1. Ecologists study
   A) living things and their genetic makeup.
   B) genetic patterns and the chemistry in them.
   C) the physical world and its processes.
   D) the Earth and its processes.
   E) relationships between organisms and their environment.

2. How are matter and mass related?
   A) Mass is a component of matter.
   B) Neither matter nor mass take up space.
   C) Matter is a component of mass.
   D) Both matter and mass take up space.
   E) Mass takes up space while matter does not take up space

3. Water vapor, water, and ice are examples of
   A) types of matter.
   B) phases of matter.
   C) transfers of energy into matter.
   D) forms of energy.
   E) types of mass.

4. What implication(s) does the law of conservation of matter have for humans?
   A) We cannot create energy because it is neither created nor destroyed.
   B) As matter is recycled it loses some of its integrity so we need to be careful when we dispose of goods.
   C) Natural resources are unlimited because they are used and reused by living organisms.
   D) Disposable goods are not going “away” when we throw them out.
   E) All of these are implications of the law of conservation of matter.

5. The law of conservation of matter tells us that matter
   A) can never be reused.
   B) needs to be conserved or it will not be available for future generations.
   C) can be destroyed.
   D) can be conserved by some adaptive strategies.
   E) is used repeatedly.

6. In chemical terms water (H2O) would best be described as a(n)

7. Which of the following is not a molecule?
   A) O3  B) O2  C) H2O  D) DNA  E) C

8. The distinction between an organic compound and an inorganic compound is that organic compounds contain
   A) oxygen. B) water. C) carbon. D) nitrogen. E) All of these.

9. A fat or oil is to a _______ as an enzyme is to a _______.
   A) nucleic acid, lipid  D) carbohydrate, protein
   B) protein, nucleic acid  E) lipid, protein
   C) nucleic acid, carbohydrate
10. Nucleic acid is to _______ as lipid is to _______.
   A) cellular membrane structure, energy storage   D) genetic storage, cellular membrane structure
   B) cellulose structure, genetic storage         E) energy storage, genetic storage
   C) energy storage, cellulose structure

11. Deoxyribonucleic acid (DNA) contains billions of atoms and is very large. It would be considered a(n)

12. A cell is
   A) the smallest molecule exhibiting organic characteristics.
   B) a building block for DNA.
   C) a small organic compound made of carbon, water, and nitrogen.
   D) made up of DNA.
   E) the smallest unit in which life processes go on.

13. Metabolism is a collective term for thousands of
   A) organic compounds in a cell.  D) cells in an organism.
   B) enzymatic reactions necessary for life.  E) molecular reactions in a cell.
   C) molecular reactions in a compound.

14. Energy is the ability to
   A) move objects.  D) All of these are true.
   B) become heated  E) Both A and C are true.
   C) transfer heat from one object to another.

15. Potential energy is _______ energy.
   A) electrical  B) motion  C) stored  D) heat  E) latent

16. The motion of a rock rolling downhill is known as _______ energy.
   A) kinetic  B) latent  C) potential  D) electrical  E) mechanical

17. Metabolism can be seen as the process of converting
   A) energy into matter.  D) atoms into compounds.
   B) potential energy into kinetic energy.  E) matter into potential energy.
   C) kinetic energy into potential energy.

18. The first law of thermodynamics and the law of conservation of matter are similar in that
   A) under normal circumstances neither energy or matter is created nor destroyed.
   B) both energy and matter are recycled through biological systems.
   C) both energy and matter flow in a one-way path through biological systems.
   D) under normal circumstances energy and matter are destroyed as they pass through biological systems.
   E) The first law of thermodynamics and the law of conservation of matter are not similar.

19. The second law of thermodynamics states that as energy moves through different forms and systems it gradually
   A) becomes more concentrated.  D) accumulates in the form of electricity.
   B) dissipates and becomes unavailable.  E) changes from kinetic to potential energy.
   C) disappears and is lost.

20. Photosynthesis is the process of converting _______ into _______ energy.
   A) chemical bond energy, kinetic  D) solar electrical energy, heat
   B) sunlight, chemical bond         E) chemical bond energy, potential
   C) solar energy, kinetic
21. About __________ percent of the solar energy that falls on plants is captured for photosynthesis.
   A) 100    B) 60 – 70    C) 40 – 50    D) 10 – 20    E) 1 – 2

22. Photosynthesis produces sugars from
   A) water, carbon dioxide, and energy.    D) carbon dioxide, enzymes, and energy.
   B) water, other sugars, and oxygen.     E) oxygen, water, and energy.
   C) oxygen, carbon dioxide, and water.

23. The process of cellular respiration
   A) helps primary producers store energy accumulated by chloroplasts.
   B) releases energy from chemical bonds of molecules such as glucose.
   C) eliminates the need for enzymes in metabolism.
   D) does not occur in primary producers.
   E) does not occur in detritivores.

24. Although there are exceptions, in general, a species includes all organisms that are similar enough to
   A) produce fertile offspring in nature.    D) occupy the same community.
   B) look alike.                               E) live together.
   C) fill the same niche.

25. All members of a species that live in the same area at the same time make up a(an)

26. A biological community consists of all
   A) populations living and interacting in an area.    D) populations of a given species.
   B) members of a species living in the same area.    E) members of a species living in the same biome.
   C) living things on Earth.

27. An ecosystem consists of
   A) a physical environment within which a biological community lives.
   B) the species with which a biological community interacts.
   C) a biological community and its physical environment.
   D) the primary producers within a biological community.
   E) all the species in a biological community.

28. If an ecosystem exchanges both matter and energy with its surroundings, it would be referred to as a(n) ______ system.
   A) closed    B) open    C) dynamic    D) isolated    E) interactive

29. With respect to __________, every ecosystem is open.
   A) species    B) populations    C) matter cycling    D) energy flow    E) inorganic compounds

30. Many ecologists think of ecosystems and even the Earth as a superorganism because its systems appear to be
   A) unregulated.    D) unchangeable.
   B) self-regulating and self-stabilizing.    E) hierarchical.
   C) completely unpredictable.

31. Productivity in an ecosystem has to do with
   A) the efficiency of its primary producers.
   B) the number of different species living in the ecosystem.
   C) its longevity.
   D) the combined metabolic rate of the biological communities.
   E) its rate of producing biomass.
32. How can a highly productive ecosystem (high total productivity) have a low net productivity?
   A) The rate of decomposition is high.        D) The rate of decomposition is low.
   B) The rate of secondary productivity is high.   E) The rate of secondary productivity is low.
   C) The rate of photosynthesis is low.

33. Biomass includes all
   A) material in an ecosystem.        D) matter produced by primary producers.
   B) things that are living at a given time.   E) biological material.
   C) living and nonliving things.

34. A simple linked feeding series such as grass-rabbit-wolf is known as a(n)

35. The length and complexity of a food web in the Arctic would be ____________ when compared to one in the tropical rainforest.
   A) short and less complex         D) long and more complex
   B) short and more complex         E) about the same
   C) long and less complex

36. Living things that carry out photosynthesis are known as

37. Primary consumers are also known as
   A) carnivores.        B) scavengers.        C) decomposers.        D) herbivores.        E) top carnivores

38. Omnivores eat mainly
   A) detritivores.
   B) plants.
   C) animals.
   D) plants and animals that have died due to natural causes or from being hit by a car driven by a careless high school student.
   E) plants and animals.

39. The organisms at the “a” level of the biomass pyramid above are

40. In the biomass pyramid above, the bottom level (shown by letter d) represents

41. Energy enters a system as sunlight and a producer is able to produce 100 kilograms of tissue. If eaten, the producer would produce about ______ kilograms of consumer tissue that would provide about ______ kilograms of tissue for a secondary consumer.
   A) 100, 10        B) 10, 1        C) 100, 1        D) 1, 0.1        E) 10, 0.1
42. Detritivores, scavengers, and decomposers are all similar in that they
A) consume nonliving organic matter. D) are among the Earth's least useful organisms.
B) are primarily microorganisms. E) consume abiotic material.
C) are primary producers.

43. Which of the following does not cycle repeatedly through the Earth's ecosystems?
A) water  B) nitrogen  C) matter  D) carbon  E) energy

44. Living vegetation and the ocean are known as “carbon sinks” because
A) they are made of carbon. D) they store carbon.
B) they create carbon. E) due to gravity carbon is found closer to the ground.
C) they destroy carbon.

45. Nitrogen is an essential component of
A) amino acids and proteins. D) the hydrologic cycle.
B) organic molecules. E) carbohydrates.
C) sugars, the product of photosynthesis.

46. Nitrogen gas (N2), the most abundant form of nitrogen on Earth, is
A) also the easiest for plants to use. D) inaccessible to most plants.
B) the easiest form for both animals and plants to use. E) usually transported in aqueous form.
C) outside of the global nitrogen cycle.

47. Phosphorus cycles through the Earth's ecosystems
A) extremely quickly. B) very slowly.
C) only when activated by human activity. D) very rarely.
E) quickly when humans burn large amounts of fossil fuels.

48. Human activities such as the ____________ release large quantities of sulfur.
A) burning of fossil fuels  D) use of detergents
B) burning of wood  E) cultivation of sulfur-fixing crops
C) use of synthetic fertilizers

49. Which of the following is not a step in the global nitrogen cycle?
A) nitrogen fixation  B) nitrification  C) photosynthesis  D) ammonification  E) denitrification

50. Which of the following biogeochemical cycles does not have an atmospheric phase?
A) hydrologic cycle  B) nitrogen cycle  C) sulfur cycle  D) carbon cycle  E) phosphorous cycle

Chapter 4

51. Tolerance limits are _______ that limit a species' survival.
A) just temperature ranges  D) narrow salinity levels
B) any environmental conditions  E) undesirable toxin concentrations
C) population sizes
52. There is/are usually _______ tolerance limit(s) responsible for limiting the number and location of a species. However, some organisms have __________ that limit(s) their distribution.
A) one, a specific critical factor   D) many, other environmental conditions
B) one, other environmental conditions   E) many, a specific critical factor
C) one specific, many factors

53. A species can withstand a wide range of pH as an adult but the juveniles can only withstand a narrow range of pH. The abiotic factor, pH, would best be described as a
A) stress factor   B) intolerance factor   C) tolerance limit   D) critical factor   E) physical factor

54. Which of the following fish species would be the best indicator of clean, well-oxygenated water?
A) carp   B) largemouth bass   C) catfish   D) rainbow trout   E) sunfish

55. Populations are most critically limited by
A) available food.   D) suitable shelter from predators.
B) suitable shelter from the elements.   E) any of these, depending on the system.
C) available water.

