



**Centre for Academic
Learner Services**

BIOLOGY 20 STUDY GUIDE

Instructions: There are 50 multiple choice questions in this study guide. The answer key is on the last page.

The course text for Biology 120 is *Biology: Life on Earth With Physiology*, 8th Edition, by Audesirk and Audesirk, published by Prentice Hall.

You may use the textbook companion website (for the 7th edition) for additional study materials at:
http://wps.prenhall.com/esm_audesirk_bloe_7/1,8753,1139971,.html

The Biology 20 exam in the Testing Centre is two hours long. The pass mark is 65%. No calculators, dictionaries, or other aides are permitted.

1. The scientific way to name an organism is:
 - a. Genus species.
 - b. *Genus species*.
 - c. genus species.
 - d. genus Species.
 - e. Genus *species*.

2. The main difference between catabolism and anabolism is:
 - a. catabolic reactions break compounds down; anabolic reactions build compounds up.
 - b. catabolic reactions build compounds up; anabolic reactions break compounds down.
 - c. catabolic reactions are part of the body's metabolism; anabolic reactions are not.
 - d. anabolic reactions are part of the body's metabolism; catabolic reactions are not.
 - e. there is no difference between catabolism and anabolism.

3. A scientific theory:
 - a. is a general explanation for a natural phenomena.
 - b. is an educated guess.
 - c. is less reliable than a hypothesis.
 - d. will never be changed.
 - e. none of the above.

4. The three main types of ecological pyramids are:
 - a. energy, producers, consumers
 - b. heterotrophic, autotrophic, detritic
 - c. plants, animals, minerals
 - d. numbers, biomass, energy
 - e. biomass, energy, heterotrophic

5. Which of the following is NOT true of water?
 - a. It is most dense at 0 °C.
 - b. It demonstrates cohesiveness through its high surface tension.
 - c. It demonstrates adhesiveness by clinging to other surfaces.
 - d. At sea level, it boils at 100 °C.
 - e. The vast majority of water on Earth is in the oceans.

6. Which of the following is NOT true of bacteria?

- a. Denitrifying bacteria turn nitrates and nitrites into gaseous nitrogen.
- b. Legumes contain nitrogen-fixating bacteria.
- c. The kind of bacteria found in your gut is known as Archaeobacteria.
- d. The kind of bacteria found in your mouth is known as Eubacteria.
- e. Some bacteria are helpful to humans, whereas other types are harmful.

7. Phosphate fertilizers have increased the amount of phosphate in lakes and other bodies of water. What effect does this have on the producers in the water?

- a. It kills them.
- b. It stimulates their growth.
- c. It increases their likelihood of getting eaten.
- d. It causes them to form toxic compounds.
- e. It reduces their photosynthetic capacity.

8. A cat eats a bird. In this case, the cat is a(n):

- a. carnivore.
- b. omnivore.
- c. herbivore.
- d. autotroph.
- e. producer.

9. Which of the following statements is true?

- a. All plants are omnivores.
- b. No plants are carnivores.
- c. Photosynthetic algae are autotrophs.
- d. Humans are autotrophs.
- e. Fungi are producers.

10. The driest biome listed below is the:

- a. Temperate deciduous forest
- b. Tropical rain forest
- c. Chaparral
- d. Taiga
- e. Tall-grass grasslands

11. A deer belongs to the domain:

- a. Heterotrophia.
- b. Herbivoria.
- c. Eubacteria.
- d. Archaeobacteria.
- e. Eukarya.

12. Which of these is **not** characteristic of most animals?

- a. reproduce sexually
- b. no cell wall
- c. swiftly respond to stimuli
- d. motility at some stage of the life cycle
- e. autotrophic

13. The kingdom Monera contains many organisms that:

- a. are unicellular and prokaryotic.
- b. are unicellular and also eukaryotic.
- c. are multicellular and prokaryotic.
- d. are multicellular and eukaryotic.
- e. resemble *Protozoa*.

