MULTIPLE CHOICE. Select the ONE choice that BEST answers the question. Circle your answer and write the letter in the blank next to the question. Please feel free to ask me to clarify any question. (2 pts. each - 70 total)

___ 1. How are adaptations beneficial to organisms?
   A. Adaptations help organisms survive and reproduce in any environment, such that organisms can easily move into different environments.
   B. Adaptations help organisms survive and reproduce in a particular environment.
   C. Adaptations allow organisms to tolerate dramatic changes in their environment (such as when a lake dries up).
   D. Adaptations are developed by individual organisms through the use of certain body parts to accomplish particular tasks.

___ 2. The smallest unit that can evolve is a _______.
   A. species
   B. genotype
   C. population
   D. morph
   E. gene

___ 3. "Differential success in reproduction" is just another way of saying _____.
   A. mutation
   B. natural selection
   C. variation
   D. genetic drift
   E. recombination

___ 4. Fossils are most likely to be found in _______.
   A. the continental shelves
   B. unglaciated terrain
   C. sedimentary rock
   D. igneous rock
   E. volcanic archipelagos such as Galapagos and Hawaiian Islands

___ 5. An adaptation is _________.
   A. an individual's attempt to conform to its environment
   B. a trait that confers a reproductive advantage on the individual possessing it
   C. a variable allele that changes expression in response to the environment
   D. a trait that is seldom expressed
   E. all of the above

___ 6. In artificial selection, humans provide the selective pressure for species to change and shape the evolution of various breeds. What provides the selective pressure in natural selection?
   A. the environment
   B. scientifically trained humans
   C. the degree of natural genetic variation in a population
   D. disease

___ 7. Which one of the following represents two structures that are homologous?
   A. the wing of a bat and the scales of a fish
   B. the wing of a bat and the flipper of a whale
   C. the antennae of an insect and the eyes of a bird
   D. the feathers of a bird and the salt glands of a blue-footed booby
   E. the legs of a fly and the wings of a bird

___ 8. In terms of hierarchy of organization, organs fall between ______ and _____.
   A. cells . . . tissues
   B. organ systems . . . organisms
   C. atoms . . . cells
   D. tissues . . . organ systems

___ 9. An animal's internal environment is _______.
   A. the blood
   B. the interior of compartments like the heart and stomach
   C. any place beneath the skin
   D. any fluid inside the body
   E. the interstitial fluid that surrounds the cells

___ 10. The connection between structure and ________ is a basic concept of biology.
    A. species
    B. adaptation
    C. function
    D. sex
    E. strength

___ 11. Food is pushed through the digestive tract by the contractions of _______.
    A. nervous tissue
    B. smooth muscle
    C. simple columnar epithelium
    D. skeletal muscle
    E. cardiac muscle

___ 12. All but one of the following systems is correctly paired with one of their parts. Which pair is INCORRECT?
    A. circulatory system ... heart
    B. respiratory system ... lung
    C. endocrine system ... thyroid gland
    D. integumentary system ... hair
    E. excretory system ... intestine
13. Which of the following best illustrates homeostasis?
A. All the cells in the body have much the same chemical composition.
B. Cells of the skin are constantly worn off and replaced.
C. When blood CO2 increases, you breathe faster and get rid of CO2.
D. All organs are composed of the same four kinds of tissues.
E. The lung has a large surface for exchange of gases.

14. Negative feedback is a method of homeostatic control that _______.
A. increases the speed and rapidity of negative responses
B. counteracts a change in a condition by causing the change to either moderate or stop
C. promotes decreases in metabolism
D. produces a response by lowering some set point of an organism's metabolism
E. causes an effector to signal the control center of an organism, which creates the stimulus to make a response

15. Which of the following could be absorbed by cells lining the digestive tract?
A. keeping air out of the esophagus
B. keeping fluid from entering the lungs
C. keeping air out of the esophagus and keeping fluid and food from entering the lungs
D. getting enough nutrients because absorption will be affected.

17. A person with a malformed epiglottis will have trouble _______.
A. pancreas
B. mouth
C. small intestine
D. stomach
E. liver

18. What is found in a bolus?
A. gastrin
B. amylase
C. acid chyme
D. sphincter valves
E. pepsin

19. Digestion of lipids begins in the _____, and digestion of proteins begins in the ______.
A. mouth . . . stomach
B. stomach . . . small intestine
C. stomach . . . mouth
D. stomach . . . stomach
E. small intestine . . . stomach

20. How does the enzyme lipase work in digestion?
A. It combines with HCl in the stomach to digest starch
B. It assists the enzyme team that hydrolyzes polypeptides
C. It finishes the work of pancreatic amylase by hydrolyzing disaccharides
D. Lipases hydrolyze DNA into nucleotides
E. It works with bile salts to hydrolyze fat to fatty acids and glycerol.

