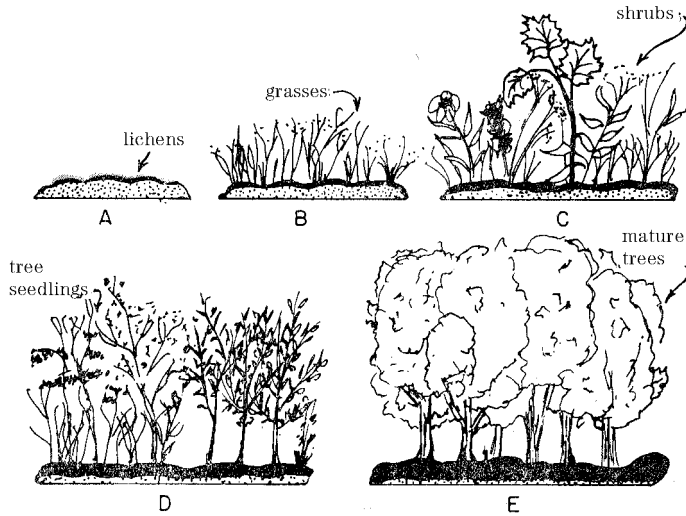


MOCK EOCT Part III Section 2

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

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

1. The sequence *A* through *E* represents stages of ecological succession in a given area.



Which diagram shows the greatest number of pioneer organisms?

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

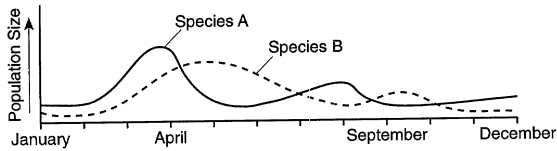
2. An enclosed aquarium receives a constant amount of sunlight. In the aquarium, wastes are recycled and oxygen and carbon dioxide are produced and used by living things. This system best represents

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

3. Which is an example of an ecosystem?

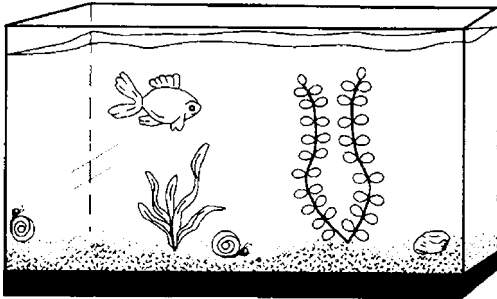
- A. a population of monarch butterflies  
B. the interdependent biotic and abiotic components of a pond  
C. all the abiotic factors found in a field  
D. all the mammals that live in the Atlantic Ocean

4. The graph shown represents the population growth curves of two different species of aquatic organisms, *A* and *B*. What is a valid prediction based on this graph?



- A. Species *A* will not be present in the water during the winter months.
- B. Species *A* will eliminate species *B* from the water after 1 year.
- C. Species *B* will attain maximum population size each autumn due to a decrease in water temperature.
- D. Species *B* will decrease in population size approximately 1 month after a decrease in the population size of species *A*.

5. An aquarium ecosystem is shown.



A community in this aquarium consists of the

- A. plants and gravel
- B. fish, water, and snails
- C. fish, plants, and snails
- D. water and gravel

6. Which list includes only abiotic factors?

- A. soil, water, air, and sunlight
- B. ducks, fish, soil, and water
- C. humidity, temperature, rodents, and grasses
- D. trees, flowering plants, mosses, and ferns

7. African elephant tusks consist of high-quality ivory. In recent years, the elephant population in certain African wildlife preserves has decreased. This decrease is most likely due to

- A. air pollution
- B. human exploitation
- C. biocide use
- D. importation of Japanese beetles

8. The wrasse, a small marine fish, periodically cleans harmful parasites from the mouth and body of the moray eel. The moray, in turn, protects the wrasse from larger predators and provides it with a constant supply of food. This is an example of the type of relationship known as

