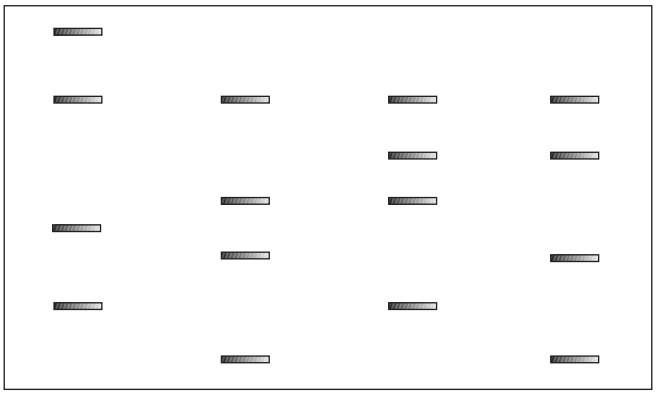
1. These are the results of a gel electrophoresis.



Which two organisms are ***most closely*** related?

A I and II

B I and IV

C II and III

D II and IV

---

2. About 99% of the information in human DNA is shared by chimpanzee DNA. This is evidence of which of the following?

A As chimpanzees evolve, they will become more similar to humans.

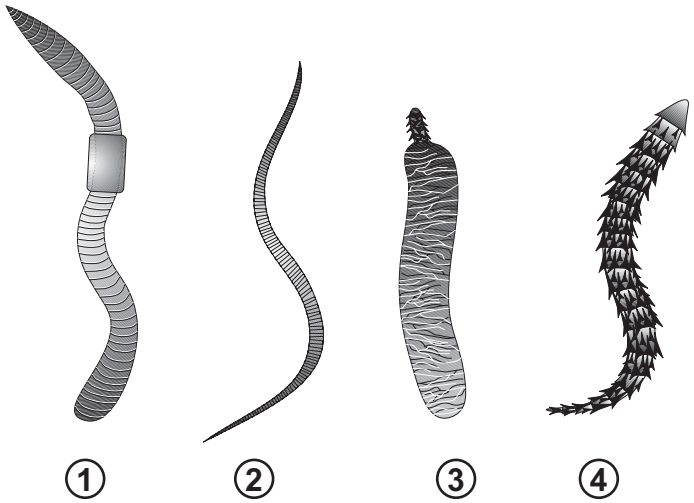
B Chimpanzees and humans are too different for meaningful genetic comparisons.

C Chimpanzees and humans diverged from a common ancestor.

D Humans evolved from chimpanzees.

3.

Taxonomic Key to Worms



1. a. worm has divided body parts (segmented) ..... (Go to 3.)
   b. worm is not divided (unsegmented) ..... (Go to 2.)

2. a. worm has spine-covered head ..... *Acanthocephala*
   b. worm does not have spiny projections, body is long and round ..... *Ascaris*

3. a. worm does not have spines, has saddle-like portion ..... *Lumbricus*
   b. no saddle portion, has spines ..... *Nais*

Worm (2) belongs to which category?

A *Acanthocephala*

B *Ascaris*

C *Lumbricus*

D *Nais*

---

4. What is the primary role of bacteria in the environment?

A carbon dioxide fixation

B phosphorylation

C promotion of decay

D sulfurization

5. A scientist has encountered a new organism in the kingdom Animalia with the following characteristics: exoskeleton, sensory appendages, segmented body, and bilateral symmetry. In which phylum should this new organism be classified?

   A Annelida

   B Arthropoda

   C Cnidaria

   D Molluska

6. According to cell theory, why are viruses not considered living organisms?

   A Viruses cannot reproduce outside a living organism.

   B Viruses do not contain genetic material.

   C Viruses cannot cause diseases in other organisms.

   D Viruses do not contain organic compounds.

7. Which is the main advantage of the present system of scientific naming for classifying organisms?

   A It clarifies the distinction between an animal and a plant.

   B Latin is not used for casual conversation, so it can be reserved for scientific names.

   C It avoids the confusion of the same species having different common names in different places.

   D If an organism has more than one name because of local customs, it can have more than one scientific name.

