

Brett Robbins Academic Consulting

Biology 20 Practice Test

Unit 2: Ecosystems and Population Change

25 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

Which of the following is an abiotic component of a grassland ecosystem?

- A) Sunlight reaching the soil
- B) Grasses growing in the soil
- C) Bacteria that decompose dead matter
- D) Insects that feed on leaves

Question 2

All of the moose living in one area of a provincial park at the same time make up a

- | | |
|--------------|---------------|
| A) Community | B) Population |
| C) Ecosystem | D) Habitat |

Question 3

Biologists counted 360 white-tailed deer in a study area of 45 km².

The population density of the deer, in individuals per km², is ____.

Question 4

The ecological niche of a species is best described as

- A) the place where the species lives
- B) the number of individuals of the species in an area
- C) the role of the species in its ecosystem, including the resources it uses and its interactions with other species
- D) the position of the species in a food chain

Question 5

Primary succession would most likely begin on

- A) an abandoned farm field
- B) a forest floor left after a wildfire
- C) an area where shrubs were cleared to build a road
- D) bare rock exposed when a glacier retreats

Question 6

In one year, a caribou population had 240 births, 60 immigrants, 150 deaths, and 90 emigrants.

The change in population size, ΔN , for the year was

- A) 60
- B) 240
- C) 300
- D) 480

Question 7

A population of 2500 rabbits increased by 300 individuals over one year.

The per capita growth rate of the population for that year was ____.

Question 8

Which of the following is a density! – ! independent limiting factor for a deer population?

- A) Competition for food among the deer
- B) Predation by wolves
- C) The spread of a contagious disease
- D) A severe drought that reduces the water supply

Question 9

A bee collects nectar from a flower and, in the process, transfers pollen that allows the flower to reproduce.

The relationship between the bee and the flower is an example of

- A) Parasitism
- B) Commensalism
- C) Mutualism
- D) Predation

Question 10

A bacterial culture starts with 500 cells. The population doubles every hour under ideal conditions.

The number of cells present after 4 hours is ____.

Question 11

A population showing logistic growth toward a carrying capacity K grows most rapidly when

- A) the population size is very small
- B) the population size is about half of K
- C) the population size has just reached K
- D) the population size is well above K

Question 12

Which of the following is an example of intraspecific competition?

- A) Two male elk fighting for the opportunity to mate
- B) A wolf pack hunting a moose
- C) Spruce trees and pine trees growing toward the same light
- D) Two different species of birds eating the same insects

Question 13

A closed population of Canada geese has 4800 individuals. During one year there are 960 births and 720 deaths. The population size at the end of the year is _____.

Question 14

A wildfire burns a mature forest in northern Alberta, leaving the soil intact.

The first plant species most likely to colonize the burned area are

- A) lichens growing on bare rock
- B) seedlings of spruce and pine trees
- C) mature shrubs and trees
- D) grasses and fireweed

Question 15

Snowshoe hare populations cycle over time, and lynx populations cycle with a slight delay.

After the hare population crashes, the lynx population will most likely

- A) increase immediately because more food is available
- B) remain unchanged for many years
- C) decrease after a short time lag
- D) increase because there is less competition among lynx

Question 16

The carrying capacity of a lake for a fish population is 1200 fish.

According to the logistic growth model, the population will grow fastest when it contains approximately

- A) 150 fish
- B) 600 fish
- C) 1200 fish
- D) 2400 fish

Question 17

In a dry grassland, plants of one species are found in groups around the few places where water collects.

This pattern of population distribution is described as

- A) Random
- B) Clumped
- C) Uniform
- D) Dispersed

Question 18

Purple loosestrife, a plant introduced from Europe, spreads rapidly through Alberta wetlands.

A major reason introduced species such as this often grow out of control is that they

- A) always reproduce asexually
- B) are closely related to native species
- C) produce more seeds than any native species
- D) have few or no natural predators or diseases in the new environment

Question 19

Cattle egrets follow grazing cattle and feed on insects that the cattle stir up from the grass.

The cattle are neither helped nor harmed. This relationship is an example of

- A) Commensalism
- B) Mutualism
- C) Parasitism
- D) Competition

Question 20

A wolf population has 850 individuals. In one year there are 170 births, 34 immigrants, 85 deaths, and 51 emig

The per capita growth rate of the population for that year was ____.

Question 21

Which characteristic most helps a population survive when its environment changes suddenly?

- A) All individuals have identical genes
- B) The population is very small
- C) The population has a high level of genetic diversity
- D) Individuals reproduce only once in their lifetime

Question 22

A deer population grows larger than the carrying capacity of its habitat.

If no new food sources become available, the population will most likely

- A) keep growing exponentially
- B) stay at the same size indefinitely
- C) adapt instantly to the new conditions
- D) decrease as starvation and disease become more common

Question 23

Three species of warblers feed in the same spruce trees, but each species hunts for insects in a different part of the tree. This behaviour reduces competition between the species and is an example of

- A) Resource partitioning
- B) Competitive exclusion
- C) Primary succession
- D) Commensalism

Question 24

Some events in primary succession on bare rock are listed below.

- 1 Shrubs and small trees become established
- 2 Lichens colonize the rock and begin to break it down
- 3 Grasses and small flowering plants grow as the soil deepens
- 4 A mature forest community develops

The order in which the events occur, from first to last, is _____.

Question 25

A tapeworm lives in the intestine of a dog, absorbing nutrients from the food the dog eats.

The dog loses weight and becomes weak. Which row correctly identifies this interaction and its effect on the two

- A) Mutualism

Both the tapeworm and the dog benefit

- B) Commensalism

The tapeworm benefits and the dog is unaffected

- C) Parasitism

The tapeworm benefits and the dog is harmed

- D) Predation

The tapeworm benefits and the dog is harmed

Answer Key

- | | | |
|---------|----------|----------|
| 1. A | 10. 8000 | 19. A |
| 2. B | 11. B | 20. 0.08 |
| 3. 8 | 12. A | 21. C |
| 4. C | 13. 5040 | 22. D |
| 5. D | 14. D | 23. A |
| 6. A | 15. C | 24. 2314 |
| 7. 0.12 | 16. B | 25. C |
| 8. D | 17. B | |
| 9. C | 18. D | |

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