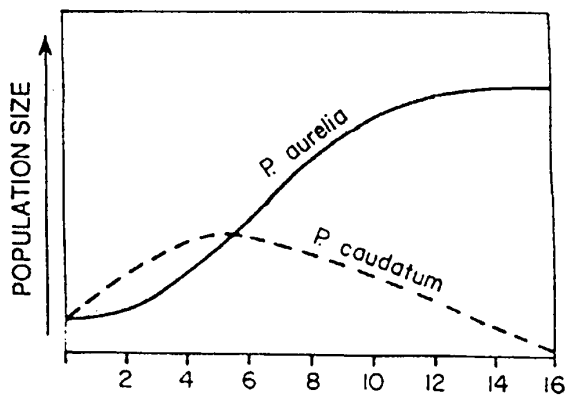
- A. mutualism                      B. parasitism
- C. commensalism                D. saprophytism

9. Select the example of symbiosis, *chosen from the list below*, that is best described by the statement shown.

This relationship is an example of commensalism.

- A. Barnacles on a whale
- B. Nitrogen-fixing bacteria in the nodules of legumes
- C. A tapeworm in a dog
- D. Protozoa within a termite's digestive system

10. The graph here shows the population growth curves of *Paramecium aurelia* and *Paramecium caudatum* cultures after they were mixed together. This graph can be used to illustrate the principle of



- A. mutualism
- B. competition
- C. assimilation
- D. saprophytism

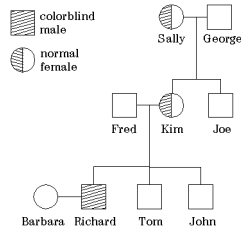
11. Meiotic cell division in animals is directly responsible for the

- A. formation of gametes
- B. fertilization of an egg
- C. growth of a cell
- D. production of muscle cells

12. A pea plant which produces green pods is crossed with a pea plant which produces yellow pods. The resulting offspring had green pods. With respect to pod color, the genotype of the offspring is most likely

- A. heterozygous dominant
- B. pure recessive
- C. homozygous dominant
- D. homozygous recessive

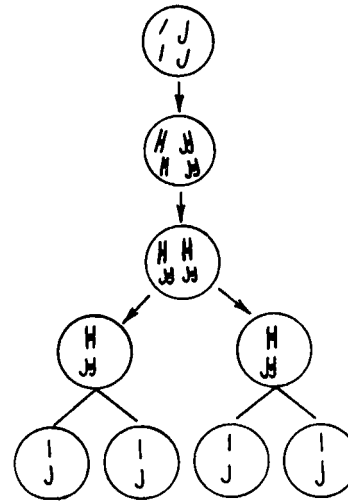
13. Shown is a pedigree chart. The chart shows that Sally is a carrier for red-green color blindness.



Which is most likely the chromosomal makeup of George's body cells?

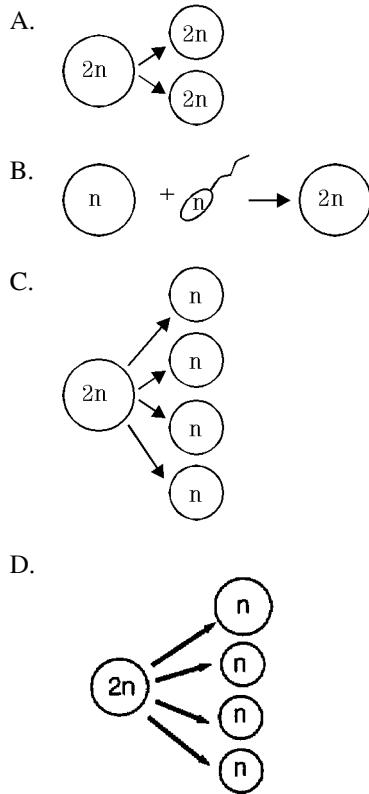
- A. 11 pairs of autosomes and one X-chromosome
- B. 11 pairs of autosomes and one Y-chromosome
- C. 22 pairs of autosomes and two X-chromosomes
- D. 22 pairs of autosomes, an X-chromosome, and a Y-chromosome

