

**Standard 2 Review** (Approximately 20% of EOC Questions)

**Standard 2.1** Analyze the interdependence of living organisms within their environments.

o.2.1.1 Analyze the flow of energy and cycling of matter (such as water, carbon, nitrogen and oxygen) through ecosystems relating the significance of each to maintaining the health and sustainability of an ecosystem.

Word Bank: abiotic, biotic, consuming other organisms, photosynthesis, producer, heterotroph, autotroph, carnivores, consumers, decomposers, herbivores, producers, herbivore, omnivores, scavengers, consumer

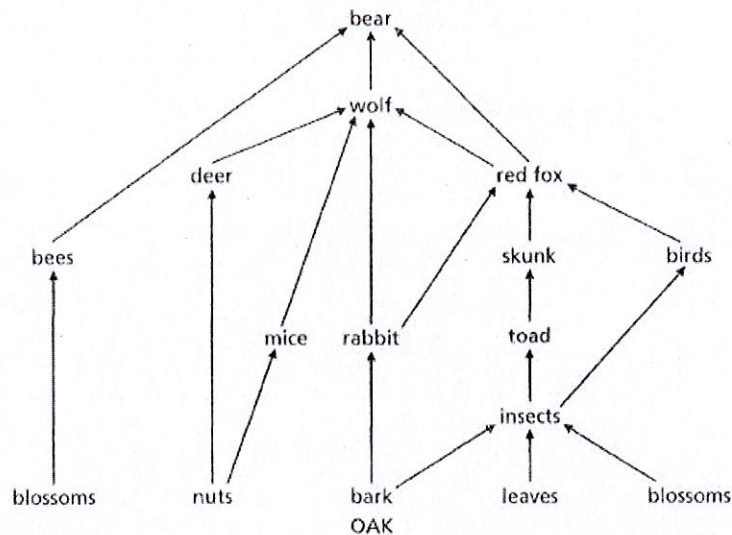
1) A plant is an example of a/an \_\_\_\_\_ or a \_\_\_\_\_.  
It gets its energy by \_\_\_\_\_.

2. A deer is an example of a/an \_\_\_\_\_ or a \_\_\_\_\_, or an \_\_\_\_\_.  
It gets its energy by \_\_\_\_\_.

- \_\_\_\_\_ 3) Nonliving factors that affect an organism – ex. weather, rain, soil composition
- \_\_\_\_\_ 4) Living factors that affect an organism – ex. other animals, plants, bacteria
- \_\_\_\_\_ 5) Organisms that can make their own food
- \_\_\_\_\_ 6) Organisms that cannot make their own food
- \_\_\_\_\_ 7) Organisms that eat dead animals.
- \_\_\_\_\_ 8) Organisms that break down dead organisms & return nutrients to the soil for plants.
- \_\_\_\_\_ 9) Animals that eat plants and animals.
- \_\_\_\_\_ 10) Animals that eat plants.
- \_\_\_\_\_ 11) Animals that eat other animals.

12) Put in order from smallest to largest: Community, Ecosystem, Organism, Population:

a. Which of these includes both biotic and abiotic factors? \_\_\_\_\_



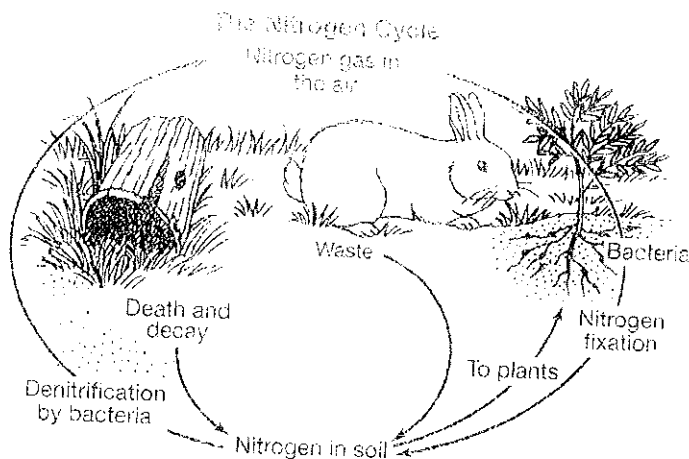
13) Which would have the greatest impact on this ecosystem: removal of mice or removal of insects?

14) List the four producers in the food web: \_\_\_\_\_

15) The bear is a \_\_\_\_\_ consumer.

16) Which population in the food web would have the least amount of available energy? \_\_\_\_\_

17) Which populations in the food web would have the greatest amount of available energy?  
\_\_\_\_\_



18) In the nitrogen cycle above, how do animals affect the nitrogen cycle?

