



Practice Midterm Exam

Raven, Berg, Hassenzahl: Environment, 7th Edition
Chapter 08: Population Change

1. The continent with the most rapidly growing population is:
- a) Africa
 - b) Asia
 - c) Europe
 - d) North America
 - e) South America

Ans: a

Difficulty: Easy

Response:

Chapter Opener; 8.0

2. Which of the following statements about population ecology is true?
- a) Population ecology only deals with declining populations that are in need of intervention in order to survive.
 - b) Population ecology focuses on individuals and their interactions, but not the abiotic environment.
 - c) Population ecology attempts to explain how and why the number of individuals changes over time.
 - d) Population ecology is not important to scientists in applied disciplines, such as wildlife management.
 - e) Population ecology deals with organisms in nature, but cannot be applied to the study of human populations.

Ans: c

Difficulty: Easy

Response:

Principles of Population Ecology; 8.1

3. Population density is:
- a) the total number of individuals
 - b) the total number of individuals of a given species
 - c) the total number of individuals per unit of area
 - d) the total number of individuals of a given species per unit of area
 - e) the total number of individuals of a given species per unit of area at a given time

Ans: e

Difficulty: Easy

Response:

Population Density; 8.1.1



Practice Midterm Exam

4. The science of population structure and growth is called:
- a) ecology
 - b) demography
 - c) democracy
 - d) human dynamics
 - e) ethology

Ans: b

Difficulty: Easy

Response:

They Human Population; 8.5

5. The maximum number of individuals of a given species that a particular environment can support for an indefinite period, assuming there are no changes in the environment is called its:
- a) environmental resistance
 - b) intrinsic rate of increase
 - c) carrying capacity
 - d) sustainability
 - e) demography

Ans: c

Difficulty: Easy

Response:

Environmental Resistance and Carrying Capacity; 8.1.4

6. The potential for future increases or decreases in a population based on the present age structure is called:
- a) intrinsic rate of increase
 - b) population density
 - c) population growth momentum
 - d) total fertility rate
 - e) age structure

Ans: c

Difficulty: Easy

Response:

Age Structure of Countries; 8.6.2

7. A scientist who first sounded the alarm about the growth of the human population and the ability of the earth to handle a large population of humans was:
- a) Charles Darwin
 - b) Paul Ehrlich
 - c) Thomas Malthus
 - d) Rachel Carson
 - e) James Lovelock

Ans: c

Difficulty: Easy

Response:

The Human Population; 8.5



Practice Midterm Exam

8. The movement of individuals out of a population is:
- a) natural increase
 - b) emigration
 - c) immigration
 - d) dispersal
 - e) carrying capacity

Ans: b

Difficulty: Easy

Response:

How Do Populations Change in Size?; 8.1.2

9. Which of the following organisms would be predicted to have the lowest intrinsic rate of increase?
- a) bacteria
 - b) cats
 - c) cockroaches
 - d) mice
 - e) whales

Ans: e

Difficulty: Easy

Response:

How Do Populations Change in Size?; 8.1.2

10. Populations that are growing at their intrinsic rate of increase:
- a) exhibit logistic growth
 - b) exhibit exponential growth
 - c) double in size every year
 - d) mutate rapidly
 - e) have no impact on their environment

Ans: b

Difficulty: Easy

Response:

Maximum Population Growth; 8.1.3

11. Limits set by a surrounding environment on reproduction are called:
- a) biotic potential
 - b) environmental resistance
 - c) natural increase
 - d) demographics
 - e) doubling time

Ans: b

Difficulty: Easy

Response:

Environmental Resistance and Carrying Capacity; 8.1.4



Practice Midterm Exam

12. Which of the following feature is typical of K-selected species?

- a) early maturity
- b) small body size
- c) do not produce a large number of offspring
- d) short life span
- e) no parental care invested in the offspring

Ans: c

Difficulty: Easy

Response:

Reproductive Strategies; 8.3

13. Humans exhibit:

- a) Type I survivorship
- b) Type II survivorship
- c) Type III survivorship
- d) Type I survivorship in early life and type II in mid-life
- e) Type IV survivorship

Ans: a

Difficulty: Easy

Response:

Survivorship; 8.3.1

14. In Type II survivorship:

- a) the probability of survival decreases with age
- b) the probability of survival increases with age
- c) the probability of survival doesn't change with age
- d) the male dies more frequently than females
- e) the female dies more frequently than males

Ans: c

Difficulty: Easy

Response:

