Biology 2201: Population Biology

Match the following terms with the appropriate definition or description by writing the letter of the term on the space provided.

Terms:

a. Natality	d. Immigration.	g. Law of Tolerance.
b. Mortality.	e. Emigration.	h. Law of Minimum.
c. Carrying Capacity.	f. Limiting Factors.	i. Biotic Potential

Definitions or Descriptions:

1. An organism can survive within a certain range of an abiotic factor, but not above and below the range. _____

2. Factors that prevent organisms from reaching their biotic potential. _____

3. The maximum number of offspring a species could produce if resources are unlimited. _____

4. The nutrient in least supply is the factor that limits the population. _____

5. The maximum number of individuals that can be supported indefinitely in an ecosystem. _____

6. Death rate. _____

7. Individuals moving out of the population. _____

8. Birth rate. _____

9. Individuals moving into the population. _____

Questions

1. What is the biological definition of the term “population”?

2. Describe what the density of a population means.

3. Explain how the following processes impact on population growth
   a. Natality b. Mortality c. Emigration d. Immigration.

4. Draw a graph to show the three possible population growth curves that may exist. Explain what is happening to the population in each scenario and label the phases of the curves.

5. Describe the specific intervals in a logistic growth curve. Along with your written explanation, sketch the graph to identify and describe these points on the graph.

6. Under what conditions would some species experience exponential growth? Explain your answer.

7. What are some of the factors that determine the biotic potential of a particular population?

8. On a single graph, draw a typical exponential growth curve and a logistic growth curve. On the correct curve, label the point at which the growth of one of these populations begins to slow down and the point at which it has reached the carrying capacity of the environment.

9. In general terms, how does competition with other species affect the growth of populations?

10. How might predation or parasitism explain why a population's size does not increase indefinitely?

11. In what way is the relationship between a population of herbivores (plant eaters) and the plants they eat similar to the relationship between predator and prey populations?

12. Define density-dependent factors. Give 2 examples of these factors for the human population.

13. Define density-independent factors. Give 2 examples of these factors for the human population.

14. What effect did the Agricultural Revolution have on the rate of growth of the human population?

15. Compare the birth and death rates during each of the four stages of a demographic transition.

16. How did the Industrial Revolution have an impact on the rate of population growth?

17. Compare an industrialized nation with a less industrialized nation with respect to typical age structure, fertility rate, and stage of demographic transition. What aspects of being more industrialized do you think have contributed to differences in these demographic features?

18. Describe the phases of demographic transition in terms of how the birth rate, death rate, and size of population tend to change as it passes through each stage.

19. What are abiotic factors? Give some examples.

20. What are biotic factors? Give some examples.

21. If a population is in equilibrium, what does this mean? How is this related to the carrying capacity of the ecosystem?

22. A population's size is controlled by two laws. List and define both laws.

23. What happens if a population exceeds carrying capacity?

24. Define Natural Resources. Explain how Earth's natural resources will be affected by future population growth.