14. Which process is represented by the diagram shown?



- A. germination
- B. fertilization
- C. mitotic cell division
- D. meiotic cell division

15. Which diagram best represents mitotic cell division?







16. One reason for Mendel's success with genetic studies of garden peas was that he

- A. used only hybrid pea plants
- B. used peas with large chromosomes
- C. studied large numbers of offspring
- D. discovered the sources of variations in peas

17. A strand of DNA consists of thousands of smaller, repeating units known as

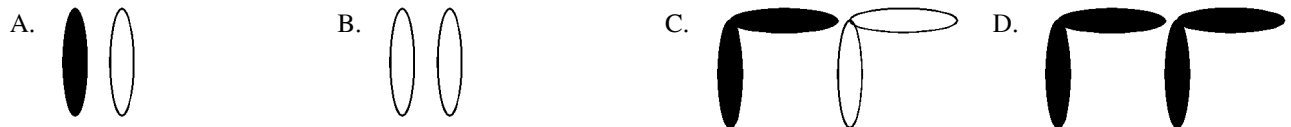
- A. lipids
- B. amino acids
- C. nucleotides
- D. polysaccharides

18.	CHROMOSOME THAT CARRIES THE DOMINANT ALLELE FOR HEIGHT	
	CHROMOSOME THAT CARRIES THE RECESSIVE ALLELE FOR HEIGHT	
	CHROMOSOME THAT CARRIES THE DOMINANT ALLELE FOR SEED SHAPE	
	CHROMOSOME THAT CARRIES THE RECESSIVE ALLELE FOR SEED SHAPE	

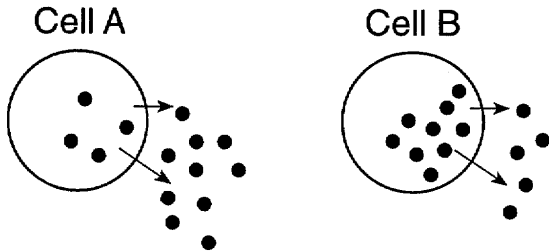
Which statement correctly describes the location of the alleles for height and seed shape?

- A. The dominant alleles for height and seed shape are located on the same chromosome.
- B. The dominant and recessive alleles are located on the same member of a homologous pair of chromosomes.
- C. The alleles for height are located on a different homologous pair of chromosomes than the alleles for seed shape.
- D. The dominant alleles are located on one pair of homologous chromosomes and the recessive alleles are located on another pair of homologous chromosomes.

19. Which diagram represents those chromosomes that are responsible for the heterozygous genotype for height?

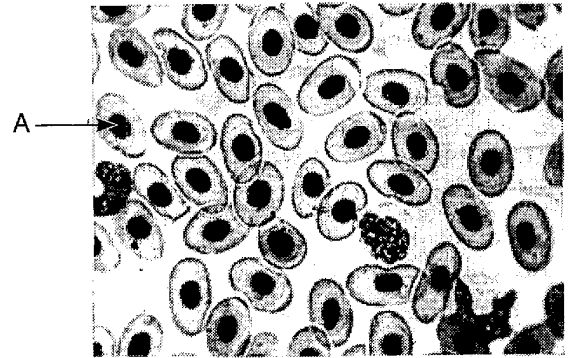


20. The arrows in the diagrams represent the direction of movement of a certain type of molecule through the cell membrane of two different cells. The dots represent the relative concentrations of this molecule. Which processes are illustrated in the diagrams?



- A. phagocytosis and diffusion
- B. pinocytosis and osmosis
- C. active transport and diffusion
- D. dehydration synthesis and circulation

21. The photograph shows a sample of stained frog blood cells as viewed with the high-power objective of a compound light microscope.