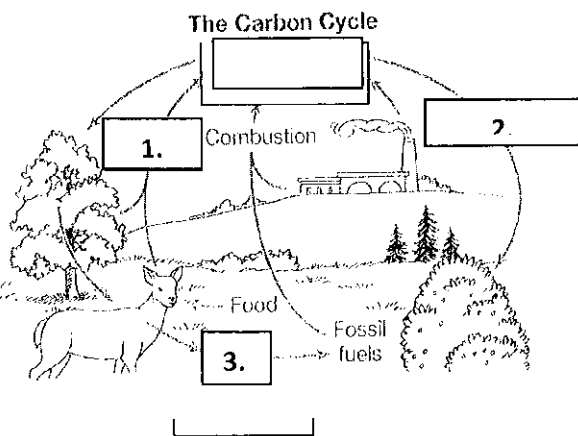
- a. consume plants that contain nitrogen and return nitrogen to ground via waste
- b. contain nitrogen-fixing bacteria to help them breathe nitrogen gas
- c. decrease nitrogen levels by consuming plants
- d. none of the above

19) In the nitrogen cycle above, what role do nitrogen-fixing bacteria play?

- a. They increase the amount of nitrogen by producing more of it for plants to grow
- b. They decrease the amount of nitrogen by breaking down nitrogen into a form plants can use
- c. The amount of nitrogen stays the same because the bacteria convert the nitrogen into a form plants can use
- d. none of the above

20) Why is nitrogen important in synthesizing (making) proteins and DNA?

21) Deconstruct the carbon cycle as it relates to photosynthesis, cellular respiration, and decomposition, and climate change. Label #1, 2, and 3 in this diagram using these words: respiration, photosynthesis, decomposition.



- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

22) How would the following affect carbon levels in the atmosphere?

- a. Greenhouse gases \_\_\_\_\_
- b. Volcanic eruptions \_\_\_\_\_

**Bio.2.1.2** Analyze the survival and success of organisms in terms of behavioral, structural, & reproductive adaptations. Classify as "Innate", "Learned", or "Social" Behavior:

- \_\_\_\_\_ 23) Suckling
- \_\_\_\_\_ 24) Habituation – Ex. Tapping on a table will initially cause a snail to pull back into its shell. Eventually, if nothing bad happens, the snail will habituate and stay out of its shell.
- \_\_\_\_\_ 25) Positive phototaxic response – Ex. Moths moving towards light
- \_\_\_\_\_ 26) Bees doing a waggle dance when they find food; Ants leaving trails of pheromones
- \_\_\_\_\_ 27) Territorial behavior – Ex. Male dogs urinating
- \_\_\_\_\_ 28) Male birds dancing to attract females (courtship)
- \_\_\_\_\_ 29) Migration to warmer climates for feeding and reproduction during the winter.
- \_\_\_\_\_ 30) Estivation – slowing of body processes in hot, dry climates.
- \_\_\_\_\_ 31) Imprinting – Ex. baby geese attaching to their mother during a critical period.
- \_\_\_\_\_ 32) Classical Conditioning – Ex. Pavlov's dogs associating a bell with the arrival of food.
- \_\_\_\_\_ 33) Hibernation – slowing of body processes in cold climates.
- \_\_\_\_\_ 34) Fight-or-Flight response
- \_\_\_\_\_ 35) Mice finding food in a maze

| Internal Fertilization | External Fertilization |                                                 |
|------------------------|------------------------|-------------------------------------------------|
|                        |                        | Sexual reproduction                             |
|                        |                        | Fertilization occurs inside the body            |
|                        |                        | Fertilization occurs outside the body           |
|                        |                        | Example is fish                                 |
|                        |                        | Example is mammal                               |
|                        |                        | Female lays eggs, male spawns to fertilize eggs |

36. Place each of the following in the correct category:

- Requires two individuals – male and female
- No fertilization occurs
- Great variation – broad differences
- Mitosis results in exact copy of parent cell
- No gametes formed
- Meiosis results in half (23 in humans) # of chromosomes
- No variation, offspring exact copy (clone) of parent
- Gametes (sex cells) are formed; sperm – males, egg – female
- Requires one individual
- Fertilization fuses gametes to make a zygote

| Sexual Reproduction | Asexual Reproduction |
|---------------------|----------------------|
|                     |                      |
|                     |                      |
|                     |                      |

|  |  |
|--|--|
|  |  |
|--|--|

| Innate | Imprinting | Habituation | Conditioning |
|--------|------------|-------------|--------------|
|        |            |             |              |
|        |            |             |              |
|        |            |             |              |
|        |            |             |              |

|                            |                                        |                      |                     |
|----------------------------|----------------------------------------|----------------------|---------------------|
| Horses used by city police | Learning by association                | Pavlov's dogs        | Aggressive behavior |
| Genetically programmed     | Ducklings follow mother                | Circadian rhythm     | Animal migration    |
| Learned behavior           | Dog training                           | Usually irreversible | Territoriality      |
| Courtship behavior         | Decreased reaction to repeated stimuli | Learned behavior     | Learned behavior    |

**Bio 2.1.3** Explain various ways organisms interact with each other (including predation, competition, parasitism, mutualism) and with their environments resulting in stability within ecosystems.