56. Indicator species, such as lichens, generally have a ___________ tolerance range for a ___________.
A) narrow, critical factor   D) broad, number of critical factors
B) narrow, number of physical factors   E) broad, critical factor
C) average, number of physical factors

Use the following to answer questions 57-58:
A species can withstand a narrow range of temperature. Above 100°F there are no species present. In the range from 97°F–100°F and 90°F–94°F there are a few species present. Below 90°F there are no species present.

57. What would you label the range of temperature from 90°F to 94°F for this particular species?
A) zone of intolerance   D) optimal range
B) zone of physiological stress   E) range of tolerance
C) tolerance limit range

58. What would you label the range of temperature from 95°F to 96°F for this particular species in the scenario?
A) zone of intolerance   D) optimal range
B) tolerance limit range   E) range of tolerance
C) zone of physiological stress

59. What is the difference in the adaptation of a sled dog's (such as a Husky) thick coat of hair to help it withstand the cold temperatures of Arctic winters and a dog that adapts to cold temperatures in the fall by growing a thickened coat? The adaptation of the sled dog best describes adaptation at the __________ level while the dog exposed to seasonal colder temperatures has ___________.
A) regional; natural selection at the individual level
B) individual; physiological modifications at the population level
C) population; physiological modifications at the individual level
D) species; natural selection at the population' level
E) ecosystem; physiological modifications at the individual level

60. Which of the following is a physiological modification used to adapt to environmental conditions?
A) Young saguaro seedlings sprouting under mesquites.
B) Leaves becoming thick and leathery on a plant growing in a dry, hot climate.
C) Locoweed growing only where selenium is present in soil.
D) Desert pupfish learning to deposit eggs where temperatures are optimal.
E) All of these are examples of physiological modifications used to adapt to environmental conditions.
61. Regular lawn mowing selects for short-headed rather than tall-headed dandelions because
   A) tall flowers spread their seeds farther.
   B) tall flowers cannot reproduce.
   C) short flowers can reproduce.
   D) short flowers spread their seeds farther.
   E) short flowers have less competition when the lawn is mowed often.

62. In the process known as convergent evolution, environmental conditions lead
   A) a species to adapt especially quickly.
   B) a species to resist the changes of random mutation.
   C) a species to branch off and develop into a new species, different from the ancestral species.
   D) unrelated species to live together.
   E) unrelated species to look like each other.

63. A generalist is a species that
   A) occupies a large habitat range.
   B) occupies a variety of ecological niches.
   C) can reproduce under highly variable conditions.
   D) can reproduce only under specific conditions.
   E) None of these are characteristics of a generalist species.

64. Most organisms’ niches are controlled by
   A) genetic determinants.
   B) lessons learned from parents.
   C) behavior learned from others in their social groups.
   D) luck.
   E) the predators and competitors they encounter.

65. Certain night-active moths and day-active birds are specialized nectar feeders. How do these species coexist if they are using the same resource for food?
   A) Since they both use the nectar eventually one of the two species will need to move to a new area.
   B) They do not compete for the nectar because they feed at different times of the day.
   C) There is enough nectar to supply both the birds and the moths with their feeding needs.
   D) Eventually the niche breadth will increase and there will be less competition.
   E) None of the above.

66. Predation influences evolution when
   A) prey species develop defensive characteristics.
   B) individual predators adapt and become more efficient in catching their prey.
   C) individual prey adapt and become more efficient in eluding predators.
   D) a population of predators develop defensive characteristics.
   E) prey species acclimate to the predators in the local ecosystem.

67. A Titmouse and a Chickadee are living in the same territory and are using some of the same resources. The best way to classify this interaction is as
   A) mutualism.
   B) intraspecific competition.
   C) interspecific competition.
   D) symbiosis.
   E) commensalism.

68. Which of the following is not a common strategy for successful interspecific competition?
   A) Eating prey before they are “ready” (ripe) for other species.
   B) Spreading seeds or offspring far and fast.
   C) Producing substances that are toxic to competitors.
   D) The life cycle of dragonflies (the larva live in the water).
   E) All of these are strategies for successful interspecific competition.
69. Territoriality is an important form of _________ for many animal species.
   A) symbiotic behavior  
   B) interspecific competition  
   C) intraspecific competition  
   D) commensalism  
   E) resource partitioning

70. In a commensal relationship,
   A) one species benefits while the other neither suffers nor benefits.  
   B) one species benefits while the other suffers.  
   C) two species live together and both suffer.  
   D) two species live together and neither benefits nor suffers.  
   E) two species live together and both benefit.

71. The tall, narrow, buttressed trunks of tropical rainforest trees are evidence of intense
   A) parasitism.  
   B) interspecific competition.  
   C) commensalism.  
   D) resiliency.  
   E) intraspecific competition.

72. Epiphytes growing on tropical trees exemplify
   A) mutualism.  
   B) predation.  
   C) parasitism.  
   D) commensalism.  
   E) intraspecific competition.

73. A biological community's productivity is a measure of
   A) its number of species.  
   B) the number of individuals in the community.  
   C) available solar energy that can be converted to biomass.  
   D) the amount of biomass produced in the community.  
   E) All of these are combined in measuring a community's productivity.

74. “Abundance” describes the total number of _________ while “diversity” describes the number of _________.
   A) species in a community; individual organisms in a community  
   B) organisms in a community; species in a community  
   C) individuals in a niche; niches available to a given species  
   D) species in a bioregion; trophic levels in a community  
   E) biomes; habitats available for different species

Use the following to answer question 75:

![Relative Biomass Accumulation of Major World Ecosystems](chart.png)
75. When looking at the relative biomass accumulation of major world ecosystems, ecosystem “a” is probably
A) desert. B) tropical rainforest. C) intensive agriculture. D) estuaries. E) temperate deciduous forest.

76. Complexity in an ecological community has to do with the number of
A) species in the population.
B) species at each trophic level.
C) genetic variations within a species.
D) primary producers available.
E) primary producers relative to the number of consumers.

77. A community that changes very little over time is said to have great

78. A “closed community” has a
A) narrow ecotone. B) gradual transition zone. C) wide ecotone.
D) very small area. E) large core area.

79. Primary succession occurs when a community develops ____________ while secondary succession occurs
when one ________.
A) into a climax community, species replaces another
B) and replaces another, ecosystem becomes stable
C) on unoccupied ground, biological community replaces another
D) and then fails, niche changes
E) intraspecific competition, experiences interspecific competition

80. Which of the following are pioneer species?
A) wood warblers B) dandelions C) starlings D) lichens E) humans

81. A climax community is one that
A) is relatively stable and long lasting. B) lasts forever.
C) contains oaks or white spruce. D) is impervious to disruption.
E) is adapted to periodic disruption.

82. The most common reason that introduced species cause trouble is because they
A) are larger than native species. B) disrupt pre-existing niches.
C) are unusually efficient predators. D) out compete the native species.
E) None of these are correct.

83. Which of the following migrations is likely to cause the extinction of a native species?
A) Migration of a member of a species of island birds to a large continent.
B) Migration of a pack of wolves to a nearby valley.
C) The introduction of a predator onto an island originally free from predators.
D) A seasonal move of large grazers that travel north in the summer and south in the winter.
E) The introduction of a new prey species onto an island originally free from this species.

84. Use specific species examples to explain how generalist species differ from specialist species. In your
explanation, make sure you emphasize the characteristics of the species.

85. Your roommate has a terrarium with plants, algae, snails, and a lizard. Which of the following terms best
describes the terrarium: community, population, environment, ecosystem, and habitat? Explain your reasoning.
86. Please summarize the secondary succession that takes place as a once forested area with a small intermittent stream flowing through it becomes a meadow. Include the species involved and the reason that this takes place.

87. The absence of certain lichens is used as an indicator of air pollution in remote areas such as national parks. How can we be sure that air pollution is really responsible? What evidence would be convincing?

88. What is the difference between saying that a duck has webbed feet because it needs to swim and saying that it is able to swim because it has webbed feet?

Chapter 6

89. In nature, most populations are
   A) slightly increasing most of the time.   D) always undergoing fluctuations.
   B) stable most of the time.              E) in a dynamic state of equilibrium.
   C) increasing most of the time.

90. Which of the following sequences is an example of geometric growth rate?
   A) 2, 4, 8, 16
   B) 1, 2, 4, 6
   C) 1, 3, 5, 7
   D) 3, 13, 23, 33
   E) All of these sequences are examples of geometric growth rate

91. A population growing at 1 percent per year should double in about ___ years.
   A) 30   B) 70   C) 10   D) 2   E) 0.7

92. The doubling time for a population with an annual growth rate of 0.07 is
   A) 1 year.   B) 5 years.   C) 10 years.   D) 50 years.   E) 100 years.

Use the following to answer questions 93-94:

On an island in the South Pacific, there is a population of 1,000 South Pacific Splendor Birds. There is no immigration or emigration but there are 40 births and 20 deaths per year.

93. The annual percentage growth rate of this population is
   A) 0.02%   B) 2.0%   C) 20%   D) -0.02%   E) -2%

94. The doubling time for the population of South Pacific Splendor Birds would be
   A) 2 years.   B) 3.5 years.   C) 7 years.   D) 20 years.   E) 35 years.

Use the following to answer questions 95-98:

95. Which of the curves in the diagram above represents exponential growth?
   A) a   B) b   C) c   D) d   E) e
96. Which of the curves in the diagram above represents arithmetic growth?
   A) a    B) b    C) c    D) d    E) e

97. The doubling time for curve “a” in the diagram above is
   A) constant.                D) predictable and continually increasing.
   B) unpredictable and continually increasing.  E) predictable and continually decreasing.
   C) unpredictable and continually decreasing.

