

MOCK EOCT Part III Section 1

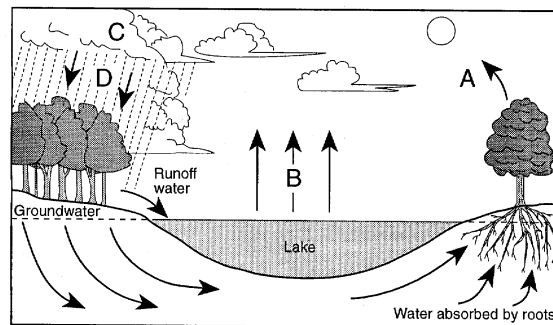
Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Which is an example of a biotic factor that would limit the size of a deer herd?
- A. populations of predators
  - B. severe summer drought
  - C. lack of oxygen at high altitudes
  - D. heavy winter snowfalls

2. The sequence of bases in one strand of a DNA molecule is arranged in the order adenine–guanine–thymine–cytosine. The sequence of bases in the complementary strand is
- A. adenine–cytosine–thymine–guanine
  - B. guanine–adenine–cytosine–uracil
  - C. thymine–cytosine–adenine–guanine
  - D. cytosine–thymine–guanine–adenine

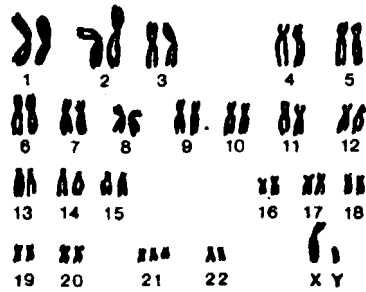
3. The letters in the diagram shown represent the processes involved in the water cycle. Which letter represents the process of transpiration



- A. A      B. B      C. C      D. D

4. A DNA molecule with the base sequence A-G-C-T-C-A was used as a template for the synthesis of a messenger RNA molecule. Which base sequence correctly represents the corresponding portion of this RNA molecule?
- A. T-C-A-G-C-A
  - B. U-C-G-A-G-U
  - C. A-G-C-U-C-A
  - D. A-T-G-A-C-T

5. The individual from whom these chromosomes were taken is a



- A. male  
B. female  
C. hermaphrodite  
D. polyploid

6. Maple leaf beetles and willow leaf beetles are named for the type of tree where they live and reproduce. They look identical to each other when observed, but experiments have shown that willow beetles would starve before eating maple leaves. This is an example of specialization that would directly reduce

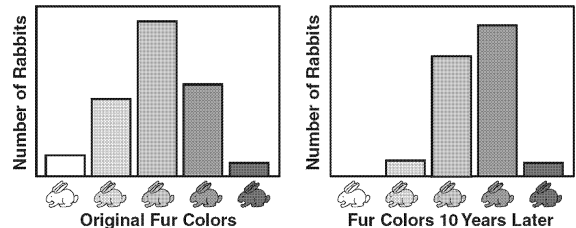
- A. variation  
B. competition  
C. adaptation  
D. replication

7. The diagram shown represents a cell that will undergo mitosis. Which diagrams below best illustrate the nuclei of the daughter cells that result from a normal mitotic cell division of the parent cell shown?



- A. + B. +   
C. + D. +

8. The accompanying diagram illustrates the change that occurred in the physical appearance of a rabbit population over a 10-year period.

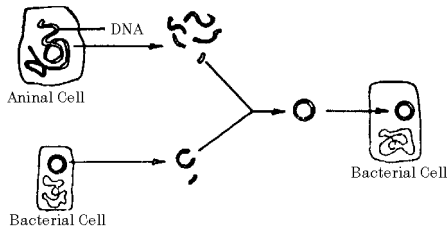


Which condition would explain this change over time?