Structure A is best described as a

- A. lysosome that stores hydrolytic enzymes
  - B. mitochondrion that produces ATP
  - C. chloroplast that carries out photosynthesis
  - D. nucleus that regulates cell activity
22. Which statement about viruses is true?
- A. They carry on aerobic respiration.
  - B. They reproduce both sexually and asexually.
  - C. They are photosynthetic organisms.
  - D. They are an exception to the cell theory.

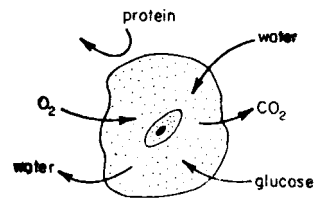
23. The virus is considered an exception to the cell theory because the

- A. mitochondria of the virus contain genetic material
- B. virus contains genetic material but no organelles
- C. chloroplasts of the virus contain genetic material
- D. virus contains no genetic material and is multi-nucleated

24. Which statement illustrates an exception to the concept that the cell is the unit of structure and function of all living things?

- A. Viruses contain genetic information but lack other cellular components.
- B. The cell is a complex “chemical factory.”
- C. Lysosomes contain hydrolytic enzymes.
- D. Most bacteria are classified as heterotrophic organisms.

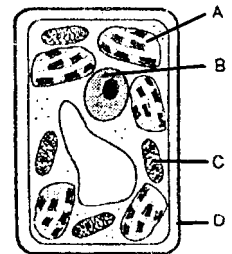
25. Which cell part selectively regulates the entry and exit of substances, as shown in the diagram?



- A. plasma membrane
- B. ribosome
- C. nucleolus
- D. nuclear membrane

26. Shown is a green plant cell. Which structure is chiefly composed of a nonliving material known as cellulose?

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







27. Which cytoplasmic organelles contain hereditary material and can undergo replication?

- A. chloroplasts and cell walls
- B. cell membranes and ribosomes
- C. endoplasmic reticula and food vacuoles
- D. mitochondria and chloroplasts



28. Information related to the organisms found on Earth during various geological time periods is represented in the accompanying chart.

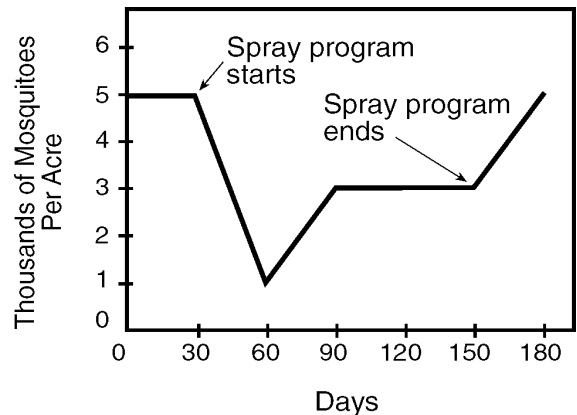
Common Organisms				
Time	4.6 (?) Billion Years Ago	600 Million Years Ago	200 Million Years Ago	60 Million Years Ago
Era	Precambrian (Simple Multicellular Organisms and First Protists)	Paleozoic (Age of Amphibians, Fishes, and Invertebrates)	Mesozoic (Age of Reptiles)	Cenozoic (Age of Mammals)
	Past <span style="font-size: 2em;">→</span> Geologic Time <span style="font-size: 2em;">→</span> Present			

Which statement concerning the first appearance of the organisms over the time period represented in this chart is most likely correct?

- Life on Earth has remained the same.
- Life on Earth has changed from primitive organisms to more complex organisms.
- Life on Earth began with complex organisms and changed to more complex organisms.
- Life on Earth has changed rapidly.

29. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

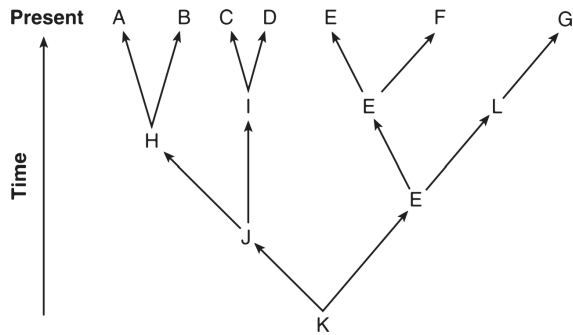
A small village was heavily infested with mosquitoes. The village was sprayed weekly with an insecticide for a period of several months. The results of daily counts of the mosquito population are shown in the graph below.



Which statement best explains the decreased effectiveness of the insecticide?

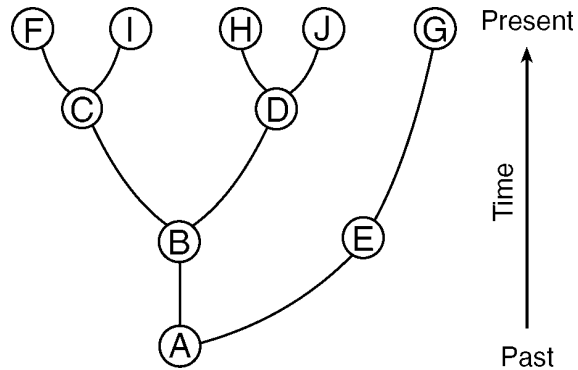
- The insecticide caused mutations that resulted in immunity in the mosquito.
- Mosquitoes resistant to the insecticide lived and produced offspring.
- The insecticide reacted chemically with the DNA of the mosquitoes and was destroyed.
- All of the mosquitoes produced antibodies that activated the insecticide.

30. The evolutionary pathways of several species are represented in the diagram below. Which species was best adapted for survival in changing environmental conditions?



- A. A      B. E      C. K      D. L

31. Base your answer(s) to the following question(s) on the diagram below that shows some evolutionary pathways. Each letter represents a different species.



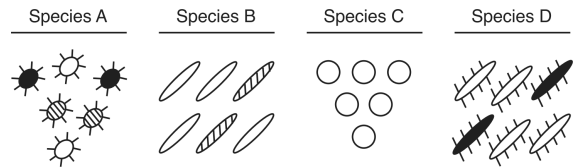
Which two organisms are most closely related?

- A. F and I      B. F and H  
C. A and G      D. G and J

32. One explanation for the variety of organisms present on Earth today is that over time

- A. new species have adapted to fill available niches in the environment  
B. evolution has caused the appearance of organisms that are similar to each other  
C. each niche has changed to support a certain variety of organism  
D. the environment has remained unchanged, causing rapid evolution

33. The diagram below represents four different species of bacteria.

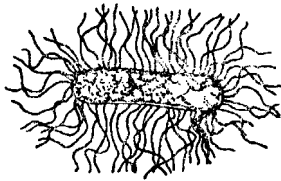


Which statement is correct concerning the chances of survival for these species if there is a change in the environment?

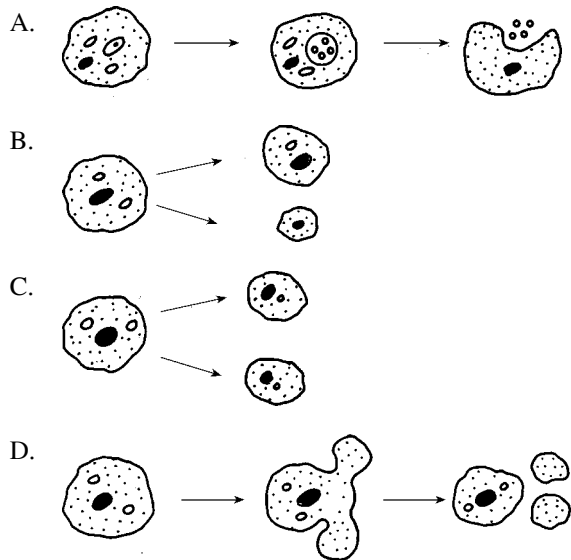
- A. Species A has the best chance of survival because it has the most genetic diversity.  
B. Species C has the best chance of survival because it has no gene mutations.  
C. Neither species B nor species D will survive because they compete for the same resources.  
D. None of the species will survive because bacteria reproduce asexually.