98. The doubling time for curve “c” in the diagram above is
   A) constant.
   B) unpredictable and continually increasing.
   C) unpredictable and continually decreasing.
   D) predictable and continually increasing at a steady incremental rate.
   E) predictable and continually decreasing at a steady incremental rate.

99. An organism’s biotic potential is the maximum number of offspring
   A) that it can produce.                    D) it produces at one time.
   B) that survive to adulthood.              E) it actually produces over its lifetime.
   C) its habitat can support.

100. In the real world population explosion is usually followed by
   A) continuous high population levels.
   B) a gradual decrease in population as food supplies dwindle.
   C) a tremendous increase in genetic diversity.
   D) a gradual increase in population due to the availability of mates.
   E) a population crash.

101. A dieback, or population crash, often occurs after a species ______ its environmental carrying capacity.
     A) meets    B) undershoots    C) overshoots    D) oscillates around    E) decreases

102. Factors that limit growth and produce population equilibrium are known as

103. Which of the following types of population growth patterns would best represent a group of elephants that enter
     a new, open habitat, and become a stable part of that ecosystem?
     A) exponential growth    D) chaotic or catastrophic growth
     B) irruptive growth      E) logistic growth
     C) Malthusian growth

104. Logistic growth rates are those in which a population
     A) grows very slowly when conditions are good and when conditions are not optimal.
     B) grows rapidly when conditions are good, then slows as it approaches carrying capacity.
     C) overshoots and dies back repeatedly.
     D) remains significantly below carrying capacity.
     E) grows at a constant rate of increase per unit time.
     F) grows rapidly when conditions are good and crashes when conditions are not optimal.

105. The ability to produce rapid population overshoots can be a useful strategy for a species that tends to
     A) colonize new territory.        D) develop intricate niche relationships.
     B) maintain a firm position in its current habitat.   E) be part of a complex ecosystem.
     C) be part of a climax community.
106. You are studying an organism that is fairly large, matures slowly, lives fairly long, and cares for its offspring. This organism probably has a _____________ population growth strategy.
   A) logistic    B) Malthusian    C) irruptive    D) catastrophic    E) Both B and C

107. Natality is usually
   A) constant in a population.                       D) variable, depending on the number of recent deaths.
   B) constant for a species.                         E) variable, depending on environmental conditions.
   C) constant in an ecosystem.

108. An organism with _____________ “strategies” would be considered to have _____________ natality.
   A) logistic, high    B) Malthusian, high    C) logistic, low    D) Malthusian, low    E) Both B and C

109. The term “fecundity” refers to an organism’s _____________ while fertility is ____________.
   A) physical ability to reproduce, actual number of offspring produced
   B) actual number of offspring produced, physical ability to reproduce
   C) average life span, physical ability to reproduce
   D) replacement level of reproduction, actual number of offspring produced
   E) physical ability to reproduce, replacement level of reproduction

110. If there is no migration, the size of a population is limited solely by interaction between
   A) natality and fertility.                        D) natality and mortality.
   B) mortality and fecundity.                     E) life expectancy and survivorship.
   C) mortality and survivorship.

Use the following to answer questions 111-112:

**Mortality Curves by Age in the U.S.**

111. The Mortality Curve graph above shows that fewer American women than men die
   A) between the ages of 40 and 80.                  D) before age 40.
   B) between the ages of 10 and 30.                 E) at all ages.
   C) after age 40.

112. Based on the above graph, the average _____________ of people in the United States is around 80 years.
   A) survivorship     B) mortality     C) fecundity     D) life span     E) life expectancy

113. Life expectancy is the
   A) maximum life span that an individual of a given species could reach.
   B) number of individuals in a population that survive in a given year.
   C) number of years an individual of a certain age will probably live.
   D) probability that an individual will survive infancy.
   E) All of these are descriptions of life expectancy.
114. Survivorship is determined by
   A) the percentage of a cohort that survives to a certain age.
   B) number of individuals in a population that survive in a given year.
   C) number of years an individual of a certain age will probably live.
   D) probability that an individual will survive infancy.
   E) maximum life span that an individual of a given species could reach.

115. The longest period of life that a given type of organism can reach is known as

Use the following to answer questions 116-119:

116. Which of the curves in the graph above represents a species that tend to die more-or-less randomly at any age?
   A) a   B) b   C) c   D) d   E) None of these.

117. Which of the curves in the graph above represents an organism that live out a full life span if they survive early life?
   A) a   B) b   C) c   D) d   E) None of these.

118. Which of the following statements best describes the species represented by curve “d” in the graph above?
   A) Reproductive adult species have the highest rate of survival for this species.
   B) The rate of mortality is relatively constant throughout its life span.
   C) It is highly susceptible to mortality early in life.
   D) Once the individual reaches old age its survivorship decreases dramatically.
   E) It is highly susceptible to mortality early in life and late in life.

119. Which of the following statements best describes the species represented by curve “c” in the graph above?
   A) Reproductive adult species have the highest rate of survival for this species.
   B) The rate of mortality is relatively constant throughout its life span.
   C) It is highly susceptible to mortality early in life.
   D) Once the individual reaches old age its survivorship decreases dramatically.
   E) It is highly susceptible to mortality early in life and late in life.

120. Density-independent population control factors cause mortality
   A) when the population becomes too large.   B) when the density becomes too high.
   C) when the population becomes too small.   D) when the density becomes too low.
   E) regardless of population size.

121. Widespread starvation is an example of ________ population control.
   A) predator-caused   B) biotic   C) density-dependent   D) density-independent   E) abiotic
122. Which of the following is an abiotic population control?
   A) predation   B) disease   C) water shortages   D) prey shortages   E) competition

123. In general, abiotic regulatory factors tend to be _______ while biotic factors tend to be _______.
   A) interspecific, intraspecific
   B) intraspecific, interspecific
   C) density-dependent, density-independent
   D) density-independent, density-dependent
   E) interspecific, density-independent

124. Which of the following is an intraspecific interaction?
   A) mutualism
   B) territoriality
   C) parasitism
   D) predation
   E) All of these are examples of intraspecific interactions.

125. Island biogeography explains the phenomenon of ______ terrestrial species on islands small and far from the mainland when compared to larger islands that are closer to the mainland and have ______ terrestrial species.
   A) fewer, more
   B) more, fewer
   C) larger, smaller
   D) smaller, larger
   E) about the same, about the same

Use the following to answer questions 126-130:

126. In the diagram above, which of the islands would probably support more terrestrial species?
   A) a   B) b   C) c   D) d   E) e

127. In the diagram above, which of the islands would probably be more susceptible to an extinction of one of its terrestrial species?
   A) a   B) b   C) c   D) d   E) e

128. In the diagram above, which of the islands would probably be more susceptible to the introduction of an exotic species?
   A) a   B) b   C) c   D) d   E) e

129. In the diagram above, which of the islands would probably have more biodiversity?
   A) a   B) b   C) c   D) d   E) e
130. In the diagram above, which of the islands would probably have more abundance of terrestrial species?
   A) a    B) b    C) c    D) d    E) e

Use the following to answer questions 131-132:

Use the following information. DNA studies suggest that all existing cheetahs originated from a single female cheetah ancestor that survived in the not-too-distant past. Generally, all male cheetahs are now genetically identical and have deformed sperm and developmental problems with decreased reproductive success. The population is extremely vulnerable and genetically, may be predestined for extinction.

131. The first part of this scenario describes
   A) the founder effect or a demographic bottleneck.   D) Malthusian strategies.
   B) genetic drift.   E) inbreeding or a genetic drift.
   C) inbreeding.

132. A species that is similar to the cheetah is the elephant seal because
   A) the individuals in the population are basically genetically identical.
   B) the population is extremely vulnerable.
   C) the population is probably predestined for extinction
   D) the males in the population suffer from deformed sperm.
   E) All of these are true.

Use the following to answer questions 133-136:

133. The overshoot phase in the diagram above is marked by the letter
   A) a    B) b    C) c    D) d    E) e

134. The horizontal line on the population oscillation graph above represents
   A) fecundity    B) biotic potential.    C) predator populations.    D) arithmetic growth.    E) carrying capacity.

135. The dieback phase in the diagram above is marked by the letter
   A) a    B) b    C) c    D) d    E) e

136. The exponential phase in the diagram above is marked by the letter
   A) a    B) b    C) c    D) d    E) e

137. Draw survivorship curves for species that:
   a. live a long time if they survive the juvenile stage (has a high juvenile mortality rate) (5 pts)
   b. have high mortality rates early and late in life (5 pts)
   c. has a fairly constant rate of mortality (5 pts)
   
   Label the curves with a, b, or c according to the list above (6 pts). Appropriately label the x and y axis (10 pts). Include a distinction of the Dependency period, the Reproductive period, and the Postreproductive period (9 pts).
138. Draw the population curve for an organism that enters a new environment with unlimited resources. Label this curve “a.” Draw the population curve for an organism that enters a new environment and encounters limited resources. Label this curve “b.” Label the x and y axis. Label the diagram using the following terms: biotic potential, environmental resistance, carrying capacity, J-curve, and S-curve. Provide examples of an organism that has the population curve “a” and one that would have the curve “b.”

Chapter 7

139. Historically, up until the middle ages, populations were mostly limited by
   A) low fertility rates.                          D) religious restrictions on marriage.
   B) culturally-imposed family planning practices.  E) infanticide.
   C) disease, famine, and war.

140. Human population growth most closely resembles
   A) carrying capacity geometric increase.         D) S-shaped growth curve.
   C) Malthusian growth.

141. Historical evidence shows that plagues and diseases
   A) are highly effective at slowing population growth.
   B) affect population growth for at least a century.
   C) affect relatively few people in a population.
   D) are devastating to human population growth.
   E) cause only minor or temporary setbacks in population growth trends.

142. Technological optimists argue that technological advances have
   A) led to the increase in human population but whether we can continue is of great concern.
   B) proven Marx wrong in his predictions of famine and disaster.
   C) proven Malthus wrong in his predictions of famine and disaster.
   D) been developed because there are more people, supporting the view that more people are the “ultimate resource.”
   E) been a neutral factor in the issue of population growth.

