ALBERTA BIOLOGY 20 · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Which process removes carbon dioxide from the atmosphere and stores the carbon in glucose?**

- A Cellular respiration
- B Photosynthesis
- C Combustion
- D Decomposition

Understand It with Pulse | Flag a mistake

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

Understand It with Pulse | Flag a mistake

3 **In a plant cell, photosynthesis takes place in the**

A chloroplast

B mitochondrion

C nucleus

D vacuole

Understand It with Pulse | Flag a mistake

4 **The enzyme in saliva that begins the chemical digestion of starch in the mouth is**

- A Pepsin
- B Lipase
- C Salivary amylase
- D Trypsin

Understand It with Pulse | Flag a mistake

5 **The graph shows the energy stored at each trophic level in a grassland. The first trophic level is the producers and the second trophic level is the primary consumers. The energy stored by the primary consumers, in kJ, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

6 **The graph shows the number of species in an area recovering after a wildfire. The number of species present 20 years after the wildfire is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

7 **The light-dependent reactions of photosynthesis occur in the**

- **A** stroma of the chloroplast
- **B** thylakoid membranes of the chloroplast
- **C** cytoplasm of the cell
- **D** matrix of the mitochondrion

Understand It with Pulse | Flag a mistake

8 **The function of the epiglottis during swallowing is to**

- **A** Produce mucus that traps dust and bacteria
- **B** Secrete enzymes into the small intestine
- **C** Cover the opening of the trachea so food does not enter the airway
- **D** Move food through the esophagus by peristalsis

Understand It with Pulse | Flag a mistake

9 **Nitrogen gas in the atmosphere is converted into compounds that plants can use by the process of**

A denitrification

B nitrification

C nitrogen fixation

D decomposition

Understand It with Pulse | Flag a mistake

10 **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

Understand It with Pulse | Flag a mistake

11 **The graph shows the rate of photosynthesis of an aquatic plant at different light intensities. The light intensity above which the rate of photosynthesis stops increasing is**

A 20

B 40

C 60

D 80

Understand It with Pulse | Flag a mistake

12 **Bile, which helps in the digestion of fats, is stored in the**

A Liver

B Gallbladder

C Pancreas

D Small intestine

Understand It with Pulse | Flag a mistake

13 **A pyramid of numbers can be inverted, with fewer organisms at the base than above it, when**

A producers reproduce more quickly than consumers

B one large producer, such as a tree, supports many small consumers

C consumers are larger than the producers

D energy is lost as heat at each transfer

Understand It with Pulse | Flag a mistake

14 **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

Understand It with Pulse | Flag a mistake

15 **The graph shows how strongly chlorophyll absorbs light at each wavelength. The wavelength at which absorption is lowest, in nm, is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

16 **Deoxygenated blood is pumped from the right ventricle to the lungs through the**

A Pulmonary artery

B Pulmonary vein

C Aorta

D Vena cava

Understand It with Pulse | Flag a mistake

17 **Carbon stored underground for millions of years is returned to the atmosphere most directly by**

A photosynthesis in forests

B the respiration of animals

C the burning of fossil fuels

D the weathering of limestone rock

Understand It with Pulse | Flag a mistake

18 **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

Understand It with Pulse | Flag a mistake

19 **A plant is at its compensation point when**

- A photosynthesis stops completely
- B cellular respiration stops completely
- C the plant releases oxygen all day
- D the rate of photosynthesis equals the rate of respiration, so there is no net gas exchange

Understand It with Pulse | Flag a mistake

20 **The villi that line the small intestine function to**

- A Produce digestive enzymes
- B Secrete insulin into the blood
- C Move food by peristalsis
- D Increase the surface area for absorption

Understand It with Pulse | Flag a mistake

21 **An earthworm that feeds on dead leaves lying on the forest floor is classified as a**

