**Population Unit Study Guide**

Tag and Recapture Formula: N= (MC)/R *N=population, M=number captured and tagged, C= number recaptured, R=number of recaptured organisms with tags*

Rate of Natural Increase= (birth rate – death rate)/10 *Note: birth rate and death rate are expressed in people per 1000*

Net Annual Growth Rate=(net increase/population)x100

1. What is biotic potential?
2. What is environmental resistance? How does it affect a population? What happens when a population encounters environmental resistance?
3. Compare/contrast density-dependent limiting factors and density-independent limiting factors.
4. How is population growth determined? What is the population growth rate for a city of 20,000 with the following statistics: 3000 births per year, 1500 deaths per year, 800 immigrants, 600 emigrants
5. Describe or draw the shapes of population pyramids for a developing country and a developed country.
6. What is the Rule of 70? If a city has a population of 100 million in 2010 and a growth rate of .8%, how long will it take for the population to reach 200 million?
7. What would the age-structure of a developing African country look like?
8. If a country has a population of 400 million and an annual growth rate of 2.25%, what will the population size be in one year?
9. Describe the birthrate and death rate of a population at carrying capacity.
10. If a country has a population of 30,000, a birth rate of 25 per 1000 each year, a death rate of 10 per 1000 each year, 50 people immigrating each year, and 15 people emigrating each year, what will the population be the following year?
11. What are the three spacing patterns commonly found in populations? What is the reason for each?
12. In a tag and recapture study, 200 fish were caught and tagged. The next month, 200 fish were caught and of them, 25 were tagged. What would you estimate the population of fish to be?
13. Describe the four stages of demographic transition.
14. Sketch a population pyramid for the following: a country with slow growth, a country with zero population growth, a country with a widespread disease like AIDS, a country with rapid growth, and a country with a declining population.
15. What is an infant mortality rate? What are the characteristics of countries with high infant mortality rates?
16. Under what circumstances will women have fewer and healthier children?
17. What is carrying capacity?
18. What is the most populous country in the world?
19. What is the rate of growth for a country that has a birth rate of 12 per 1000 and a death rate of 10 per 1000?
20. What is total fertility rate?
21. What is population density?
22. Describe r-select and K-select species.