143. Malthus and Marx
   A) worked together to form their theories.
   B) agreed about the root causes of overpopulation, poverty, and social upheaval.
   C) disagreed about the root causes of overpopulation, poverty, and social upheaval.
   D) held the same beliefs but worked on different issues.
   E) disagreed about the severity of overpopulation, poverty, and social upheaval.

144. The population theory held by Thomas Malthus was that the human population would
   A) never reach its environment's carrying capacity.
   B) develop a modern utopia.
   C) reach its environment's carrying capacity and then maintain equilibrium.
   D) maintain equilibrium with its carrying capacity.
   E) outstrip its resources, then suffer starvation and misery.

145. Neo-Malthusians argue that
   A) Malthus' eighteenth century theories apply to similar circumstances today.
   B) we should never return to the conditions observed by Malthus in his day.
   C) Malthus could be useful today if reinterpreted.
   D) Malthus was wrong from the start.
   E) None of these represent the viewpoint of Neo-Malthusians.
146. Disastrous famines in the past 200 years
   A) prove conclusively that Malthus was right.
   B) have mostly resulted from war and politics rather than from overpopulation.
   C) prove conclusively that Malthus was mistaken.
   D) have resulted from population overshoots based on overuse of resources.
   E) prove conclusively that Marx was mistaken.

147. Malthus argued that ____________ is the ultimate cause of social and environmental problems and Marx argued that population growth ____________ social and environmental problems.
   A) excess population growth, results from
   B) poverty, results from
   C) war, results from
   D) excess population growth, is also the ultimate cause of
   E) poverty, is the ultimate cause of

148. Human ingenuity and intelligence as the “ultimate resource” is the central theme in the argument of

149. The world human population reached 1 billion in about ________ and passed __________ in 1999.
   A) 1400; 78 bi llion    B) 1500 ; 6 rillion    C) 1600 ; 78million    D) 1700; 6 million    E) 1800; 6 billion

150. Graphs are widely used in communication because
   A) they can create powerful impressions by illustrating patterns of relationships.
   B) artifacts that distort the data can readily be seen by the untrained eye.
   C) they add interest and variety to textual material.
   D) they can be easily manipulated to distort the data presented.
   E) they are easier to create when compared to writing explanatory text.

151. Demography is the science that describes
   A) the earth's carrying capacity.    D) food production.
   B) population changes and characteristics.    E) environmental factors that affects population sizes.
   C) energy resources.

152. Ninety percent of the world's population growth in the next century is expected to occur in
   A) less-developed countries.    D) moderately-developed nations.
   B) China.    E) India
   C) developed countries.

153. Why is Russia's population declining?
   A) There is a one-child policy similar to the one in China and Thailand.
   B) There has been a massive education campaign to reduce births.
   C) The standard of living has decreased leading to lower infant mortality and lower birth rates.
   D) Russia's population is not declining.
   E) The standard of living has decreased leading to higher death rates and lower birth rates.

154. Most of the world's human settlements are clustered
   A) in wide, arable plains.    D) between 30 and 50 degrees north latitude.
   B) in mountainous regions.    E) in open valleys.
   C) along coastlines and rivers.
155. Crude birth rates are measured in terms of the number of children born
A) in a single year.   D) per 1000 people each year.
B) per family.          E) per 1000 people in the general population.
C) per family per year.

156. The total fertility rate is the number of children born
A) to the average woman per year.   D) in a population during a single year.
B) to the average woman during her lifetime.  E) in a population during an entire generation.
C) in the world during a single year.

157. The total fertility rate for upper class women in seventeenth and eighteenth century Europe was sometimes
A) less than one.   D) between 10 and 12.
B) between one and two.  E) greater than 20.
C) about eight.

158. The zero population growth rate is slightly over two children per couple because
A) we always need slightly more young people.
B) the older generation is dying.
C) some children die and some couples do not have children.
D) that is as low as birth rates can reasonably be expected to get.
E) The zero population growth rate is not slightly over two children per couple.

Use the following to answer questions 159-161:

159. According to the graph above, which region had the highest total fertility rate in 1998?
A) Africa   B) The Americas   C) Eastern Mediterranean    D) Europe   E) South-East Asia

160. According to the graph above, which region had the highest total fertility rate in 1950?
A) Africa   B) The Americas   C) Eastern Mediterranean    D) Europe   E) South-East Asia

161. According to the graph above, which region has the greatest fertility reduction?
A) Africa   B) The Americas   C) Eastern Mediterranean    D) Europe   E) South-East Asia

162. Demographers usually measure mortality in terms of
A) deaths per 1000 persons per year.   D) the total number of deaths per generation.
B) deaths per person per year.          E) total deaths in a population per year.
C) the number of children who die per year.

163. Which of the following factors does not usually affect the crude death rates of a population?
A) health care   D) nutrition
B) sanitation   E) All of these affect crude death rates.
C) age structure of the population
164. The difference between “total growth rate” and “natural increase” is that total growth rates
   A) include only the number of births and deaths.
   B) include immigration and emigration as well as births and deaths.
   C) include only immigration and emigration.
   D) include infant mortality as well as adult deaths.
   E) are not expressed as percentages.

165. The average age that a newborn can expect to attain in a given society is referred to as

166. The main cause of world population growth in the past 300 years has been
   A) increasing fecundity.  D) increasing immigration.
   B) rising fertility.  E) falling mortality.
   C) higher birthrates in developing countries.

Use the following to answer questions 167-168:

![Age Class Histograms]

167. The population represented by the age class histogram on the right above will
   A) have a large population of old people soon.  D) grow substantially in the future.
   B) not grow much in the coming years.  E) grow slowly in the future.
   C) soon begin to decline

168. The histogram on the left above represents a population whose birth rates
   A) have not changed for many years.
   B) have recently decreased.
   C) are gradually increasing.
   D) are sharply increasing.
   E) None of these – birth rates cannot be determined by the age class histogram.

169. A pyramid-shaped age-structure histogram is characteristic of a(n) ________ population.
   A) stable  B) expanding  C) declining  D) unpredictable  E) diminishing

170. A dependency ratio is a comparison between the numbers of
   A) working and nonworking people.  D) young infants and older adults.
   B) parents and children.  E) middle aged people and infants.
   C) old people and young people.
171. You were in a discussion with a classmate who complained that immigrants were taking away jobs and abusing social services. In response, another classmate who is a proponent of the open door policy explained that immigrants can actually be a bonus to a country. Someone supporting an open door policy would not use which of the following statements?
A) Immigrants are usually of a different racial or ethnic background and add cultural diversity.
B) Immigrants usually perform dangerous work that citizens are unwilling to do.
C) Immigrants usually perform work at a payscale that citizens are unwilling to accept.
D) Immigrants are usually welcomed by other immigrants or descendants of immigrants.
E) All of these would probably be used by someone supporting an open door policy.

172. Pronatalist pressures are influences that lead people to
A) increase fecundity. D) prevent infant mortality.
B) have more children. E) wait until later in life to have children.
C) have fewer children.

173. Women who ________ are least likely to have many children.
A) cannot afford children D) are able to earn an income for themselves
B) live where many children die young E) All of these.
C) are subordinate to their husbands

174. Birth rates in the United States have ______ during the last hundred years.
A) remained fairly constant D) risen steadily
B) fallen steadily E) decreased dramatically
C) fallen and risen repeatedly

175. There is some evidence that population growth today is ____________ rather than ______________.
A) slowing slightly, continuing to accelerate D) leveling off, decreasing
B) continuing to accelerate, slowing slightly E) leveling off, slowing slightly
C) increasing, leveling off

176. “Birth dearths” can be a problem because they cause
A) labor shortages. D) a decrease in taxpayers.
B) military weakness. E) All of these.
C) a decrease in workers.

177. The demographic transition refers to a country's change from
A) high birth and death rates to low birth and death rates.
B) high to low birth rates and low to high death rates.
C) low to high birth rates and high to low death rates.
D) a majority of young people to a majority of elderly people.
E) a majority of elderly people to a majority of young people.

Use the following to answer questions 178-180:

Use the following demographic data on three hypothetical countries.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertility (per female)</td>
<td>2.0</td>
<td>3.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Infant Mortality (per 1000 people)</td>
<td>9</td>
<td>69</td>
<td>62</td>
</tr>
<tr>
<td>Life Expectancy (years)</td>
<td>75.5</td>
<td>65</td>
<td>61</td>
</tr>
<tr>
<td>Per-capita Income (US$)</td>
<td>$21,700</td>
<td>$2,680</td>
<td>$370</td>
</tr>
<tr>
<td>Doubling Time (years)</td>
<td>89</td>
<td>37</td>
<td>19</td>
</tr>
</tbody>
</table>
178. The most industrialized country listed above is:
A) Country “A”
B) Country “B”
C) Country “C”
D) None of the countries listed are likely to be industrialized
E) It is impossible to use the data in the table to identify an industrialized country

179. Country “C” above probably has __________ rate of female literacy when compared to the other two countries.
A) the highest
B) an intermediate
C) the lowest
D) an equal
E) It is impossible to use the data in the table to identify the rate of female literacy.

180. Which of the following demographic categories best identifies Country “A” above?
A) Developed   B) Moderately Developed   C) Less developed   D) Developing   E) Third World

181. Proponents of social justice believe that environmental and social problems will decrease if
A) we can educate poor people about family planning.
B) resources are distributed fairly.
C) better ethics are taught to poor, uneducated populations.
D) we just reduce the number of people on Earth.
E) we concentrate on population control.

182. Supporters of “ecojustice” think we should
A) send North American natural resources to the developing world.
B) share our national parks with the developing world.
C) share resources with other species as well as with other people.
D) let the human population grow to the maximum possible size.
E) concentrate on population control.

183. __________ are the most numerous vertebrate species on Earth.
A) Fish   B) Insects   C) Rodents   D) Birds   E) Humans

184. Family planning means enabling people to
A) have fewer children so that the population growth rate can reach ZPG.
B) have no children.
C) have many children.
D) decide in advance how many children they should have.
E) have more children if they live in a country with a birth dearth.