A detrivore

B decomposer

C producer

D parasite

Understand It with Pulse | Flag a mistake

22 **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

Understand It with Pulse | Flag a mistake

23 **Which statement best describes how photosynthesis and cellular respiration are connected?**

A Respiration stores light energy in glucose, and photosynthesis releases it

B The products of photosynthesis, glucose and oxygen, are the reactants of cellular respiration

C Both processes occur only in the chloroplast

D Both processes produce oxygen gas

Understand It with Pulse | Flag a mistake

24 **The graph shows a student's heart rate during exercise. The student's stroke volume is 70 mL per beat. The cardiac output at 6 minutes, in mL per minute, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

25 **Which sequence shows the correct direction of energy flow in an ecosystem?**

A Sun → producer → herbivore → carnivore

B Sun → herbivore → producer → carnivore

C producer → Sun → herbivore → carnivore

D herbivore → carnivore → producer → Sun

Understand It with Pulse | Flag a mistake

26 **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

Understand It with Pulse | Flag a mistake

27 **The graph shows the ATP produced at each stage of aerobic cellular respiration, in order: stage 1 is glycolysis, stage 2 is the Krebs cycle, and stage 3 is the electron transport chain. The number of ATP produced by the electron transport chain is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

28 **Some structures of the respiratory system are listed below. 1 Trachea 2 Alveoli 3 Nasal cavity 4 Bronchus The order in which inhaled air passes through these structures, from first to last, is ____. Record your answer as a four-digit number.**

ANSWER _____

Understand It with Pulse | Flag a mistake

29 **Phosphorus becomes available to plants in the soil mainly when**

A lightning strikes the ground

B bacteria take it in from the air

C rocks containing phosphate weather and erode

D animals die and decompose

Understand It with Pulse | Flag a mistake

30 **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 ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

31 **The original source of energy for nearly all life on Earth is**

A heat from the core of the Earth

B energy in sunlight

C oxygen in the atmosphere

D glucose absorbed from the soil

Understand It with Pulse | Flag a mistake

32 **The wave-like contractions of the smooth muscle in the walls of the digestive tract that push food along are called**

A Peristalsis

B Emulsification

C Filtration

D Absorption

Understand It with Pulse | Flag a mistake

33 **In the water cycle, water vapour in the atmosphere cools and changes into tiny liquid droplets that form clouds. This process is called**

A evaporation

B condensation

C precipitation

D transpiration

Understand It with Pulse | Flag a mistake

34 **The graph shows population size over time for a population with unlimited food and space and no predators. The shape of the graph is**

- **A** J-shaped, rising more and more steeply
- **B** S-shaped, levelling off at a maximum
- **C** a straight horizontal line
- **D** bell-shaped, rising then falling

Understand It with Pulse | Flag a mistake

35 **When human muscle cells cannot get enough oxygen, they convert pyruvate into**

- **A** lactic acid
- **B** ethanol
- **C** acetyl-CoA
- **D** carbon dioxide

Understand It with Pulse | Flag a mistake

36 **The graph shows a student's breathing rate during exercise. The student's tidal volume is 500 mL per breath. The volume of air inhaled in one minute at 2 minutes, in mL, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

37 **All heterotrophs ultimately depend on autotrophs because autotrophs**

A capture light energy and store it in food that other organisms can use

B return nitrogen compounds to the soil when they die

C break down dead organisms and recycle their nutrients

D obtain energy by consuming other organisms

Understand It with Pulse | Flag a mistake

38 **When a predatory sea star was removed from a rocky shore ecosystem, mussels multiplied rapidly and crowded out many other species, greatly reducing the diversity of the community. The sea star is best described as a**