- A. a decrease in the mutation rate of the rabbits with black fur  
B. a decrease in the advantage of having white fur  
C. an increase in the advantage of having white fur  
D. an increase in the chromosome number of the rabbits with black fur

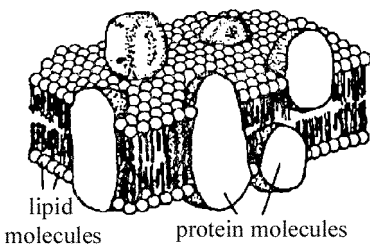
9. Which process utilizes cellular energy to move particles through a membrane?
- A. osmosis                      B. passive diffusion  
C. active transport            D. transpiration

10. The technique shown in the diagram represents



- A. amniocentesis  
B. the formation of a karyotype  
C. animal cloning  
D. the formation of recombinant DNA

11. Which cellular organelle is represented by the diagram?



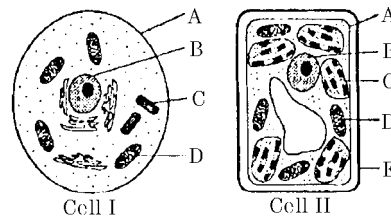
- A. ribosome                      B. centriole  
C. plasma membrane        D. cell wall

12. Galapagos finches evolved partly due to
- A. cloning and recombination  
B. migration and selective breeding  
C. mutation and asexual reproduction  
D. variation and competition

13. Uncontrolled cell division is characteristic of

- A. cancer                              B. meiosis  
C. budding                            D. sporulation

14. Cell II most likely represents a plant cell due to the presence of



- A. A                      B. B                      C. D                      D. E

15. Which scientist is correctly paired with his contribution to biological science?
- A. Miller — first to observe mitotic cell division
  - B. Linnaeus — devised a binomial system for naming organisms
  - C. Darwin — invented the electron microscope
  - D. Watson — first to observe cells

16. Which is an example of an abiotic factor in a pond environment?
- A. the water
  - B. a frog
  - C. a grasshopper
  - D. a snake

17. Animals which ingest organic materials are classified as
- A. heterotrophic
  - B. photosynthetic
  - C. autotrophic
  - D. chemosynthetic

18. A classification scheme is shown.

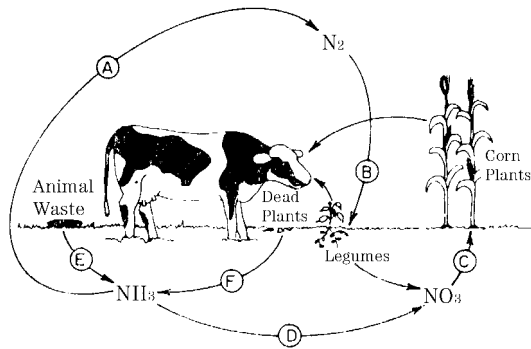
Classification	Examples
Kingdom—Animal	dolphin, house cat, songbird, lynx, wolf, earthworm, butterfly, hydra
Phylum—Chordata	dolphin, house cat, songbird, lynx, wolf
Genus— <i>Felis</i>	house cat, lynx
Species— <i>domestica</i>	house cat

This classification scheme indicates that the house cat is most closely related to the

- A. dolphin
- B. songbird
- C. lynx
- D. wolf

19. What is the relationship between an organism's DNA and protein specificity?
- A. DNA becomes a specific part of the protein structure.
  - B. DNA determines the ribosomal RNA sequence that becomes part of the protein structure.
  - C. DNA determines which RNA molecules are incorporated into protein molecules.
  - D. DNA determines the amino acid sequence of each protein.

20. Pictured here is a nitrogen cycle. The organisms that carry on nearly all of the processes represented by arrows *A* through *F* are most likely



- A. legumes                      B. bacteria  
C. herbivores                  D. scavengers

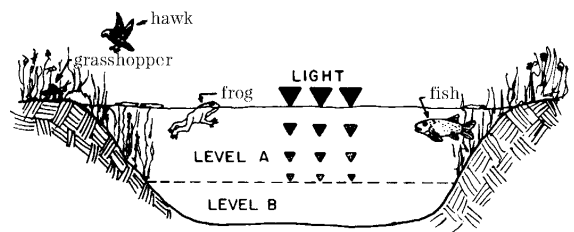
21. Thousands of years ago, giraffes with short necks were common within giraffe populations. Nearly all giraffe populations today have long necks. This difference could be due to