185. Which of the following is a mechanical barrier to conception?
A) abortion   B) condoms   C) birth control pills   D) vasectomies   E) IUD

186. One of the __________ effective ways to stabilize populations is to __________.
A) most, provide free contraceptives   D) most, decrease child mortality
B) least, provide free contraceptives   E) most, expect mandatory sterilization.
C) least, decrease child mortality

187. As compared to China, India's population control programs have not been as successful as China's.
A) True   B) False
188. So far, the most successful and popular solution(s) to global overpopulation have been education and the provision of family planning services.
A) True    B) False

Please use a separate sheet of paper to respond to the following question.

189. Use birth rates, death rates, emigration rates, and fertility rates to explain a current example of the population dynamics in a nation's human population. Choose the nation you want to describe.

Chapter 8

190. The World Health Organization regards health as primarily a matter of __________ well being.
A) physical
B) mental and physical
C) social and mental
D) physical, mental, and social
E) physical and social

191. Diseases usually develop in response to _______ factors.
A) nutritional and diet
B) infectious or toxic
C) physical
D) psychological stress
E) All of these.

Use the following to answer questions 192-193:

One of the problems with using mortality rates for information about how much a disease affects the population is the lack of information about morbidity and the accompanying decrease in quality of life.

192. Health organizations now use the ______________, a tool to __________________.
A) DALY, judge the total impact of the disease rather than only measuring how many people die
B) DALY, judge the total impact of how many people die
C) Morbidity Measure, judge the total impact of the disease rather than only measuring how many people die
D) Morbidity Measure, judge the total impact of how many people die
E) Mortality and Morbidity Measure (3M), judge the total impact of the disease rather than only measuring how many people die

193. ______________, rather than ______________ are becoming the leading causes of disability and premature death worldwide.
A) Chronic conditions such as cardiovascular disease; infectious diseases such as malaria
B) Infectious diseases such as malaria; chronic conditions such as cardiovascular disease
C) Traffic deaths; infectious diseases such as malaria
D) Chronic conditions such as cardiovascular disease; traffic deaths
E) Infectious diseases such as malaria; traffic deaths

194. Historically, the greatest threats to human health came from
A) carcinogenic or toxic chemicals
B) psychological stress factors due to crowding
C) pathogenic organisms
D) teratogenic chemicals
E) injuries (intentional and unintentional)

195. Infectious diseases such as diarrhea are closely linked to
A) emotional stress
B) malnutrition
C) toxicity effects
D) the over consumption of fats
E) All of these exacerbate infectious diseases such as diarrhea.
196. Research on infectious diseases is a _______ priority for the US Government as shown by the ______________.
   A) high, large expenditures it contributes to the research
   B) high, small expenditures it contributes to the research
   C) high, support that the pharmaceuticals are providing to prevent AIDS
   D) low, large expenditures it contributes to the research
   E) low, small expenditures it contributes to the research

197. Which of the following practices contributes the least to antibiotic or pesticide resistance?
   A) Domestic farm animals are fed low doses of antibiotics to increase weight gain.
   B) A person takes the full course of the appropriate antibiotic when she has a virus infection.
   C) A person takes the full course of the appropriate antibiotic when she has a bacterial infection.
   D) A person takes an anti-malarial drug when he does not have malaria.
   E) Mosquito populations in the tropics have been sprayed with DDT for about 50 years.

198. Hazardous substances ______________ while toxins are ______________.
   A) react with specific cell components to kill cells, poisonous substances
   B) are dangerous substances, poisonous substances
   C) are usually of concern at all concentrations, are dangerous substances
   D) are poisonous substances, also poisonous substances
   E) All of these choices are true.

199. Toxic substances are dangerous because they
   A) react or interfere with specific cell functions.
   B) can physically remove or tear tissues.
   C) are usually synthetic.
   D) cause debilitating, parasitic diseases.
   E) cause excessive water accumulation in tissues.

200. Allergens are substances that
   A) repress the immune system.
   B) stimulate the nervous system.
   C) prevent oxygen uptake.
   D) activate the immune system.
   E) interfere with oxygen uptake.

201. Some particles or cells cause immune responses when your body's white blood cells recognize them as foreign objects. These are known as

202. Neurotoxins act by
   A) disrupting nerve cells.
   B) altering genetic material.
   C) repressing the immune system.
   D) disrupting normal hormone functions.
   E) cause abnormalities in nervous tissue during embryonic growth and development.

203. Endocrine disruptors
   A) disrupt nerve cells.
   B) alter genetic material.
   C) repress the immune system.
   D) disrupt normal hormone functions.
   E) cause abnormalities in nervous tissue during embryonic growth and development.

204. Radiation can act as a mutagen because it
   A) deactivates the immune system.
   B) interferes with the activity of nerve cells.
   C) causes muscles to grow at unusual rates.
   D) damages genetic material in cells.
   E) represses oxygen uptake.
205. Tumors can grow because of exposure to

206. Teratogens cause abnormal growth specifically in
   A) nerve cells.  B) muscle cells.  C) embryos.  D) the liver.  E) skin cells.

207. Fetal alcohol syndrome is caused by exposure to a(n)

208. Carcinogens are substances that cause
   A) a sensitized reaction.  D) immune responses.
   B) out of control cell growth and tumors.  E) Carcinogens can cause all of these reactions.
   C) birth defects.

209. A group of cells that grows extremely fast and begins to obstruct other cells' functions is known as

210. Among the most important characteristics of chemicals in determining their environmental risks is/are
   A) solubility.  B) reactivity.  C) persistence.  D) toxicity  E) All of these.

211. If solubility is an important characteristic in toxic material movement in the environment and body, which of the
   following statements is true?
   A) Water-soluble compounds require carriers to enter cells.
   B) Oil-soluble compounds readily damage kidneys.
   C) Water-soluble compounds move slowly in the environment.
   D) Oil-soluble compounds accumulate in the body.
   E) Solubility is not an important characteristic in toxic material movement.

212. Fat soluble contaminants
   A) tend to accumulate in the surface water of aquatic habitats.
   B) are easily excreted by organisms.
   C) tend to accumulate in soil, sediments, and organisms.
   D) commonly biomagnify from lower to higher trophic levels.
   E) have very low bioconcentration factors.

213. The biomagnification of DDT demonstrates that
   A) higher trophic level organisms can concentrate toxins in a type of “inverse biological pyramid.”
   B) birds should not depend on fish for food.
   C) DDT is easily metabolized and excreted by most organisms.
   D) DDT is an extremely water-soluble material.
   E) water-soluble toxins are widespread.

214. Bioaccumulation is important because it allows cells to
   A) accumulate essential nutrients and minerals.  D) reproduce more quickly.
   B) rid themselves of waste material.  E) have a ready source of energy is it is needed.
   C) protect themselves against toxins.

215. Biomagnification is a concentration of toxins
   A) within certain cells of the body.
   B) as predators consume and store toxins stored in the bodies of their prey.
   C) within the liver as an organism gets older.
   D) within the bodies of organisms at low trophic levels.
   E) None of these is true regarding biomagnification.
216. A chemical interaction in which one substance exacerbates the other is termed  
A) a persistent reaction. D) synergism.  
B) a bioaccumulation. E) metabolic degradation.  
C) an antagonistic reaction.

217. If 100 cups of strong coffee contain a lethal dose of caffeine, why don't coffee drinkers eventually die from caffeine overdoses?  
A) Coffee drinkers who drink more than 100 cups of coffee a week will eventually die from the bioaccumulation.  
B) Because of its molecular form, all of the caffeine is not actually absorbed into the body.  
C) Once the coffee cools the caffeine is not as strong as it was when the coffee was fresh.  
D) Coffee drinkers who drink more than 100 cups of coffee a month will eventually die from the bioaccumulation.  
E) Our bodies metabolize the caffeine before lethal concentrations are reached.

218. Our bodies minimize the effects of toxic compounds by all of the following except  
A) metabolic degradation.  
B) excretion.  
C) antagonistic reactions.  
D) repair mechanisms.  
E) All of these are ways that our bodies minimize the effects of toxic compounds.

219. Which of the following tissues are more likely to develop cancers?  
A) skin because there is high cellular reproduction rates to replace injured cells.  
B) eyes because they are always exposed to light.  
C) fat because of bioaccumulation.  
D) bones because of the increased radiation in our environment.  
E) No one tissue is more likely to develop cancer when compared to another type of tissue.

220. The saying “the dose makes the poison” means that  
A) almost nothing is toxic at low levels.  
B) nearly anything can be toxic at some level.  
C) some things are more poisonous than other things.  
D) toxic materials are measured in doses of lethal amounts.  
E) all things are equally poisonous at equal doses.

221. An advantage of testing for toxicity by exposing animals to chemicals is that using animals is  
A) cheaper than other methods. D) easier than using computer models.  
B) faster than other methods. E) a trusted and usually reliable way to get results.  
C) usually quite humane.

Use the following to answer questions 222-226:

[Graph showing a bell curve with peak at 20 ppm, with labels at 0, 10, 20, 30, and 40 ppm on the x-axis and "Number of First Responses" on the y-axis.]
222. The dose/response curve above shows that
A) some exposure is necessary before most individuals respond.
B) any exposure causes immediate response.
C) response levels off as dosage increases.
D) the dose decreases as response increases.
E) All of these are represented by the dose/response curve.

223. Individuals represented by the right end of the dose/response curve above (responding to doses between 30 and 40 ppm) are ____________ to the chemical.
A) very sensitive
B) very insensitive
C) about average in sensitivity
D) relatively insensitive
E) relatively sensitive

224. Referring to the the dose/response curve above, the greatest number of individuals respond to this toxin at a dosage of ___ ppm.
A) 5  B) 10  C) 20  D) 40  E) It is impossible to answer the questions with the data provided.

225. Individuals represented by the left end of the dose/response curve above (responding to doses between 0 and 10 ppm) are ____________ for that population.
A) very sensitive
B) very insensitive
C) about average in sensitivity
D) relatively insensitive
E) relatively sensitive

226. Individuals represented by the middle of the dose/response curve above (responding to doses of 20 ppm) are ____________ for that population.
A) very sensitive
B) very insensitive
C) about average in sensitivity
D) relatively insensitive
E) relatively sensitive

227. An LD50 is a dose of a toxic chemical that
A) is an acceptable level of risk for most individuals.
B) all individuals react to.
C) kills individuals 50 years old and over.
D) is 50 times less than the minimal dose.
E) kills half of the population.

