Modeling Population Changes and Dynamics

Answer the following questions to the best of your ability. Use notes, the text, and the Internet where appropriate. These can be done in your notebooks. Q1-6 are notes, 7 and 8 are to be turned in on 11/3.

1. Define the following terms:
   a. Limiting Factors
   b. Carrying Capacity
   c. S Population Curve
   d. J Population Curve
2. How do limiting factors define a carrying capacity within an ecosystem? Provide specific details and relate this to population growth.
3. Draw a sample graph to represent a S population and a J population.
4. For each curve type, provide an example of a species that follows that growth pattern. Discuss why this population behaves this way and how limiting factors affect the growth.
5. Describe density-dependent factors and density independent factors. List 3-4 examples for each.
6. Describe internal and external factors, with relation to species and interactions. Provide examples to support your descriptions.
7. Use the following data to graph population growth. Label each population as S or J.
   a. For the J population – What years was it in exponential growth? What was its carrying capacity? What happened to the population when it reached carrying capacity?
   b. For the S population - What years did the population grow more rapidly? What was the carrying capacity? What happened to the population after it hit its carrying capacity?

Population A. This population lives in the Rainforest of Brazil. Their population was monitored by a group of Wake Forest graduate students from 1956-2008.

Date	Population Size
1956	20
1960	24
1964	30
1968	70
1972	120
1976	176
1980	259
1984	320
1988	500
1992	700
1996	1000
2000	300
2004	50
2008	0

Population B. This population lives in North Carolina. Their population was monitored by Dr. Sharon Bradshaw from 1948-2008.

Data	Population Size
1948	15
1950	19
1952	25
1954	35
1956	45
1960	60
1964	90
1968	120
1972	150
1976	200
1980	275
1984	340
1988	265
1992	310
1996	280
2000	308
2004	295
2008	305

8. Find one real world example to discuss how limiting, density-dependent, density-independent, internal, and external factors influence population growth. Describe the specific population growth model experienced in this situation.