Biology Chapter 5 Section 1 Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. There are 150 Saguaro cacti plants per square kilometer in a certain area of Arizona desert. To which population characteristic does this information refer?
   a. growth rate  
   b. geographic distribution  
   c. age structure  
   d. population density

2. What does the range of a population tell you that density does not?
   a. the number that live in an area  
   b. the areas inhabited by a population  
   c. the births per unit area  
   d. the deaths per unit area

3. What can cause a population to grow?
   a. The birthrate becomes higher than the death rate.  
   b. The birthrate stays the same, and the death rate increases.  
   c. The birthrate becomes lower than the death rate.  
   d. The birthrate and the death rate remain the same.

4. Which are two ways a population can decrease in size?
   a. immigration and emigration  
   b. increased death rate and immigration  
   c. decreased birthrate and emigration  
   d. emigration and increased birthrate

5. When individuals in a population reproduce at a constant rate, it produces a growth pattern called
   a. logistic growth.  
   b. growth density.  
   c. demographic growth.  
   d. exponential growth.

6. As resources in a population become less available, population growth
   a. becomes negative.  
   b. increases slowly.  
   c. reaches carrying capacity.  
   d. enters a phase of exponential growth.

7. If a population grows larger than the carrying capacity of the environment, the
   a. death rate may rise.  
   b. birthrate may rise.  
   c. population will grow faster.  
   d. carrying capacity will change.

Completion
Complete each statement.

8. When an individual moves into a population from a different population, it is called ____________________.

9. Zero population growth is a characteristic of ____________________ growth.
10. Under conditions of logistic growth, population size will rise and fall around an average point called a(an) _____________________.

**Short Answer**

11. How does emigration affect population size?

**Essay**

12. Discuss four ways population size can change.

13. Differentiate between exponential and logistic growth.
USING SCIENCE SKILLS

Graph I shows the curve for a culture of *Paramecium aurelia*. Graph II shows the growth curve for a culture of *Paramecium caudatum*, a larger species. Graph III shows the growth curves of each species when they are grown together.

**Figure 5–1**

14. **Interpreting Data** According to Figure 5-1, which species has the greater initial growth rate when they are grown in separate cultures?
15. **Interpreting Graphics** From Figure 5-1, which species has the greater growth rate overall when grown together? Describe the growth curve of *P. caudatum* in graph III.

16. **Observing** What type of population growth curve can be observed in graphs I and II of Figure 5-1?

17. **Drawing Conclusions** What is the most likely explanation for the decline of the *P. caudatum* shown in graph III of Figure 5-1?
Biology Chapter 5 Section 1 Review
Answer Section

MULTIPLE CHOICE

1. ANS: D  PTS: 1  REF: p. 119
2. ANS: B  PTS: 1  REF: p. 119
3. ANS: A  PTS: 1  REF: p. 120
4. ANS: C  PTS: 1  REF: p. 120
5. ANS: D  PTS: 1  REF: p. 121
6. ANS: C  PTS: 1  REF: p. 122
7. ANS: A  PTS: 1  REF: p. 122

COMPLETION

8. ANS: immigration  PTS: 1  REF: p. 120
9. ANS: logistic  PTS: 1  REF: p. 122
10. ANS: carrying capacity  PTS: 1  REF: p. 122

SHORT ANSWER

11. ANS: Emigration is the movement of individuals out of a population and reduces its size if all other factors are equal.  PTS: 1  REF: p. 120

ESSAY

12. ANS: A population will increase or decrease in size depending on how many individuals are added to it or removed from it. There are two ways individuals can be added to a population. Individuals can be born into the population, or they can move into it from outside the population, or immigrate. There are two ways individuals can be removed from a population. They can die, or they can move out of the population, or emigrate.  PTS: 1  REF: p. 120
13. **ANS:**
Exponential growth occurs when the individuals in a population reproduce at a constant rate. At first, the size of the population increases slowly, then it increases more and more rapidly until it approaches an infinitely large size. Under ideal conditions with unlimited resources, a population will grow exponentially. Exponential growth does not continue in natural populations for very long. Resources become less available as the population grows, and the rate of population growth slows down. Logistic growth occurs when a population’s growth slows or stops following a period of exponential growth.

PTS: 1 REF: p. 121 | p. 122

**OTHER**

14. **ANS:**
P. caudatum

PTS: 1 REF: p. 122

15. **ANS:**
Overall, *P. aurelia* had the greater growth rate. *P. caudatum* had the greater initial growth rate, but was eventually excluded by *P. aurelia*. *P. caudatum* eventually died out.

PTS: 1 REF: p. 122

16. **ANS:**
Both populations show a logistic growth curve.

PTS: 1 REF: p. 122

17. **ANS:**
*P. aurelia* is a better competitor for limited resources, such as food.

PTS: 1 REF: p. 122