

WEEK #7

Prokaryotes=> df A group of organisms that lack a cell nucleus or any other membrane-bound organelles.

Homeostasis=> df The property of a living organism where the organism regulates its internal environment so as to maintain a stable, constant condition.

Neurons=> df These are responsive cells in the nervous system that process and transmit information by electrochemical signaling.

F - 25

- 1 A plant with cool-weather adaptations is able to reproduce sexually and asexually. If the plant is going to be replanted in a new environment, how would sexual reproduction benefit the plant's offspring?
 - A. The offspring will be identical to the parent plant.
 - B. There is no benefit—the offspring would be weaker.
 - C. Two sets of DNA will make the offspring able to resist warmer weather.
 - D. The offspring may be able to acquire traits adaptive to a new environment.

- 2 In humans, the gene for brown eyes is dominant to the gene for gray eyes. If two heterozygous brown-eyed people have children, what percent of the offspring will have gray eyes?



F - 26

- 1 Which of the following describes the process of DNA replication?
 - A. Enzymes create an RNA copy from a DNA molecule.
 - B. The DNA double-helix is divided into two strands by enzymes.
 - C. DNA is created from recombined parts of DNA that came from other locations.
 - D. Information from mRNA is converted into an amino acid sequence in a protein.
- 2 The reduction of chromosome numbers during meiosis is most important for which of the following?
 - F. keeping the amount of DNA in the cell at a minimum level
 - G. preventing the nucleus from becoming larger with each cell division
 - H. maintaining the chromosome numbers during sexual reproduction
 - I. allowing the growth of the cell without increasing the DNA content

F - 27

- 1 How does DNA direct the production of the 20 amino acids needed to synthesize proteins?
 - A. DNA forms codons from various genes.
 - B. DNA forms codons from the four bases.
 - C. DNA replication creates different amino acids.
 - D. DNA forms polypeptides, which then form amino acids.
- 2 Which of the following is a characteristic of proteins in a cell's nucleus?
 - F. They are responsible for digesting food.
 - G. They mutate DNA and cause cellular degradation.
 - H. They assist in the proper transcription of new mRNA.
 - I. They are responsible for intracellular communication.

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Hormones=> df Chemicals released by cells that affect cells in other parts of the body. Only a small amount of hormone is required to alter cell metabolism. It is essentially a chemical messenger that transports a signal from one cell to another.

Veins=> df Blood vessels that carries blood back toward the heart (as opposed to artery, a blood vessel carrying blood away from the heart).

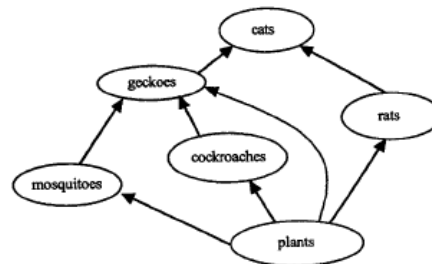
Alveoli=> df An alveolus (plural: alveoli, from Latin *alveolus*, "little cavity") is an anatomical structure that has the form of a hollow cavity. Found in the lung, the pulmonary alveoli are spherical outcroppings of the respiratory bronchioles and are the primary sites of gas exchange with the blood.

F - 28

- 1 In a dry region, plants with slow stem growth and few leaves reproduce more successfully than plants with rapid stem growth and many leaves. Based on this information, which hypothesis explains the different reproduction rates?
 - A. Fewer leaves reduce photosynthesis rates.
 - B. Short stems collect water more efficiently.
 - C. Slow-growing plants reproduce more quickly.
 - D. Rapid stem growth attracts predators more easily.
- 2 Many tree climbers, including some primates, have long tails used to aid in moving through the branches. Many species of primates evolved an opposable thumb. What advantage do opposable thumbs give the primates?

G - 1

Some of the organisms that live in Borneo include cockroaches, geckoes (a type of lizard), cats, rats, mosquitoes and plants. The following food web shows some of the relationships among these non-human members of Borneo's ecosystem.



In the 1950's, insecticides were used to kill mosquitoes on Borneo in order to wipe out malaria. The insecticide concentrated in cockroaches and hence geckoes.