A Pioneer species

B Invasive species

C Dominant species

D Keystone species

Understand It with Pulse | Flag a mistake

39 **In cellular respiration, the coenzyme NADH functions mainly to**

A store carbon dioxide until it can be released

B split water molecules in the mitochondrion

C carry hydrogen to the electron transport chain

D convert glucose into starch for storage

Understand It with Pulse | Flag a mistake

40 **Which statement about capillaries is correct?**

- **A** Capillaries contain valves that prevent the backflow of blood
- **B** Capillary walls are thick and muscular so they can withstand high blood pressure
- **C** Capillary walls are one cell thick, allowing substances to diffuse between the blood and the body cells
- **D** Capillaries carry blood directly from the heart to the body tissues

Understand It with Pulse | Flag a mistake

41 **The graph shows the biomass at each trophic level in a pond. The first trophic level is the producers and the third trophic level is the secondary consumers. The biomass at the secondary consumer level, in kg, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

42 **A fish population follows the logistic growth model, $\Delta N = r_{max} N \left(\frac{K - N}{K}\right)$. If $r_{max} = 0.4$ per year, $N = 300$, and $K = 1500$, then the growth of the population, ΔN, in one year is ____ fish.**

ANSWER _____

Understand It with Pulse | Flag a mistake

43 **The main purpose of fermentation in a cell that lacks oxygen is**

- **A** to produce most of the ATP the cell needs
- **B** to break down lactic acid into glucose
- **C** to release oxygen for aerobic respiration
- **D** to regenerate NAD^+ so that glycolysis can continue

Understand It with Pulse | Flag a mistake

44 **The stomach wall is not digested by its own gastric juice mainly because**

- **A** A thick layer of mucus coats and protects the stomach lining
- **B** Pepsin is never released into the stomach
- **C** Bile neutralizes the hydrochloric acid in the stomach
- **D** The stomach lining has no blood supply

Understand It with Pulse | Flag a mistake

45 **Phosphate fertilizer washes from farm fields into a lake. The most direct effect of the added phosphate on the lake is that it**

- **A** increases denitrification by bacteria in the lake
- **B** is converted into nitrates by nitrifying bacteria
- **C** causes algal blooms, and decomposition of the algae lowers dissolved oxygen
- **D** escapes from the lake as a gas into the atmosphere

Understand It with Pulse | Flag a mistake

46 **The harmless scarlet king snake has red, black, and yellow bands very similar to those of the poisonous eastern coral snake, and predators avoid both snakes. The king snake is protected by**

- **A** Mimicry
- **B** Camouflage
- **C** Countershading
- **D** Warning colouration

Understand It with Pulse | Flag a mistake

47 **Carotenoids, the orange pigments in leaves, assist photosynthesis by**

A absorbing wavelengths of light that chlorophyll absorbs poorly and passing the energy to chlorophyll

B reflecting all light away from the leaf

C splitting water molecules during the light-dependent reactions

D carrying carbon dioxide into the leaf through the stomata

Understand It with Pulse | Flag a mistake

48 **Bile salts break large fat globules into many tiny droplets, increasing the surface area on which lipase can act. This physical process is called**

A Peristalsis

B Hydrolysis

C Absorption

D Emulsification

Understand It with Pulse | Flag a mistake

49 **The producers in a forest store 3600000 kJ of energy. Using the 10% rule, the energy available to the secondary consumers, in kJ, is**

- A 360000
- B 3600
- C 360000000
- D 36000

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50 **Secondary succession differs from primary succession because, in secondary succession,**

- A the process begins on bare rock
- B the process takes much longer to complete
- C no pioneer species are involved
- D soil is already present when the process begins

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ANSWER KEY

1. B
2. B
3. A
4. C
5. 50000
6. 20
7. B
8. C
9. C
10. D
11. C
12. B
13. B
14. B
15. 550
16. A
17. C
18. D
19. D
20. D
21. A
22. B
23. B
24. 8400
25. A
26. C
27. 32
28. 3142
29. C
30. 2314
31. B
32. A
33. B
34. A
35. A
36. 8000
37. A
38. D
39. C
40. C
41. 8.5
42. 96
43. D
44. A
45. C
46. A
47. A
48. D
49. D
50. D

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