228. Acute effects of a toxin appear
A) only after repeated exposure.
B) long after exposure.
C) immediately after exposure.
D) when there is sustained contact.
E) to cause permanent damage if the individual survives the initial exposure.

229. Chronic effects of a toxic response
A) are less harmful than acute effects.
B) can last a long time or be permanent.
C) rarely show up in time to be diagnosed.
D) are unlikely to be lethal.
E) are likely to kill the individual during the initial exposure.

230. Detection of toxic chemicals depends upon
A) how many chemicals are present.
B) how many individuals respond to them at a certain dosage.
C) the sensitivity of measuring techniques and how many chemicals are present.
D) whether or not individuals or groups of individuals are sensitive to them.
E) whether or not groups of individuals are sensitive to them.
231. Which of the following factors would explain the seemingly irrational behavior of a father who smokes (high risk factor for baby) throwing away his baby's teething rings that may contain phthalates (seemingly low risk factor for baby).
   A) People tend to downplay risks that are associated with activities they are committed to or enjoy.
   B) Most people do not understand the concepts of probability.
   C) News media can give a biased view of hazards.
   D) People tend to have an irrational fear of certain technologies that are not as well understood.
   E) All of these factors can lead to the relatively irrational behavior demonstrated by the father.

232. As a society, we usually focus money and attention on health risks that are
   A) most serious.                     D) statistically more likely to occur.
   B) easiest to clean up.              E) All of these receive equal money and attention.
   C) most well publicized and frightening.

233. Historically, which of the following considerations in setting standards for toxic exposure has been emphasized the least?
   A) Including information about how toxins affect natural ecological systems.
   B) Different members of the population have different sensitivities to toxins.
   C) Including information about both chronic and acute exposures to a toxin.
   D) Individuals in the human population have been exposed to many different kinds of toxins that may have additive or synergistic effects.
   E) All of these considerations have been used and are important in setting policy.

234. Two problems encountered in human health risk assessment are _______________________ and _____________________.
   A) use of chemical mixtures, lack of knowledge about synergistic effects
   B) lack of funding for federal mandates, lack of public support
   C) extrapolation of data to low doses, extrapolation of data from non-human species to humans
   D) lack of planning, the involvement of politics
   E) There are no inherent problems in human health risk assessment.

235. The DALY combines premature deaths and loss of healthy lives resulting from illness or injury.
   A) True    B) False

236. Pathogenic organisms are those that cause diseases.
   A) True    B) False

237. Malaria is caused by a parasitic protozoan transmitted by mosquitoes.
   A) True    B) False

238. One positive aspect of the current state world diseases is that domestic and wildlife are not experiencing epidemics.
   A) True    B) False

239. Toxins can be dangerous at the smallest concentrations (parts per trillion)?
   A) True    B) False
Chapter 9

240. Which of the following does not describe the status of the world's wild fisheries?
   A) Overharvesting threatens the fisheries.
   B) Subsidies are necessary to make the fisheries profitable.
   C) Fish farming has allowed wild fish to recover worldwide.
   D) Habitat destruction threatens the fisheries.
   E) All of these describe the status of wild fisheries.

241. Undernourished parents often raise children who are undernourished because the parents
   A) transfer genetic deficiencies to their children.
   B) do not know any better.
   C) cannot afford to feed their children properly.
   D) do not have access to the information about nutrition.
   E) All of these are reasons for the vicious cycle.

242. Food security has to do with
   A) a country's dependence on cash crop exports.
   B) preventing wars over diminishing food supplies.
   C) the ability of a population to obtain food on a day-to-day basis.
   D) the total volume of food a country imports.
   E) the total volume of aid a country receives.

243. Famines are most often serious when there is
   A) a very serious drought.
   B) no room to expand agriculture.
   C) steady population growth.
   D) armed conflict along with the natural disaster.
   E) an attempt by indigenous people to return to old traditions and lands.

244. People can suffer malnourishment if they consume large amounts of ______ instead of _______.
   A) fat and sugar, vitamins and protein
   B) proteins, carbohydrates
   C) vitamins, protein
   D) proteins and minerals, vitamins
   E) fiber, processed foods

245. Anemia is a common disease resulting from a shortage of dietary
   A) protein.  B) iodine.  C) iron.  D) vitamin A.  E) folic acid.

246. People who subsist on starchy foods such as cassava, potatoes, and white rice
   A) often receive insufficient protein.
   B) are usually severely overweight.
   C) have the healthiest possible diet.
   D) are sure to meet all their nutritional needs.
   E) are usually suffering from goiter.

247. Vitamin A deficiencies are associated with
   A) anemia.
   B) weak bones.
   C) a lack of energy, or listlessness.
   D) poorly developed neural systems in embryos.
   E) dry eyes and retinal degeneration.

248. What are two common diseases that result from protein deficiencies?
   A) dysentery and diarrhea
   B) dysentery and scurvy
   C) scurvy and pellagra
   D) goiter and cretinism
   E) marasmus and kwashiorkor
249. The three crops that humans rely on for the majority of nutrients and calories are
   A) potatoes, wheat, and oats.                    D) maiz e (corn), oats, and rice.
   B) wheat, rice, and maize (corn).                E) oats, beans, and barley.
   C) barley, oats, and rye.

250. Most humans rely on just a few of the world's animal and plant species for food because only a few
   A) are edible.                                  D) food types are what we are accustomed to eating.
   B) are available.                               E) All of these are true.
   C) have been discovered.

251. Which of the following is the most correct definition of soil?
   A) A complex of minerals that provide energy for plant growth.
   B) A complex mixture of organic matter, minerals, and living organisms.
   C) A mass of dead organic matter and detritus; dirt.
   D) An elaborate mixture of organic matter and minerals.
   E) All of these adequately describe soil.

252. Mineral particles in the soil are derived from
   A) underlying bedrock.                          D) materials transported and deposited by wind.
   B) materials transported and deposited by glaciers. E) All of these.
   C) materials transported and deposited by rivers.

253. When compared to sand and gravel, small soil particles (clay and silt) have ______ pore space.
   A) more                                       D) significantly more
   B) about the same                            E) It depends on the other minerals that are present.
   C) less

254. What component makes soil sticky, elastic, and impermeable?
   A) sands                                     B) organic matter                        C) living organisms
   D) clay                                      E) a large particle size

255. A “heavy” soil would have a high ____________ content.
   A) sand                                     B) iron                                    C) silt
   D) clay                                     E) gravel

Use the following to answer questions 256-258:

256. The soil types represented by the letters A, B, and C in the diagram above are ______, ______, and ______.
   A) peat, sandy soil, loam                  D) peat, loam, sandy soil
   B) loam, peat, sandy soil                 E) loam, sandy soil, peat
   C) sandy soil, loam, peat

257. In the graph above, which soil type has the highest sand content?
   A) A                                       B) B                                       C) C
   D) D                                       E) It is impossible to tell with the provided data.
258. In the graph above, which soil type has the most humus?
   A) A    B) B    C) C    D) D    E) It is impossible to tell with the provided data.

259. The critical organic component of soil that gives it its structure is termed
   A) clay    B) humus    C) parent material    D) heavy soil    E) bedrock

260. Which of the following cannot be found in soil?
   A) fungus and algae    D) insects and fungus
   B) algae and bacteria    E) All of these are found in soil.
   C) insects and bacteria

261. Soil organisms usually stay __________ the soil.
   A) deep below the surface of
   B) near the middle of
   C) close to the surface of
   D) spread uniformly throughout
   E) About half stay close to the surface and the other half stay deep below the surface of the soil.

262. The stratified horizontal layers of soils are called

263. Soil leaching involves
   A) rainwater seeping through soil and dissolving nutrients.
   B) the accumulation of organic matter in the uppermost soil layers.
   C) the elimination of pore space in soil.
   D) the microorganisms and their movements through the soil to aerate it.
   E) All of these.

264. Topsoil contains predominantly
   A) organic material.    D) insoluble minerals and sand.
   B) mineral material.    E) mixed organic and mineral particles.
   C) plant roots.

265. Which of the following would have nearly zero or zero topsoil?
   A) virgin prairies    B) deserts    C) tropical rainforests    D) tundra    E) All of these have topsoil.

266. The parent material layer of a soil is composed of weathered

Use the following to answer questions 267-269:

![Graph showing organic content by horizon layers]

- [X] Horizon layer A
- [X] Horizon layer C
- [X] Horizon layer D

- Which horizon layer has the highest organic content?
  - A) A
  - B) C
  - C) D

- Which horizon layer has the lowest organic content?
  - A) A
  - B) C
  - C) D

- Which horizon layer contains the most organic matter?
  - A) A
  - B) C
  - C) D
267. The letters A, B, C, and D on the graph above represent different horizons in a soil. The letters represent, in order,  
A) topsoil; parent material; bedrock; subsoil. 
B) subsoil; parent material; bedrock; topsoil. 
C) parent material; topsoil; subsoil; bedrock. 
D) topsoil; subsoil; parent material; bedrock. 
E) bedrock; subsoil; parent material; topsoil.

268. In which horizon layer of the graph above would you find the most plant roots? 
A) A    B) B    C) C    D) D    E) It is impossible to tell with the provided data.

269. Which horizon layer of the graph above would be impenetrable? 
A) A    B) B    C) C    D) D    E) It is impossible to tell with the provided data.

270. The richest farming soils that form under the grasslands of central North America and under moist deciduous forests are the 
A) latisols and aridisols. 
B) ultisols and mollisols. 
C) mollisols and alfisols. 
D) entisols and ultisols. 
E) alfisols and ultisols.

271. In developed countries, the most recent increases in agricultural productivity have come from 
A) irrigation in arid areas. 
B) building up soil reserves on farms worldwide. 
C) clearing rainforests. 
D) an increase on the land being used for agriculture, especially in developed countries. 
E) new crop varieties and intensified farming.