Identify the Type of Symbiotic Relationship: "Commensalism", "Mutualism", or "Parasitism"?

| Type of Interaction | Effect on Organism X | Effect on Organism Y |
|---------------------|----------------------|----------------------|
| A                   | Benefits             | Harms                |
| B                   | Benefits             | No Effect            |
| C                   | Benefits             | Benefits             |

- A) \_\_\_\_\_
- B) \_\_\_\_\_
- C) \_\_\_\_\_

**Bio.2.1.4** Explain why ecosystems can be relatively stable over hundreds or thousands of years, even though populations may fluctuate (emphasizing availability of food, availability of shelter, number of predators and disease).

37.) How are these diseases spread? Match them with their method:

|                                                          | AIDS | Influenza | Tuberculosis | Dutch Elm Disease | Pfisteria |
|----------------------------------------------------------|------|-----------|--------------|-------------------|-----------|
| Air                                                      |      |           |              |                   |           |
| Blood/Body fluids                                        |      |           |              |                   |           |
| Insects                                                  |      |           |              |                   |           |
| Direct contact with the toxins released by this organism |      |           |              |                   |           |

38. Explain how disease can disrupt ecosystem balance. Match these examples with their definitions:

- |                 |                                                                           |
|-----------------|---------------------------------------------------------------------------|
| a. AIDS         | 1. An introduced species caused by a fungus and spread by elm bark beetle |
| b. Influenza    | 2. Associated with harmful algal blooms and fish kills in NC              |
| c. Tuberculosis | 3. Seasonal infectious disease caused by an RNA virus                     |



d. Dutch Elm Disease

4. Final stage of HIV disease which causes severe immune deficiency

e. Pfiesteria

5. Contagious bacterial infection that involves the lungs

**Standard 2.2** Understand the impact of human activities on the environment (one generation affects the next).

o.2.2.1 Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

Bio.2.2.2 Explain how the use, protection and conservation of natural resources by humans impact the environment from one generation to the next.

**Word Bank (for Questions 39-55):** exponential growth, carbon dioxide, global warming, invasive species, temperature, light, 10, carrying capacity (used twice), logistic growth, resources, bioaccumulation, chemical, algal, fish, nourishment, lagoon, acid rain, erosion, decreases, eutrophication.

39) There are usually no more than a few trophic levels in an ecosystem because energy transfer efficiency is only \_\_\_\_ %.

40) A population will reach carrying capacity when it is limited by \_\_\_\_\_.

41) \_\_\_\_\_ is a gas emitted when burning fossil fuels.

42) One result of rising CO<sub>2</sub> levels is an increase in \_\_\_\_\_.

43) Rising temperatures lead to \_\_\_\_\_.

44) \_\_\_\_\_ occurs when the concentration of a substance increases through trophic levels.

45) \_\_\_\_\_ are species that are deliberately or accidentally introduced that cause harm to the ecosystem. An example is kudzu.

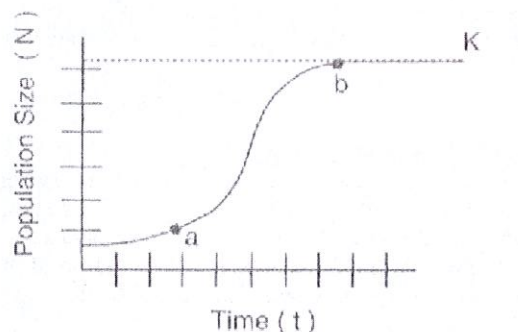
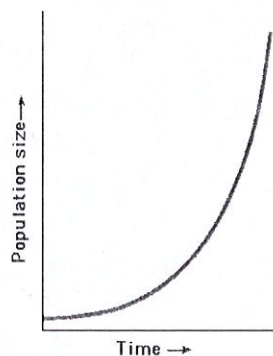
46) The Sun provides \_\_\_\_\_ energy that can be converted into \_\_\_\_\_ energy that allows organisms to carry out their life processes.

47) What type of graph is Graph A? \_\_\_\_\_

48) What type of graph is Graph B? \_\_\_\_\_

49) What does K represent for this population? \_\_\_\_\_

**Graph A**



**Graph B**

50.) The largest number of individuals that a given environment can support is called the \_\_\_\_\_

51.) What happens to a population's size if:

a. Birth rate > death rate \_\_\_\_\_

b. Birth rate < death rate \_\_\_\_\_

c. Birth rate = death rate \_\_\_\_\_

52.) \_\_\_\_\_ occurs when fertilizers and animal waste run off into nearby streams and cause \_\_\_\_\_ blooms, which \_\_\_\_\_ oxygen levels and cause \_\_\_\_\_ kills.

53.) \_\_\_\_\_ occurs in the NC mountains; causing tree populations to be decimated.

54.) As a result of increasing sea levels, NC beaches have seen greater amounts of beach \_\_\_\_\_. Beach \_\_\_\_\_ projects are used to help maintain the beaches.

55.) The waste products from pigs kept in concentrated feeding operations go into a \_\_\_\_\_ outside the building.