  
15. What are invasive species and how might they interfere with the environment in which they invade?  
16. What is the difference between mutualism, commensalism, and parasitism?

**Human Population Growth**17. Why is human population growth often considered the number one ecological program?  
18. What form of growth is human population currently following?  
19. How does population growth, density, and dispersion differ in More Developed Countries vs. Less Developed Countries?  
20. Why is population growth in developed nations slower than in developing nations?  
21. Describe the theory of demographic development, including all four stages of development.  
22. What is the IPAT equation and what does it tell us about population growth?  
23. What are the best ways to encourage lower population growth?