Survivorship; 8.3.1

15. Which of the following is true for Type III survivorship?

- a) the probability of survival decreases with age
- b) the probability of survival increases with age
- c) it is characteristic of redwood trees
- d) it is characteristic of humans
- e) it is characteristic of adult gulls

Ans: b

Difficulty: Easy

Response:

Survivorship; 8.3.1



Practice Midterm Exam

16. Which of the following species is characterized by a boom-or-bust cycle?

- a) whales
- b) Paramecium
- c) reindeer
- d) lemmings
- e) humans

Ans: d

Difficulty: Easy

Response:

Density-Dependent Factors; 8.2.3

17. All of the following are examples of a density-independent factor affecting population growth except:

- a) fire
- b) blizzard
- c) hurricane
- d) food availability
- e) all of these are density-independent factors

Ans: d

Difficulty: Easy

Response:

Factors That Affect Population Size; Density-Independent Factors

18. As of 2008, the current size of the human population is nearly:

- a) 2.5 billion
- b) 3.6 billion
- c) 4.2 billion
- d) 5.8 billion
- e) 6.8 billion

Ans: e

Difficulty: Easy

Response:

Current Population Numbers; 8.5.1

19. The human population is increasing because of:

- a) medical advances
- b) agricultural advances
- c) sanitation practices
- d) improved water quality
- e) all of these

Ans: e

Difficulty: Easy

Response:

Current Population Numbers; 8.5.1



Practice Midterm Exam

20. Over the past several years the world growth rate (r) has:

- a) increased
- b) declined
- c) stayed the same
- d) doubled
- e) increased exponentially

Ans: b

Difficulty: Easy

Response:

Projecting Future Population Numbers; 8.5.2

21. Replacement-level fertility is:

- a) the average number of children born to each women
- b) the number of children who die in a given area
- c) the number of children a couple must produce to replace themselves
- d) doubling the amount of fertility in women in a given country
- e) number of women without fertility in a given area and others needed to replace them

Ans: c

Difficulty: Easy

Response:

Demographics of Countries; 8.6

22. Developing countries fall into two categories, moderately developed and less developed. Which of the following is not classified as a less developed country?

- a) Laos
- b) Niger
- c) Bangladesh
- d) Thailand
- e) Ethiopia

Ans: d

Difficulty: Easy

Response:

Demographics of Countries; 8.6

23. What is the formula for doubling time (t_d)?

- a) $t_d = 70/r$
- b) $t_d = 35/r$
- c) $t_d = x/r$
- d) the rule of 90
- e) both $t_d = 70/r$ and the rule of 90

Ans: a

Difficulty: Easy

Response:

Demographics of Countries; 8.6



Practice Midterm Exam

24. A dieback or population crash often occurs after a species _____ its environmental carrying capacity.
- a) meets
 - b) undershoots
 - c) overshoots
 - d) oscillates around
 - e) reduces

Ans: c

Difficulty: Easy

Response:

Environmental Resistance and Carrying Capacity; 8.1.4

25. Conditions that limit growth and ultimately produce population equilibrium are known as:
- a) predation conflicts
 - b) diebacks
 - c) biotic potential
 - d) environmental resistance
 - e) fertility factors

Ans: d

Difficulty: Easy

Response:

Environmental Resistance and Carrying Capacity; 8.1.4

26. Relative to the United States, China:
- 1) has higher CO₂ production per unit of energy
 - 2) has higher per-capita CO₂ emissions
 - 3) has lower overall CO₂ emissions
 - 4) burns much less coal
- a) 1
 - b) 2
 - c) 3
 - d) 4
 - e) Both 3 and 4

Ans: a

Difficulty: Easy

Response:

U.S. Immigration; 8.7.1

27. Which of the following factors is density-dependent?
- a) drought
 - b) severe storms
 - c) disease
 - d) fire in a grassland biome
 - e) extreme cold, or moderate cold at an especially critical time of year

Ans: c

Difficulty: Medium

Response:

Density-Dependent Factors; 8.2.1



Practice Midterm Exam

28. In the real world, many factors determine the numbers of organisms in a given population. Yet a SUPERFLY population with unlimited food and no mortality would show what types of growth?
- a) exponential
 - b) logistic
 - c) linear
 - d) Malthusian
 - e) unpredictable

Ans: a

Difficulty: Medium

Response:

How Do Populations Change in Size?; 8.1.2

29. An age structure diagram shaped like a pyramid is characteristic of a country with:
- a) a decreasing population growth rate
 - b) an increasing population growth rate
 - c) a steady rate of population growth
 - d) a population crash
 - e) a population at its carrying capacity

Ans: b

Difficulty: Medium

Response:

Age Structure of Countries; 8.6.2

30. In the postindustrial stage there is:
- a) modest population growth
 - b) high death rate
 - c) greater affluence and higher levels of education
 - d) high birth rate
 - e) high infant mortality

Ans: c

Difficulty: Medium

Response:

Demographic Stages; 8.6.1

31. Which of the following is not true of highly developed countries?
- a) a list would include Japan, Australia, and Germany
 - b) they have high fertility rates
 - c) they have very low infant mortality rates
 - d) they have longer life expectancies compared to less developed countries
 - e) have low rates of population growth

Ans: b

Difficulty: Medium

Response:

Demographics of Countries; 8.6



Practice Midterm Exam

32. Which of the following statements about HIV/AIDS in Africa is false?
- a) More than 23 million of the world's population infected with HIV/AIDS live in sub-Saharan Africa.
 - b) by 2010, about 18 million children in southern Africa will lose at least one parent to AIDS.
 - c) The average life expectancy in Swaziland today is 50 years.
 - d) In developing countries, almost all people infected with HIV/AIDS die.
 - e) HIV/AIDS is now the leading cause of death in Africa.

Ans: c

Difficulty: Medium

Response:

Chapter Opener 8.0

33. Which of the following equations accurately represents population growth?
- a) $r = (b - d) + (i - e)$
 - b) $r = (b + d) - (i + e)$
 - c) $r = (b - d) \square (e - i)$
 - d) $r = (b + d) \square (i + e)$
 - e) none of these are accurate

Ans: a

Difficulty: Easy

Response:

How Do Populations Change in Size?; 8.1.2

34. Which of the following scenarios is (are) likely to lead to the creation of a metapopulation? The type of organism is listed first, followed by the change to its habitat.
- a) forest bird species; large sections of a forest are cleared to construct residential subdivisions
 - b) grassland small mammal species; large areas of grassland are cleared and plowed for agriculture
 - c) river fish species; an industrial chemical spill causes a massive fish kill on the river
 - d) both forest bird species; large sections of a forest are cleared to construct residential subdivisions and grassland small mammal species; large areas of grassland are cleared and plowed for agriculture
 - e) all scenarios could lead to metapopulations

Ans: d

Difficulty: Medium

Response:

Metapopulations; 8.4

35. In the pre-industrial demographic stage:
- a) birth and death rates are high
 - b) death rates are low
 - c) industrialization is very light
 - d) birth rates are low
 - e) infant mortality rates are low

Ans: a

Difficulty: Medium

Response:

Demographic Stages; 8.6.1



Practice Midterm Exam

36. Which of the following populations would have a growth rate of zero?

- a) $b = 100, d = 50, i = 0, e = 100$
- b) $b = 100, d = 50, i = 50, e = 100$
- c) $b = 100, d = 50, i = 75, e = 100$
- d) $b = 100, d = 50, i = 100, e = 100$
- e) $b = 100, d = 50, i = 150, e = 100$

Ans: b

Difficulty: Medium

Response:

How Do Populations Change in Size?; 8.1.2

37. Zero population growth is:

- a) when the death rate equals the growth rate
- b) when the birth rate equals the death rate
- c) when the birth rate equals the growth rate
- d) when the growth rate equals the declining rate
- e) when the birth rate plus the death rate equals the zero

Ans: b

Difficulty: Medium

Response:

Projecting Future Population Numbers; 8.5.2

38. Which of the following is not an example of an animal with a boom-or-bust cycle?

- a) lemmings
- b) snowshoe hares
- c) red grouse
- d) antelope
- e) all of these have cyclic population fluctuations

Ans: d

Difficulty: Medium

Response:

Density-Dependent Factors; 8.2.1

39. Which of the following is true of population growth momentum?

- 1) it is the potential for future increase or decrease in a population based on the present age structure
- 2) there is no relation between population growth momentum and replacement-level fertility
- 3) a country can have replacement-level fertility and still experience population growth
- 4) it is the growth pattern of a given countries' population

- a) 1
- b) 2
- c) 3
- d) 4
- e) Both 1 and 3

Ans: e

Difficulty: Medium

Response:

Age Structure of Countries; 8.6.2



Practice Midterm Exam

40. If and when the human population reaches zero population growth, which of the following will be true?

- a) $(b - d) > 0.01$
- b) $(i - e) = 0$
- c) $(i - e) > 0.01$
- d) $r > 1$
- e) $r = 0$

Ans: e

Difficulty: Medium

Response:

How Do Populations Change in Size; 8.1.2

41. What is the doubling time for a population if the annual growth rate is 5%?

- a) 5 years
- b) 10 years
- c) 14 years
- d) 1.4 years
- e) cannot be determined from this information

Ans: c

Difficulty: Difficult

Response:

Demographics of Countries; 8.6

42. An improving socioeconomic condition of a country is generally correlated with:

- a) increased birth rate and increased population growth rate
- b) increased death rate and decreased population growth rate
- c) decreased birth rate and increased population growth rate
- d) decreased birth rate and decreased population growth rate
- e) decreased death rate and increased population growth rate

Ans: d

Difficulty: Medium

Response:

Demographic Stages; 8.6.1

43. In the fourth demographic stage (postindustrial stage) of the demographic transition the population will stabilize:

- a) at the carrying capacity of the environment
- b) at a population larger than before the transition, but with very slow or no growth
- c) at a rate of growth that is higher than before the transition
- d) at a size close to the original before the transition
- e) at a size much smaller than the original population

Ans: b

Difficulty: Medium

Response:

Demographic Stages; 8.6.1



Practice Midterm Exam

44. The challenges for countries with aging populations include all of the following concerns except:
- a) ways to deal with an increase in violent crimes
 - b) a need to increase the age of retirement
 - c) reduction in financial benefits for the elderly
 - d) not enough young people to support the elderly population
 - e) a greater demand for health and social services

Ans: a

Difficulty: Medium

Response:

Age Structure of Countries; 8.6.2

45. Lemming population fluctuations (crashes) are thought to be most closely related to
- a) an increase in the predator populations
 - b) an increase in the food supply
 - c) a decrease in the predator populations
 - d) a decrease in the food supply
 - e) variations in climate due to global warming

Ans: d

Difficulty: Medium

Response:

Density-Dependent Factors; 8.2.1

46. All of the following are characteristics of an r-selected population except:
- a) it has a high intrinsic rate of growth
 - b) the onset of reproduction is at an early age
 - c) there is extensive parental care of offspring
 - d) it is likely to occur in variable environments
 - e) there are many offspring per reproductive event

Ans: c

Difficulty: Medium

Response:

Reproductive Strategies; 8.3

47. Which of the following was responsible for reducing the population of reindeer on the Pribilof Islands, Alaska?
- a) competition
 - b) availability of vegetation
 - c) availability of nesting sites
 - d) build-up of waste products
 - e) drought

Ans: b

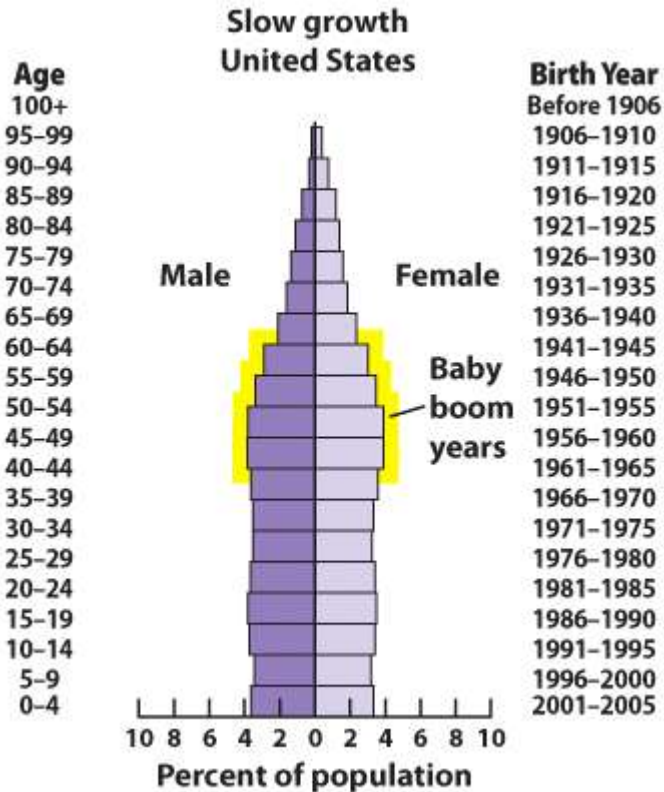
Difficulty: Medium

Response:

Environmental Resistance and Carrying Capacity 8

Practice Midterm Exam

48. The following graphic represents the age structure characteristic of:



- a) a highly developed country
- b) a moderately developed country
- c) a developing country
- d) the transition stage
- e) the pre-industrial state

Ans: a

Difficulty: Medium

Response:

Demographics of Countries; Age Structure of Countries

49. Features that are typical of r-selected species include all of the following except:

- a) late reproduction
- b) small body size
- c) early maturity
- d) short life span
- e) large broods

Ans: a

Difficulty: Medium

Response:

Reproductive Strategies; 8.3



Practice Midterm Exam

50. A biologist reported that during an algal bloom, a sample of ocean water had ten million dinoflagellates (marine phytoplankton) per cubic meter of seawater. What was the biologist measuring?
- a) dispersion
 - b) density
 - c) carrying capacity
 - d) survivorship
 - e) biotic potential

Ans: b

Difficulty: Medium

Response:

Population Density; 8.1.1

51. Given a population growth rate of +0.18%, you would expect the population to:
- a) increase rapidly
 - b) continue to increase, but very slowly
 - c) remain unchanged
 - d) decrease rapidly
 - e) continue to decrease, but very slowly

Ans: b

Difficulty: Medium

Response:

How Do Populations Change in Size?; 8.1.2

52. Given a population growth rate of -3.0%, you would expect the population to:
- a) increase rapidly
 - b) continue to increase, but very slowly
 - c) remain unchanged
 - d) decrease rapidly
 - e) continue to decrease, but very slowly

Ans: d

Difficulty: Medium

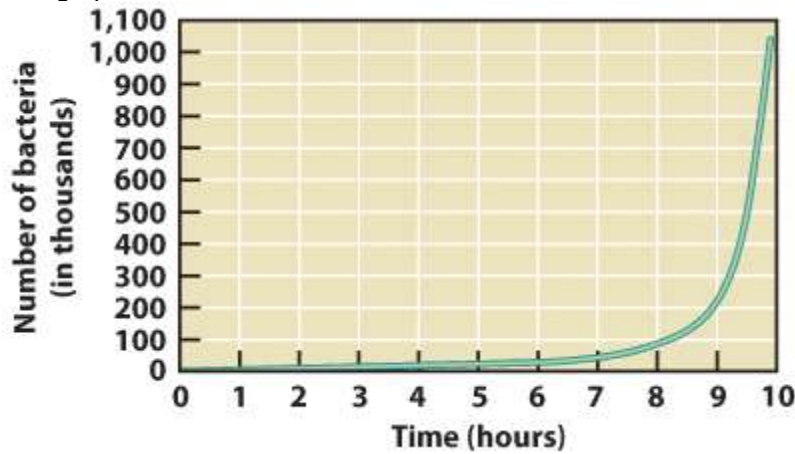
Response:

How Do Populations Change in Size?; 8.1.2



Practice Midterm Exam

53. The graph below best illustrates:



- a) logistic growth
- b) a population that has reached carrying capacity
- c) exponential growth
- d) linear growth
- e) a population crash

Ans: c

Difficulty: Medium

Response:

Maximum Population Growth; 8.1.3

54. Which of the following is an example of a density-dependent factor affecting population growth?

- a) disease
- b) the salinity of the soil
- c) the amount of rainfall
- d) temperature range
- e) hurricane

Ans: a

Difficulty: Medium

Response:

Density-Dependent Factors; 8.2.1

55. Which of these is not an example of a density-dependent factor affecting population growth?

- a) competition
- b) disease
- c) climate
- d) accumulation of body wastes
- e) none of these, all are examples of density-dependent factors

Ans: c

Difficulty: Medium

Response:

Density-Dependent Factors; 8.2.1

Biology 112 – Introduction to Ecology



Session: Spring 2011
Section: 51569 3 Units
Class Location: NVC 838
Days / Time: W 6:00 PM – 8:50 PM
Instructor: RIDDELL

Practice Midterm Exam

56. Which of the following is a true statement about the global human population size?

- a) it is no longer increasing
- b) it is predicted to increase exponentially far into the future
- c) it is currently decreasing slowly
- d) it is predicted to stop growing in the next 100 years
- e) it is predicted to decrease dramatically in the next 100 years

Ans: d

Difficulty: Medium

Response:

Projecting Future Population Numbers; 8.5.2