14. When classifying life:

- a. a "class" contains more organisms than a "kingdom"
- b. an "order" contains more organisms than a "class"
- c. a "class" contains more organisms than an "order"
- d. a "phylum" contains fewer organisms than a "class"
- e. a "phylum" contains fewer organisms than an "order"

15. The DNA in a prokaryotic cell is contained in the _____ region of the cytoplasm.

- a. nucleus
- b. nucleolus
- c. nucleoid
- d. nuclear
- e. nucleic

16. The flipper of a dolphin and the arm of a human are considered to be:

- a. analogous.
- b. homologous.
- c. vestigial.
- d. ancestral.
- e. an example of convergent evolution.

17. In the cells of all living organisms, the most common energy carrier is:

- a. NADP
- b. NAD⁺
- c. ADP
- d. ATP
- e. DNA

18. Coenzymes function by:

- a. binding to the enzyme and weakening the bonds of the substrate.
- b. binding to the substrate and weakening the bonds of the enzyme.
- c. binding two or more substrates and joining them.
- d. helping substrates find enzymes.
- e. joining together to form an enzyme.

19. Energy transformations are not 100% efficient; often energy in the form of _____ is released, which fulfills the second law of thermodynamics.

- a. nuclear
- b. chemical
- c. heat
- d. elastic
- e. kinetic

20. Electrons from molecules of _____ are excited in the light-dependent reactions of photosynthesis.

- a. carotenoids.
- b. stroma.
- c. matrix.
- d. leaves.
- e. chlorophyll.

21. The reactions that occur in the stroma are known as:

- a. the Krebs cycle.
- b. the citric acid cycle.
- c. light-dependent reactions.
- d. light-independent reactions.
- e. electron excitation reactions.

22. If a plasma membrane is differentially permeable, the membrane:

- a. allows only water to pass through by osmosis
- b. is impermeable to lipid-soluble molecules
- c. only permits molecules to pass through by diffusion
- d. cannot regulate passage of materials unless aided by expenditure of energy
- e. allows some molecules to pass through but not others

23. Which pair of organelles is responsible for energy supply to eukaryotic cells?

- a. Ribosomes and mitochondria
- b. Chloroplasts and ribosomes
- c. Golgi bodies and ribosomes
- d. Mitochondria and lysosomes
- e. Chloroplasts and mitochondria

24. During glycolysis, what is the net gain of ATP molecules produced?

- a. 2
- b. 4
- c. 34
- d. 36
- e. 38

25. Strenuous exercise increases CO₂ production. Specifically, where is the CO₂ coming from?

- a. glycolysis
- b. C3 cycle
- c. Krebs cycle
- d. chemiosmosis
- e. fermentation

26. Which chambers supply deoxygenated blood to, and receive oxygenated blood from, respectively, the pulmonary circulation?

- a. The right atrium and the left ventricle
- b. The right ventricle and the left atrium
- c. The right atrium and right ventricle
- d. The left atrium and left ventricle
- e. The right and left atria

27. The maximum number of molecules of oxygen that can bind with one molecule of human hemoglobin is?

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

28. The correct path that blood follows from when it leaves the heart to when it returns to the heart is:

- a. arteries, arterioles, capillaries, venuoles, veins
- b. veins, venuoles, capillaries, arterioles, arteries
- c. arterioles, arteries, capillaries, venuoles, veins
- d. veins, venuoles, capillaries, arterioles, arteries
- e. capillaries, arteries, arterioles, venuoles, veins

29. Blood clotting is best described as a(n):

- a. anabolic reaction.
- b. catabolic reaction.
- c. cascade reaction.
- d. negative feedback reaction.
- e. allosteric reaction.

30. When measuring blood pressure, the first number is known as the _____ and the second number is known as the _____.

- a. diastolic, systolic
- b. systolic, diastolic
- c. high, low
- d. low, high
- e. arterial, venular

31. Which of the following is not a part of the lymphatic system?

- a. Thymus
- b. Thyroid
- c. Spleen
- d. All of the above are part of the lymphatic system.
- e. None of the above is part of the lymphatic system.

32. Life-long immunity to a disease after a vaccination is due to the presence of

- a. red blood cells
- b. helper T cells
- c. killer T cells
- d. memory B cells
- e. mast cells

33. How does a natural killer cell prevent infection?

- a. By enzymatically degrading viruses.
- b. By destroying the cells infected with a virus.
- c. By secreting proteins into the viral membrane, thereby opening a large pore in the viral membrane.
- d. Both a and c are correct.
- e. All statements are correct.