8. Which of the following groups includes organisms that are ***most closely*** related?

   A species

   B genus

   C family

   D order

9. Which behavior ***most*** distinguishes mammals and birds from other vertebrates?

   A methods of obtaining food

   B care of young after birth

   C aggressive defensive behavior

   D construction of shelters

10. Fish obtain oxygen from water when it passes over the gill filaments.

Concentration of Oxygen

Condition	Concentration of O_2 in H_2O	Concentration of O_2 in Blood
I	low	low
II	low	high
III	high	high
IV	high	low

Which condition would lead to maximum absorption of O_2 by the gills?

A I

B II

C III

D IV

---

11. What is the function of male flower parts?

A to produce seeds

B to receive pollen

C to release seeds

D to release pollen

12. What method of pollination is ***most likely*** used by plants with large, colorful flowers?

A wind

B animal

C water

D self

13. What regulates plant growth and development?

A neurons

B hormones

C stimulants

D glands

14. **Principle**: Organisms produce organisms similar to themselves.

If a moth lays eggs that hatch into caterpillars, why is this ***not*** a violation of the principle stated above?

A Caterpillars are exceptions to the rule.

B Caterpillars and moths are related species.

C Caterpillars are a stage of development.

D Caterpillars result from mutations.

15. What is the primary benefit of honeybees to crop farmers?

A The honeybees provide fertilizer.

B The honeybees kill predators.

C The honeybees destroy weeds.

D The honeybees pollinate crops.

16. How does a vaccine work?

A It prevents the disease-causing agent from entering the body.

B It attacks the disease-causing agent as soon as it enters the body.

C It triggers the immune system to produce antibodies to fight the disease-causing agent.

D It allows the blood to filter out the disease-causing agent.

17. Which of the following would be ***least likely*** to be found in an arctic environment?

A mammal

B reptile

C bird

D insect

18. Which phylum below includes organisms which undergo metamorphosis?

A Arthropoda

B Annelida

C Mollusca

D Nematoda

19. Reptiles occupy a greater range of terrestrial environments than do amphibians. Which of the following adaptations allows for this increased range?

A the development of a protective coating on the egg

B the ability to absorb oxygen through the skin

C the development of the two-chambered heart

D the use of external fertilization

20. What is the function of the endosperm tissue in seeds?

A food storage

B photosynthesis

C reproduction

D water transport

21. A student carries out an experiment on the growth of *Rhizopus* (the common bread mold) in petri dishes observed under different temperatures.

Temp.	**Average Area Covered by Mold** (cm^2)
−10°C	0
−5°C	0
0°C	2
5°C	8
10°C	15
15°C	27
20°C	41
25°C	50
30°C	32
35°C	19
40°C	10
45°C	4
50°C	0
55°C	0
60°C	0

According to the table above, at what temperature does the mold grow ***best***?

A –10°C

B 20°C

C 25°C

D 60°C

22. Corn seedlings were grown under identical conditions. What factor could ***best*** account for differences in height among the seedlings?

A elevation

B wind

C pests

D genetics

23. Which of the following diseases is predetermined by a person's genetic makeup?

A hemophilia

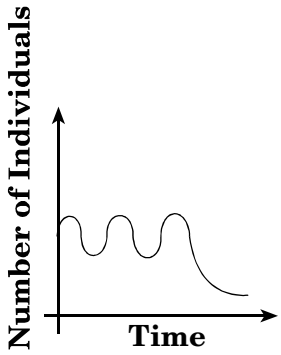
B influenza

C measles

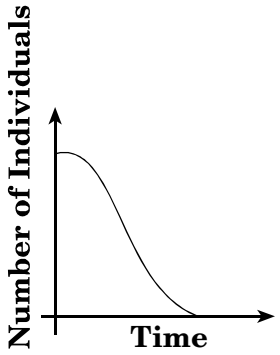
D tuberculosis

24. Which of the following graphs represents a population that has reached a state of equilibrium?

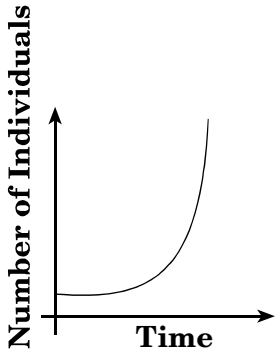
A



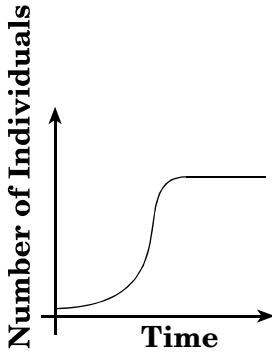
B



C



D



25. A research scientist is attempting to create a chemical herbicide that acts by causing sterility rather than by killing the existing plant. What is expected to happen in plants sprayed with this chemical?