- Based on the above information, decide which of the following unintended consequences occurred as a result of the use of insecticides.
- A) The number of cases of malaria increased.
 - B) The cat population increased.
 - C) The number of cases of bubonic plague increased because the population of rats (that carry the disease) increased.
 - D) Geckoes found sources of food other than cockroaches in order to survive.

G - 2

Which of the following is most closely associated with the water cycle?

- A) respiration
- B) photosynthesis
- C) fixation
- D) transpiration

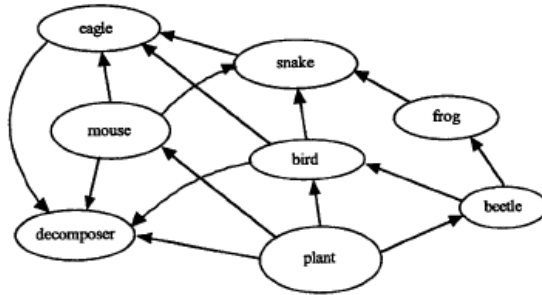
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Pathogen => df A biological agent that causes disease or illness to its host.

Antigen => df A substance that prompts the generation of antibodies and can cause an immune response.

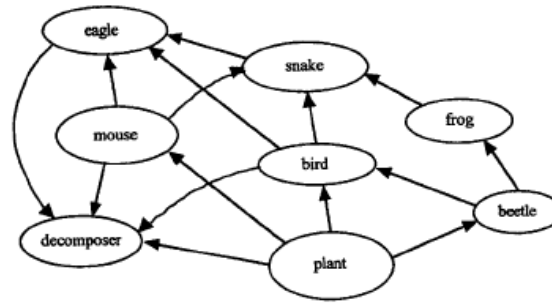
Binary fission => df The form of asexual reproduction and cell division used by prokaryotic organisms. This process results in the reproduction of a living prokaryotic cell by division into two parts which each have the potential to grow to the size of the original cell.

G - 3



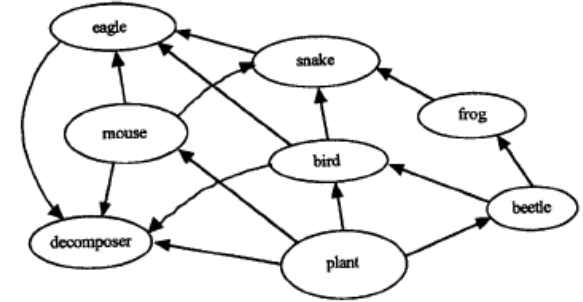
According to the food web, what is the ecological role of plants?

G - 4



According to the food web, what is the ecological role of decomposers?

G - 5



Use the food web to identify the primary (first-order) consumers in the ecosystem.

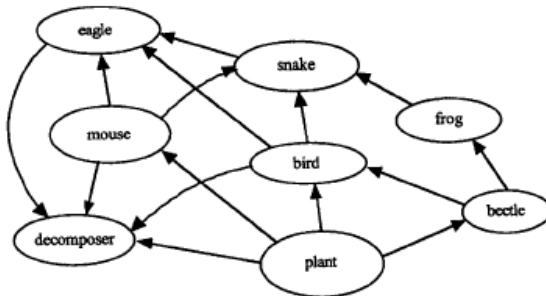
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Gymnosperm => df Seed bearing, cone forming plants.

Angiosperm => df Seed bearing, flowering plants.

Diffusion => df A net transport of molecules from a region of higher concentration to one of lower concentration by random molecular motion. The result of diffusion is a gradual mixing of material.

G - 6



Consider the food web given above that shows some of the relationships among organisms in an ecosystem. What would happen if the primary consumers in this ecosystem were suddenly eliminated due to disease?

G - 7

The carbon-oxygen cycle is driven by

- A) digestion
- B) respiration and photosynthesis
- C) decomposition
- D) evaporation and condensation

G - 8

Most living organisms use nitrogen only in the form of nitrates (NO_3^-), nitrites (NO_2^-) or ammonia (NH_3). How is nitrogen in the air converted into nitrates?

- A) by respiration
- B) by digestion
- C) by bacteria
- D) by photosynthesis

G - 9

Organic compounds such as carbohydrates, fats and proteins commonly contain all of the following elements EXCEPT

- A) hydrogen
- B) carbon
- C) oxygen
- D) sulfur