34. The organism in the diagram is classified as *Proteus vulgaris*. The term “vulgaris” refers to this organism’s

- A. species
- B. genus
- C. family
- D. phylum



35. Which diagram best shows the process of binary fission in an amoeba?



36. The table below gives both the common and scientific names of five New York State vertebrates.

Vertebrate	Common Name	Scientific Name
A	white perch	<i>Monrone americana</i>
B	grass pickerel	<i>Esox americanus</i>
C	varying hare	<i>Lepus americanus</i>
D	American toad	<i>Bufo americanus</i>
E	muskellunge	<i>Esox masquinongy</i>

Which two vertebrates are most closely related?

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

37. An investigation was performed to determine the rate of growth of a bacterial population over a period of 16 hours. The data obtained is shown in the table.

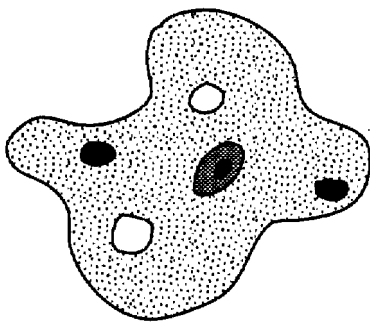
Data Table

Time (hours)	Number of Organisms
0	1,500
4	14,000
8	76,000
12	58,000
16	20,000

According to this investigation, the rate of bacterial growth was greatest between

- A. 0 and 4 hours
- B. 4 and 8 hours
- C. 8 and 12 hours
- D. 12 and 16 hours

38. How should the organism shown in the diagram be classified?



- A. bacterium
- B. fungus
- C. moneran
- D. protist

MOCK EOCT Part III Section 2 5/3/2019

- |         |   |            |       |
|---------|---|------------|-------|
| 1.      |   | 21.        |       |
| Answer: | A | Answer:    | D     |
| 2.      |   | 22.        |       |
| Answer: | C | Answer:    | D     |
| 3.      |   | 23.        |       |
| Answer: | B | Answer:    | B     |
| 4.      |   | 24.        |       |
| Answer: | D | Answer:    | A     |
| 5.      |   | Objective: | B.04C |
| Answer: | C | 25.        |       |
| 6.      |   | Answer:    | A     |
| Answer: | A | 26.        |       |
| 7.      |   | Answer:    | D     |
| Answer: | B | 27.        |       |
| 8.      |   | Answer:    | D     |
| Answer: | A | 28.        |       |
| 9.      |   | Answer:    | B     |
| Answer: | A | 29.        |       |
| 10.     |   | Answer:    | B     |
| Answer: | B | 30.        |       |
| 11.     |   | Answer:    | B     |
| Answer: | A | 31.        |       |
| 12.     |   | Answer:    | A     |
| Answer: | A | 32.        |       |
| 13.     |   | Answer:    | A     |
| Answer: | D | 33.        |       |
| 14.     |   | Answer:    | A     |
| Answer: | D | 34.        |       |
| 15.     |   | Answer:    | A     |
| Answer: | A | 35.        |       |
| 16.     |   | Answer:    | C     |
| Answer: | C | 36.        |       |
| 17.     |   | Answer:    | B     |
| Answer: | C | 37.        |       |
| 18.     |   | Answer:    | B     |
| Answer: | C | 38.        |       |
| 19.     |   | Answer:    | D     |
| Answer: | A |            |       |
| 20.     |   |            |       |
| Answer: | C |            |       |