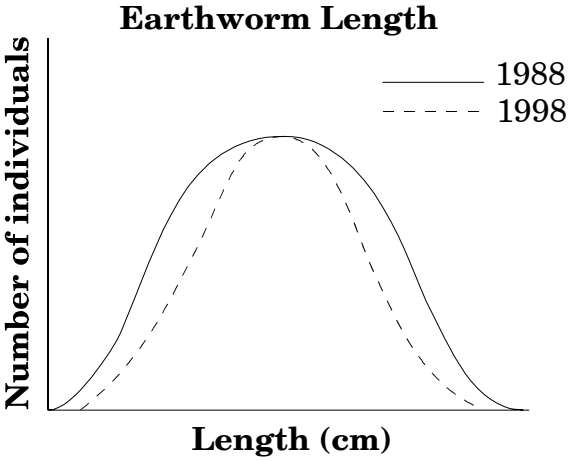
A non-functioning flowers

B root rot

C withered stems

D yellowed leaves

26. The graph below represents the lengths of earthworms in a population collected 10 years apart.



What can be concluded about the survival and reproduction of earthworms from this graph?

A Shorter earthworms have an advantage.

B Average-length earthworms have an advantage.

C Punctuated equilibrium has occurred.

D Longer earthworms have an advantage.

27. A scientist from the board of health collected bacteria samples from various surfaces around a restaurant. Why would she culture them at 37°C?

A because at this high temperature any harmful bacteria would be killed

B because bacteria need a variety of temperatures to survive long enough to be studied

C because the bacteria could safely be studied but would not reproduce at this temperature

D because growth at 37°C would be ideal for revealing bacteria that are human pathogens

End of Goal 3 Sample Items

Answers to EOC Biology Sample Items

Goal 3

1. **Objective 3.01**
   Relate the variety of living organisms to their evolutionary relationships.
   Thinking Skill: Analyzing **Correct Answer:** D

2. **Objective 3.01**
   Relate the variety of living organisms to their evolutionary relationships.
   Thinking Skill: Applying **Correct Answer:** C

3. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Organizing **Correct Answer:** B

4. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Knowledge **Correct Answer:** C

5. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Applying **Correct Answer:** B

6. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Knowledge **Correct Answer:** A

7. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Knowledge **Correct Answer:** C

8. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Organizing **Correct Answer:** A

9. **Objective 3.02**
   Classify organisms according to currently accepted systems.
   Thinking Skill: Organizing **Correct Answer:** B

Goal 3

10. Objective 3.03
Determine the form and function of organisms including: Organ systems of animals. Functional systems of plants including: transport, reproduction, and regulation.
Thinking Skill: Applying **Correct Answer:** D

11. Objective 3.03
Determine the form and function of organisms including: Organ systems of animals. Functional systems of plants including: transport, reproduction, and regulation.
Thinking Skill: Knowledge **Correct Answer:** D

12. Objective 3.03
Determine the form and function of organisms including: Organ systems of animals. Functional systems of plants including: transport, reproduction, and regulation.
Thinking Skill: Applying **Correct Answer:** B

13. Objective 3.03
Determine the form and function of organisms including: Organ systems of animals. Functional systems of plants including: transport, reproduction, and regulation.
Thinking Skill: Applying **Correct Answer:** B

14. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Integrating **Correct Answer:** C

15. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Applying **Correct Answer:** D

16. Objective 3.03
Determine the form and function of organisms including: Organ systems of animals. Functional systems of plants including: transport, reproduction, and regulation.
Thinking Skill: Knowledge **Correct Answer:** C

Goal 3

17. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Applying **Correct Answer:** B

18. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Knowledge **Correct Answer:** A

19. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Analyzing **Correct Answer:** A

20. Objective 3.04
Compare and contrast the processes of reproduction, growth, development, and regulation of major phyla or organisms.
Thinking Skill: Knowledge **Correct Answer:** A

21. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Analyzing **Correct Answer:** C

22. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Analyzing **Correct Answer:** D

23. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Knowledge **Correct Answer:** A

24. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Analyzing **Correct Answer:** D

Goal 3

25. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Integrating **Correct Answer:** A

26. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Generating **Correct Answer:** B

27. Objective 3.05
Determine the internal and external factors that influence the growth and development of organisms.
Thinking Skill: Analyzing **Correct Answer:** D