- A. giraffes stretching their necks to keep their heads out of reach of predators  
B. giraffes stretching their necks so they could reach food higher in the trees  
C. a mutation in genetic material controlling neck size occurring in some skin cells of a giraffe  
D. a mutation in genetic material controlling neck size occurring in the reproductive cells of a giraffe

22. Which group of terms is in the correct order from most general to most specific?

- A. species, phylum, genus, kingdom  
B. genus, species, kingdom, phylum  
C. kingdom, phylum, genus, species  
D. phylum, kingdom, species, genus

23. The diagram shown is of a lake ecosystem. The diagram shows a cross section of a deep lake. The dashed line which separates level *A* from level *B* indicates the depth beyond which light cannot penetrate.

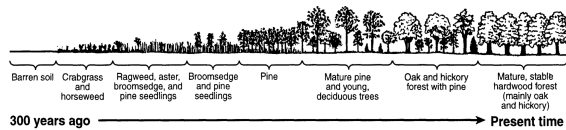


A possible food chain represented by the diagram could be

- A. plant → grasshopper → frog → fish  
B. hawk → plant → grasshopper → frog  
C. grasshopper → fish → frog → plant  
D. plant → hawk → frog → fish

24. A population of animals is permanently split by a natural barrier into two separate populations in different environments. What will likely result after a long period of time?
- The evolution of the two populations will be identical.
  - The production of variations will stop in the two populations.
  - The two populations will evolve into separate species.
  - Autotrophic nutrition will replace heterotrophic nutrition in the two populations.

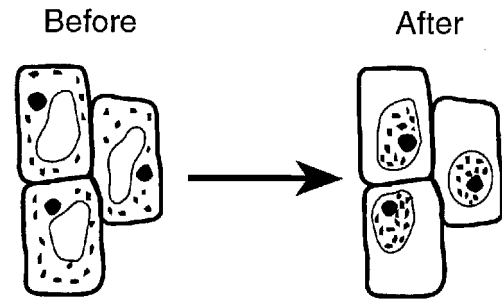
25. Base your answer(s) to the following question(s) on the diagram below, which shows the sequence of plant communities that have occupied land that was left barren 300 years ago, and on your knowledge of biology.



Dominant plant species in the climax community include

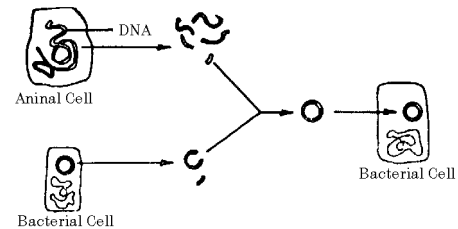
- pine trees
  - hickory trees
  - mosses
  - lichens
26. Which organism lacks the ability to carry on autotrophic nutrition?
- oak tree
  - maple tree
  - mushroom
  - fern

27. The diagram shown represents the change that occurred after a fluid was added to a wet mount of some elodea leaf cells. Which fluid was most likely added to the wet mount?



- salt solution
- tap water
- distilled water
- iodine solution

28. The process is useful in producing



- insulin and human growth hormone
- artificial hearts and kidneys
- organ transplants
- identical frogs

29. All the cottontail rabbits in a country would represent

- A. a community                      B. a biome  
C. a population                      D. an ecosystem

30. In a cell, the selective permeability of the cell membrane is most closely associated with the maintenance of

- A. homeostasis                      B. hydrolysis  
C. phagocytosis                      D. pinocytosis

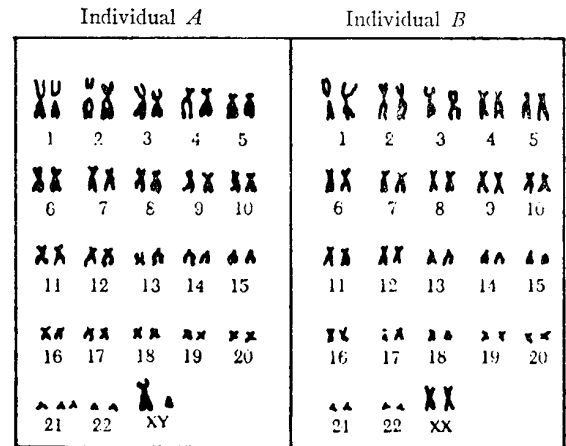
31. Exposure to cosmic rays, x rays, ultraviolet rays, and radiation from radioactive substances may promote