272. Which of the following areas has the greatest potential for future productive farmland with the least amount of ecological damage? 
A) tropical moist forests in Asia 
B) tropical moist forests in South America 
C) tropical seasonal forests in Brazil 
D) subtropical grassland in Texas 
E) subtropical grassland in Argentina

273. Which of the following are forms of chemical deterioration of soil? 
A) salinization and acidification 
B) waterlogging and laterization 
C) compaction and nutrient depletion 
D) pollution and waterlogging 
E) water and wind erosion

274. Rill erosion leads to 
A) sheet erosion. 
B) wind erosion. 
C) gullying. 
D) soil compaction. 
E) salinization and waterlogging

275. Wind erosion is most likely to cause problems in 
A) forested grazing lands on high mountains. 
B) open, arid regions. 
C) fertile river bottoms with annual floods. 
D) agricultural regions in the far north. 
E) protected, arid region.

276. About what portion of world freshwater withdrawals is used for agriculture? 
A) 1/10    B) 1/20    C) 3/4    D) 9/10    E) 1/2

277. Waterlogging results from 
A) toxic metal accumulation. 
B) excessive irrigation. 
C) excessive plowing. 
D) natural wind erosion processes. 
E) natural water erosion processes.
278. Salinization is a common agricultural problem in what type of region?
   A) arid   B) cold   C) tropical   D) humid   E) windy

279. The efficiency of irrigation water use is ______ in most countries. One of the reasons for this is
   A) high, the abundance of water
   B) high, the careful use of water because it is so expensive.
   C) high, the technology to distribute the water where it is needed is available.
   D) low, the lack of availability of technology to distribute the water where it is needed.
   E) low, evaporative losses from unprotected water channeling.

280. Legumes are plants whose roots contain bacteria that can fix nitrogen and naturally fertilize the plant. Which of
   the following are legumes?
   A) peas, beans, and alfalfa
   B) carrots, potatoes, and beets
   C) peas, spinach, and rhubarb
   D) celery, carrots, and onions
   E) beans, grasses, and root crops (potatoes, etc.)

281. “Green manure” is
   A) fresh animal waste that has not aged.
   B) green plants, especially legumes that are planted and then plowed under.
   C) green plants, especially grasses that are raised for animal fodder.
   D) commercial fertilizer that is certified organic.
   E) fresh animal waste that is certified organic.

282. Which of the following uses the least amount of energy in industrialized farming practices?
   A) fuel for tractors and other machines
   B) production of chemical fertilizers
   C) pumping groundwater
   D) drying the crops
   E) transporting the crops to market.

283. High responder crops of the green revolution produce tremendous yields
   A) even in severe drought conditions.
   B) with primitive farming techniques and no chemical use.
   C) in response to fertilizers, pesticides, and irrigation.
   D) in all conditions where standard crops fail.
   E) in response to fertilizers, pesticides, and irrigation and only “good” yields in less than ideal situations.

284. Fifty years ago, there were several hundred varieties of wheat grown in the Middle East. Now a few of the more
   modern high responder varieties have replaced the indigenous species. What are the implications of this change?
   A) The productivity of wheat should continue to rise and increase the availability of food per person.
   B) Genetic resources are diminished and an epidemic of wheat disease is highly likely due to the reliance on
      few species.
   C) The high responder varieties will need specialized harvesting methods because they are so productive.
   D) The biodiversity of wheat species has increased because of the introduction of few hybrid species.
   E) All of these.

285. The first Genetically modified animal for human consumption is a Salmon with extra growth hormones. Which
   of the following is not a concern about this animal?
   A) They will probably out compete wild salmon for mates.
   B) Eating this fish will add extra hormones into our diet.
   C) They will probably out compete wild salmon for food.
   D) They will probably out compete wild salmon for habitat.
   E) These are all worries about the GM salmon.
286. Which is the best cropping method for reducing erosion?
A) rotating corn, wheat, and clover  D) growing clover continuously
B) growing corn continuously  E) None of these is more effective in reducing erosion.
C) growing wheat continuously

287. Annual row crops such as __________ cause the highest topsoil erosion rates because ____________.
A) corn and coffee, they use so many nutrients
B) wheat and coffee, they need so much water
C) tea and beans, plowing in the fall is required for planting of these annual spring crops
D) beans and coffee, trees are usually cut down for the fields
E) corn and beans, soil is left bare for the majority of the year

288. An effective way to measure soil erosion in a region is to measure the
A) amount of dust in the air.  D) distance the dust travels.
B) sediment load of rivers.  E) All of these are effective ways to measure the loss.
C) amount lost on crop fields.

289. Contour plowing and strip farming are methods designed to
A) prevent weed spreading.  D) prevent water and soil loss.
B) improve plowing efficiency.  E) make farms more attractive.
C) improve harvesting efficiency.

290. Which of the following is the best way to ensure soil health?
A) maintaining clean, open ground between rows
B) strip farming and leaving residues on fields after harvest
C) clearing fields immediately after harvesting.
D) establishing ridges running up and down hills.
E) All of these are good practices in ensuring soil health.

291. Another word for cover crops is
A) mulch.  B) strip farming.  C) green manure.  D) shade planting.  E) All of these.

292. Which of these is not a benefit found with reduced tillage farming?
A) water conservation  D) soil aeration and loosening
B) soil preservation  E) decreased insects and weeds
C) increased crop yields

293. One of the drawbacks of leaving crop residues on a field after harvest is increased
A) cost due to the high cost of fertilizers.  D) energy use of machinery.
B) pest and disease problems.  E) wind erosion
C) salinization.

294. The benefits of leaving crop residues on a field after harvest include
A) protecting soil organisms.  D) reducing soil temperatures.
B) reducing evaporation.  E) All of these.
C) breaking the erosive effects of wind and water.
295. The figure above shows that
   A) runoff and soil loss increases simultaneously.
   B) runoff decreases as soil loss rises.
   C) runoff and soil loss change in opposite ways as land uses change.
   D) soil loss causes increased runoff.
   E) It is impossible to tell with the provided data.

296. According to the graph above, which of the land use types is the most sustainable?
   A) bare soil
   B) continuous corn cropping
   C) crop rotation
   D) maintaining grass cover
   E) It is impossible to tell with the provided data.

297. Agricultural cropland is shrinking worldwide.
   A) True    B) False

298. Sustainable farming is safer than conventional farming, but much more expensive.
   A) True    B) False

299. Buying shade grown coffee and cocoa has a minimal effect on local ecosystems where they are grown.
   A) True    B) False
300. What is the texture of a soil that is 50% Clay, 30% Sand and 20% Silt
   A) Silty Clay  B) Sandy Clay  C) Loam  D) Clay

301. What is the texture of a soil that is 30% Clay, 30% Sand and 40% Silt
   A) Sandy Clay Loam  B) Clay Loam  C) Silty Clay Loam  D) Loam

302. What is the texture of a soil that is 10% Clay, 60% Sand and 30% Silt
   A) Loam  B) Sandy Loam  C) Loamy Sand  D) Sandy Clay Loam

303. What is the texture of a soil that is 30% Clay, 60% Sand and 10% Silt
   A) Sandy Clay Loam  B) Sandy Clay  C) Loam  D) Clay Loam

304. A loam soil with 40% Sand cannot have a silt content greater than
   A) 30%  B) 40%  C) 50%  D) 20%
Answer Key

1. E relationships between organisms and their environment.
2. A Mass is a component of matter.
4. D Disposable goods are not going “away” when we throw them out.
5. E is used repeatedly.
6. D compound.
7. E C
9. E lipid, protein
10. D genetic storage, cellular membrane structure
11. C compound.
12. E the smallest unit in which life processes go on.
14. E Both A and C are true.
15. C stored
16. A kinetic
17. B potential energy into kinetic energy.
18. A under normal circumstances neither energy or matter is created nor destroyed.
20. B sunlight, chemical bond
21. E I – 2
22. A water, carbon dioxide, and energy.
23. B releases energy from chemical bonds of molecules such as glucose.
24. A produce fertile offspring in nature.
25. D population.
26. A populations living and interacting in an area.
27. C
a biological community and its physical environment.
28. B
   open
29. D
   energy flow
30. B
   self-regulating and self-stabilizing.
31. E
   its rate of producing biomass.
32. A
   The rate of decomposition is high.
33. E
   biological material.
34. D
   food chain.
35. A
   short and less complex
36. E
   producers.
37. D
   herbivores.
38. E
   plants and animals.
39. D
   carnivores.
40. A
   primary producers.
41. B
   10, 1
42. A
   consume nonliving organic matter.
43. E
   energy
44. D
   they store carbon.
45. A
   amino acids and proteins.
46. D
   inaccessible to most plants.
47. B
   very slowly.
48. A
   burning of fossil fuels
49. C
   photosynthesis
50. E
   phosphorous cycle
51. B
   any environmental conditions
52. E
   many, a specific critical factor
53. D
   critical factor
54. D
   rainbow trout
55. E any of these, depending on the system.
56. A narrow, critical factor
57. B zone of physiological stress
58. D optimal range
59. C population; physiological modifications at the individual level
60. B Leaves becoming thick and leathery on a plant growing in a dry, hot climate.
61. B tall flowers cannot reproduce.
62. E unrelated species to look like each other.
63. B occupies a variety of ecological niches.
64. A genetic determinants.
65. B They do not compete for the nectar because they feed at different times of the day.
66. A prey species develop defensive characteristics.
67. C interspecific competition.
68. D The life cycle of dragonflies (the larva live in the water).
69. C intraspecific competition
70. A one species benefits while the other neither suffers nor benefits.
71. B interspecific competition.
72. D commensalism.
73. D the amount of biomass produced in the community.
74. B organisms in a community; species in a community
75. A desert.
76. B species at each trophic level.
77. D constancy.
78. A narrow ecotone.
79. C on unoccupied ground, biological community replaces another
80. D lichens
81. A is relatively stable and long lasting.
82. B
disrupt pre-existing niches.