21. The largest variety of digestive enzymes function in the ____________
A. large intestine
B. oral cavity
C. stomach
D. gall bladder
E. small intestine

22. Which one of the following is NOT a function of the circulatory system?
A. producing mucus
B. transporting nutrients
C. fighting disease
D. moving wastes
E. maintaining body temperature

23. The ________ side of the lower heart is thicker and pumps blood to the _________.
A. left . . . body
B. right . . . body
C. left . . . lungs
D. right . . . lungs
E. neither side of the heart is thicker

24. The function of the pulmonary circuit is to ____________
A. carry O2 and nutrients to tissues where they are needed
B. retrieve waste products from the body tissues
C. carry blood through the heart, lungs, and all body tissues
D. carry CO2 to the lungs and pick up O2 from the lungs
E. screen blood from the small intestine in case toxic substances are present

25. The component in bone marrow responsible for producing all other blood cells ______.
A. platelets
B. red blood cells
C. white blood cells
D. macrophages
E. master stem cells

26. Which chamber(s) of the heart hold(s) oxygenated blood?
A. left ventricle and left atrium
B. both left and right atria
C. left atrium only
D. right atrium and right ventricle
E. right atrium only

27. Heart valves function to _________.
A. keep blood moving forward through the heart
B. mix blood as it passes through the heart
C. control the amount of blood flow
D. slow down the blood
E. all are correct
28. Which of these would help you in your quest to develop cardiovascular disease?
   A. exercise    B. eat a diet low in cholesterol    C. eat a diet low in saturated fat
   D. smoke    E. None of these increases the risk of cardiovascular disease.

29. What type of lymphocyte produces antibodies as part of the human immune response?
   A. helper T    B. effector B    C. cytotoxic T    D. memory B    E. memory T

30. Tissue inflammation is triggered by which of the following?
   A. accumulation of phagocytes in an injured area    B. release of interferon by infected cells
   C. increased blood flow in an injured area    D. release of chemicals such as histamine by damaged cells
   E. fever

31. Chemicals produced by virus-infected cells that alert neighboring cells to prepare a defense are called _____.
   A. antibodies    B. interferons    C. antigens    D. histamines    E. complement proteins

32. The thymus is most active during childhood. A child with a malfunctioning thymus will have trouble with _____.
   A. humoral immunity    B. cell-mediated immunity    C. innate immunity
   D. humoral and cell-mediated immunity    E. leukocyte production

33. Which of the following types of cells initiate a secondary immune response?
   A. immature white blood cells    B. natural killer cells    C. memory cells    D. effector cells
   E. plasma cells

34. What type of lymphocyte attacks infected body cells during the cell-mediated immune response?
   A. helper T    B. effector B    C. cytotoxic T    D. memory B    E. memory T

35. A macromolecule produced in the body, which recognizes another molecule as "foreign" to the body, is a(n) _____.
   A. antibody    B. platelet    C. antigen    D. lymphocyte    E. macrophage

TRUE/FALSE. Write your answer next to the statement, T for true and F for false. (2 pts. each - 30 total)

36. Homologous structures are used for the same function in different species.

37. Stabilizing selection occurs in a population in which individuals at both ends of a phenotypic range have been selected for.

38. Connective tissue consists of cells scattered in an extracellular matrix.

39. Chemical exchange between the environment and the cells of a complex animal is indirect.

40. The goal of homeostasis is the maintenance of internal conditions within narrow limits.

41. Geckos can walk up walls and hang from ceilings because their toes have microscopic suction cups.

42. The function of bile salts is to neutralize chyme.

43. Pancreatic secretions are stored in the gallbladder.

44. The liver is the first organ to get access to nutrients absorbed in the small intestine.
45. The entire cardiac cycle takes about one second to complete.

46. Atherosclerosis is hardening of arteries due to calcium being deposited in the plaques along the inner walls of arteries.

47. A heart murmur is the result of a defect in one or more of the heart valves.

48. An antigen binds to the part of an antibody called the antigenic determinant.

49. An antigen-presenting cell is a macrophage.

50. Cytotoxic T cells kill infected cells by using perforins to make holes in their cell membrane.