34. In the lungs, oxygen moves from air to blood by

- a. osmosis
- b. bulk flow
- c. active transport
- d. facilitated diffusion
- e. simple diffusion

35. "Smoker's cough" is the result of:

- a. irritation in the throat
- b. dry lungs
- c. nicotine
- d. excess mucous
- e. emphysema

36. High carbon dioxide levels are detected by the:

- a. pituitary.
- b. AV node.
- c. SA node.
- d. medulla oblongata.
- e. hypothalamus.

37. Where does digestion begin?

- a. Mouth
- b. Pharynx
- c. Stomach
- d. Small intestine
- e. Colon

38. Which of the following is not a function of the stomach?

- a. storage of digesting food
- b. production of bile
- c. digestion of protein
- d. mechanical digestion
- e. chemical digestion

39. Bile aids in fat digestion by:

- a. acting as an emulsifier, thus exposing a large surface area to enzymes.
- b. acting as a lipid-digesting enzyme.
- c. digesting lipids into smaller components; these can now be digested further by pancreatic enzymes.
- d. both b and c are correct.
- e. a, b, and c are correct.

40. Long loops of Henle promote....

- a. decreased retention of large proteins
- b. decreased secretion of wastes
- c. increased secretion of wastes
- d. decreased retention of water
- e. increased retention of water

41. Urine leaves each mammalian kidney through a muscular tube known as the:

- a. urethra
- b. ureter
- c. bladder
- d. collecting duct
- e. nephridium

42. If you eat a meal that is high in sugar, which hormone will stimulate your cells to store the excess?

- a. Glucagon
- b. Glycogen
- c. Insulin
- d. Thyroxine
- e. Glucocorticoids

43. Which of the following is NOT true about ADH?

- a. It is also known as vasopressin
- b. It is released when the body is becoming dehydrated
- c. It is released from the hypothalamus
- d. It increases the permeability of part of the nephron to water
- e. It helps the body conserve water

44. Which of the following is correct about blood donation?

- a. An O- person can donate to an O+ person.
- b. An O+ person can donate to an O- person.
- c. An AB+ person can donate to a B+ person.
- d. An AB- person can donate to a B+ person.
- e. None of the above are possible.

45. The most common deficiency in the diet in developed countries, such as Canada, is:

- a. calcium.
- b. iron.
- c. vitamin C.
- d. vitamin D.
- e. iodine.

46. Which type of cell is destroyed by the AIDS virus?

- a. Suppressor T cells
- b. Killer T cells
- c. Helper T cells
- d. B cells
- e. Plasma cells

47. Which of the following is an autoimmune disorder?

- a. arthritis
- b. the common cold
- c. cancer
- d. AIDS
- e. influenza

48. The term "motor unit" refers to

- a. an entire skeletal muscle
- b. a group of sarcomeres in a muscle fiber
- c. all of the skeletal muscle in one body part
- d. all of the motor neurons going to a skeletal muscle
- e. a group of muscle fibers with which a neuron synapses

49. Which of the following is true about muscle?

- a. Actin is in the thick filaments.
- b. Myosin is in the thin filaments.
- c. Striated muscle is the same as smooth muscle.
- d. Skeletal muscle is also called striated muscle.
- e. Smooth muscle is also known as cardiac muscle.

50. Groups of tissues that function together form a(n)

- a. organ
- b. organ system
- c. system
- d. cell
- e. organism

Answer Key

1. b
2. a
3. a
4. d
5. a

6. c
7. b
8. a
9. c
10. c

11. e
12. e
13. a
14. c
15. c

16. b
17. d
18. a
19. c
20. e

21. d
22. e
23. e
24. a
25. c

26. b
27. d
28. a
29. c
30. b

31. b
32. d
33. b
34. e
35. d

36. d

37. a

38. b

39. a

40. e

41. b

42. c

43. c

44. a

45. b

46. c

47. a

48. e

49. d

50. a