83. C
The introduction of a predator onto an island originally free from predators.

84. For a total of 6 points (Note: The numbers can be changed to fit your assessment needs.)
   6 = Provided an accurate example for specialist and generalist species; Accurately explained how generalists differ from specialists; Accurately described the characteristics that make the species a specialist or generalist; Communicated effectively with a well written analysis
   4 = Provided an inaccurate example for specialist and generalist species; Accurately explained how generalists differ from specialists; Accurately described the characteristics that make the species a specialist or generalist; Communicated with a fairly well written analysis
   2 = Provided an inaccurate example for specialist and generalist species; Inaccurately explained how generalists differ from specialists; Accurately described the characteristics that make the species a specialist or generalist; Communicated with a poorly written analysis
   0 = Provided an inaccurate example for specialist and generalist species; Inaccurately explained how generalists differ from specialists; Inaccurately described the characteristics that make the species a specialist or generalist; Communicated with a very poorly written analysis

85. For a total of 10 points (Note: The numbers can be changed to fit your assessment needs.)
   10 = Identified an appropriate term; Supported choice of term with accurate and appropriate explanation; Communicated effectively with a well written analysis
   5 = Identified an inappropriate term; Supported choice of term with accurate and appropriate explanation; Communicated with a fairly well written analysis
   0 = Identified an inappropriate term; Supported choice of term with inaccurate and inappropriate explanation; Communicated with a poorly written analysis

86. Forest - Tree falls into the stream - Stream creates a pond - Trees fall into the pond - New soil is formed - Grasses move in

87. Teacher Grade

88. Teacher grade

89. E
   in a dynamic state of equilibrium.

90. A
   2, 4, 8, 16

91. B
   70

92. C
   10 years.

93. B
   2.0%

94. E
   35 years.

95. A
   a

96. C
   c

97. E
   predictable and continually decreasing.

98. E
   predictable and continually decreasing at a steady incremental rate.

99. A
   that it can produce.

100. E
    a population crash.

101. C
    overshoots

102. C
    environmental resistance.
103. E logistic growth
104. B grows rapidly when conditions are good, then slows as it approaches carrying capacity.
105. A colonize new territory.
106. A logistic
107. E variable, depending on environmental conditions.
108. E Both B and C
109. A physical ability to reproduce, actual number of offspring produced
110. D natality and mortality.
111. A between the ages of 40 and 80.
112. E life expectancy
113. C number of years an individual of a certain age will probably live.
114. A the percentage of a cohort that survives to a certain age.
116. B b
117. A a
118. C It is highly susceptible to mortality early in life.
119. E It is highly susceptible to mortality early in life and late in life.
120. E regardless of population size.
121. C density-dependent
122. C water shortages
123. D density-independent, density-dependent
124. B territoriality
125. A fewer, more
126. A a
127. D d
128. D d
129. A a
130. A
A the founder effect or a demographic bottleneck.

A the individuals in the population are basically genetically identical.

B b

carrying capacity.

C c

For a total of 20 points (Note: The numbers can be changed to fit your assessment needs.)

20 = Used appropriate/accurate labels for both axes; Used appropriate/accurate scale for both axes; Used appropriate/accurate labels for graph; Drew accurate graph

15 = Used inappropriate/inaccurate labels for both axes; Used appropriate/accurate scale for both axes; Used appropriate/accurate labels for graph; Drew accurate graph

10 = Used inappropriate/inaccurate labels for both axes; Used inappropriate/inaccurate scale for both axes; Used appropriate/accurate labels for graph; Drew accurate graph

5 = Used inappropriate/inaccurate labels for both axes; Used inappropriate/inaccurate scale for both axes; Used inappropriate/inaccurate labels for graph; Drew accurate graph

0 = Used inappropriate/inaccurate labels for both axes; Used inappropriate/inaccurate scale for both axes; Used inappropriate/inaccurate labels for graph; Drew inaccurate graph

C disease, famine, and war.

E J-shaped growth curve.

E cause only minor or temporary setbacks in population growth trends.

C proven Malthus wrong in his predictions of famine and disaster.

C disagreed about the root causes of overpopulation, poverty, and social upheaval.

E outstrip its resources, then suffer starvation and misery.

A Malthus' eighteenth century theories apply to similar circumstances today.

B have mostly resulted from war and politics rather than from overpopulation.

A excess population growth, results from

A Julian Simon.

E 1800; 6 billion

A they can create powerful impressions by illustrating patterns of relationships.

B population changes and characteristics.

A less-developed countries.

E The standard of living has decreased leading to higher death rates and lower birth rates.
154. C  along coastlines and rivers.
155. D  per 1000 people each year.
156. B  to the average woman during her lifetime.
157. E  greater than 20.
158. C  some children die and some couples do not have children.
159. A  Africa
160. C  Eastern Mediterranean
161. E  South-East Asia
162. A  deaths per 1000 persons per year.
163. E  All of these affect crude death rates.
164. B  include immigration and emigration as well as births and deaths.
165. A  life expectancy.
166. E  falling mortality.
167. D  grow substantially in the future.
168. B  have recently decreased.
169. B  expanding
170. A  working and nonworking people.
171. E  All of these would probably be used by someone supporting an open door policy.
172. B  have more children.
173. D  are able to earn an income for themselves
174. C  fallen and risen repeatedly
175. A  slowing slightly, continuing to accelerate
176. E  All of these.
177. A  high birth and death rates to low birth and death rates.
178. A  Country “A”
179. C  the lowest
180. A  Developed
181. B
resources are distributed fairly.
182. C
share resources with other species as well as with other people.
183. E
Humans
184. D
decide in advance how many children they should have.
185. B
condoms
186. D
most, decrease child mortality
187. A
True
188. A
True
189. For a total of 20 points (Note: The numbers can be changed to fit your assessment needs.)
   20 = Used the four terms appropriately and accurately in the explanation; Communicated effectively with a well written explanation
   15 = Used three terms appropriately and accurately in the explanation; Communicated with a fairly well written explanation
   10 = Used two terms appropriately and accurately in the explanation; Communicated with a poorly written explanation
   5 = Used one term appropriately and accurately in the explanation; Communicated with a poorly written explanation
   0 = Used no terms appropriately and accurately in the explanation; Communicated with a very poorly written explanation
190. D
physical, mental, and social
191. E
All of these.
192. A
DALY, judge the total impact of the disease rather than only measuring how many people die
193. A
Chronic conditions such as cardiovascular disease; infectious diseases such as malaria
194. C
pathogenic organisms.
195. B
malnutrition.
196. E
low, small expenditures it contributes to the research
197. C
A person takes the full course of the appropriate antibiotic when she has a bacterial infection.
198. B
are dangerous substances, poisonous substances
199. A
react or interfere with specific cell functions.
200. D
activate the immune system.
201. B
antigens.
202. A
disrupting nerve cells.
203. A
disrupt nerve cells.
damages genetic material in cells.

205. B
mutagens.

206. C
embryos.

207. D
teratogen.

208. B
out of control cell growth and tumors.

209. A
a malignant tumor.

210. E
All of these.

211. D
Oil-soluble compounds accumulate in the body.

212. D
commonly biomagnify from lower to higher trophic levels.

213. A
higher trophic level organisms can concentrate toxins in a type of “inverse biological pyramid.”

214. A
accumulate essential nutrients and minerals.

215. B
as predators consume and store toxins stored in the bodies of their prey.

216. D
synergism.

217. E
Our bodies metabolize the caffeine before lethal concentrations are reached.

218. C
antagonistic reactions.

219. A
skin because there is high cellular reproduction rates to replace injured cells.

220. B
nearly anything can be toxic at some level.

221. E
a trusted and usually reliable way to get results.

222. A
some exposure is necessary before most individuals respond.

223. B
very insensitive

224. C
20

225. A
very sensitive

226. C
about average in sensitivity

227. E
kills half of the population.

228. C
immediately after exposure.

229. B
can last a long time or be permanent.

230. C
the sensitivity of measuring techniques and how many chemicals are present.

231. E
All of these factors can lead to the relatively irrational behavior demonstrated by the father.
232. C  
    most well publicized and frightening.

233. A  
    Including information about how toxins affect natural ecological systems.

234. C  
    extrapolation of data to low doses, extrapolation of data from non-human species to humans

235. A  
    True

236. A  
    True

237. A  
    True

238. B  
    False

239. A  
    True

240. C  
    Fish farming has allowed wild fish to recover worldwide.

241. C  
    cannot afford to feed their children properly.

242. C  
    the ability of a population to obtain food on a day-to-day basis.

243. D  
    armed conflict along with the natural disaster.

244. A  
    fat and sugar, vitamins and protein

245. C  
    iron.

246. A  
    often receive insufficient protein.

247. E  
    dry eyes and retinal degeneration.

248. E  
    marasmus and kwashiorkor

249. B  
    wheat, rice, and maize (corn).

250. D  
    food types are what we are accustomed to eating.

251. B  
    A complex mixture of organic matter, minerals, and living organisms.

252. E  
    All of these.

253. C  
    less

254. D  
    clay

255. D  
    clay

256. C  
    sandy soil, loam, peat

257. A  
    A

258. D  
    D

259. B
humus
260. E
All of these are found in soil.
261. C
close to the surface of
262. B
soil horizons.
263. A
rainwater seeping through soil and dissolving nutrients.
264. E
mixed organic and mineral particles.
265. B
deserts
266. E
rock fragments.
267. D
topsoil; subsoil; parent material; bedrock.
268. A
A
269. D
D
270. C
mollisols and alfisols.
271. E
new crop varieties and intensified farming.
272. E
subtropical grassland in Argentina
273. A
salinization and acidification
274. C
gullying.
275. B
open, arid regions.
276. C
3/4
277. B
excessive irrigation.
278. A
arid
279. E
low, evaporative losses from unprotected water channeling.
280. A
peas, beans, and alfalfa
281. B
green plants, especially legumes that are planted and then plowed under.
282. D
drying the crops
283. C
in response to fertilizers, pesticides, and irrigation.
284. B
Genetic resources are diminished and an epidemic of wheat disease is highly likely due to the reliance on few species.
285. B
Eating this fish will add extra hormones into our diet.
286. A
rotating corn, wheat, and clover
287. D
beans and coffee, trees are usually cut down for the fields
288. B
sediment load of rivers.
289. D
prevent water and soil loss.
290. B
strip farming and leaving residues on fields after harvest
291. C
green manure.
292. E
decreased insects and weeds
293. B
pest and disease problems.
294. E
All of these.
295. A
runoff and soil loss increases simultaneously.
296. D
maintaining grass cover
297. A
True
298. B
False
299. B
False
300. D
Clay
301. B
Clay Loam
302. B
Sandy Loam
303. A
Sandy Clay Loam
304. C
50%