- A. the production of similar organisms  
B. diversity among organisms  
C. an increase in population size  
D. a change from sexual to asexual reproduction

32. The study of the interrelationships of plants and animals and their interaction with the physical environment is known as

- A. evolution                      B. ecology  
C. anatomy                      D. taxonomy

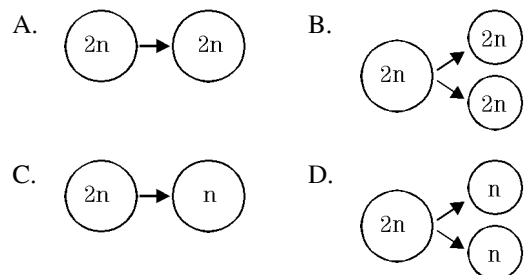
33. The charts show human chromosomes arranged in pairs.



Which genetic disorder in individual A is indicated by the number of chromosomes labeled 21?

- A. phenylketonuria (PKU)  
B. Tay-Sachs  
C. sickle-cell anemia  
D. Down's syndrome

34. Which diagram most correctly represents the process of mitosis?



35. The processes of photosynthesis, transpiration, evaporation, condensation, respiration, and excretion are all involved in the cycling of

- A. water
- B. nitrogen
- C. carbon dioxide
- D. sulfur

36. In pea plants, the gene for tallness ( $T$ ) is dominant over the gene for shortness ( $t$ ). If 100% of the  $F_1$  generation offspring are heterozygous tall, what were the most probable genotypes of the parent plants?

- A.  $Tt \times Tt$
- B.  $Tt \times tt$
- C.  $TT \times Tt$
- D.  $TT \times tt$

37. A change that alters the base sequence in an organism's DNA is called a

- A. synapsis
- B. mutation
- C. disjunction
- D. replication

38. Fly larvae consume the body of a dead rabbit. In this activity, they function as

- A. producers
- B. scavengers
- C. herbivore
- D. parasites



MOCK EOCT Part III Section 1 5/3/2019

- |         |   |         |   |
|---------|---|---------|---|
| 1.      |   | 21.     |   |
| Answer: | A | Answer: | D |
| 2.      |   | 22.     |   |
| Answer: | C | Answer: | C |
| 3.      |   | 23.     |   |
| Answer: | A | Answer: | A |
| 4.      |   | 24.     |   |
| Answer: | B | Answer: | C |
| 5.      |   | 25.     |   |
| Answer: | A | Answer: | B |
| 6.      |   | 26.     |   |
| Answer: | B | Answer: | C |
| 7.      |   | 27.     |   |
| Answer: | A | Answer: | A |
| 8.      |   | 28.     |   |
| Answer: | B | Answer: | A |
| 9.      |   | 29.     |   |
| Answer: | C | Answer: | C |
| 10.     |   | 30.     |   |
| Answer: | D | Answer: | A |
| 11.     |   | 31.     |   |
| Answer: | C | Answer: | B |
| 12.     |   | 32.     |   |
| Answer: | D | Answer: | B |
| 13.     |   | 33.     |   |
| Answer: | A | Answer: | D |
| 14.     |   | 34.     |   |
| Answer: | D | Answer: | B |
| 15.     |   | 35.     |   |
| Answer: | B | Answer: | A |
| 16.     |   | 36.     |   |
| Answer: | A | Answer: | D |
| 17.     |   | 37.     |   |
| Answer: | A | Answer: | B |
| 18.     |   | 38.     |   |
| Answer: | C | Answer: | B |
| 19.     |   |         |   |
| Answer: | D |         |   |
| 20.     |   |         |   |
| Answer: | B |         |   |