

- ~~18)~~ Nervous tissue is composed of two types of cells: \_\_\_\_\_ that conduct impulses and \_\_\_\_\_ that surround and protect these cells. 18) \_\_\_\_\_
- ~~19)~~ A group of two or more tissues that function as a unit is a(n) \_\_\_\_\_. 19) \_\_\_\_\_
- 20) The toes are located \_\_\_\_\_ to the knee. 20) \_\_\_\_\_
- ~~21)~~ Skeletal muscle is considered \_\_\_\_\_ muscle because conscious control can be exercised over its movement. 21) \_\_\_\_\_
- ~~22)~~ The skin provides a waterproof barrier surrounding the body because of the presence of \_\_\_\_\_, a protein in the epidermal cells. 22) \_\_\_\_\_
- ~~23)~~ The presence of a suntan is due to increased activity of \_\_\_\_\_ in response to increased levels of ultraviolet radiation. 23) \_\_\_\_\_
- 24) \_\_\_\_\_ gland located in the dermis of the skin that helps to regulate body temperature is the \_\_\_\_\_ gland, which is a type of \_\_\_\_\_ gland. 24) \_\_\_\_\_
- ~~25)~~ The ability of living organisms to maintain a constant internal environment despite changes in the external environment is \_\_\_\_\_. 25) \_\_\_\_\_
- ~~26)~~ Body temperature is controlled by a negative feedback control system. The hypothalamus is the \_\_\_\_\_ for this system. 26) \_\_\_\_\_

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 27) If you were in a bike accident that resulted in bleeding, explain why the injury must be deeper than the epidermis.
- 28) Blood pressure is carefully regulated by a negative feedback control system in the body. When the blood pressure falls below a set point, this decreased pressure is detected by baroreceptors (pressure receptors) in the aorta and carotid arteries. These receptors send signals to a region of the brain known as the medulla oblongata. This region of the brain integrates incoming signals and sends signals to the heart to increase the strength of contractions and to the blood vessels, to constrict arterioles so as to increase the blood pressure, returning it to normal. Based on this information, identify each of the parts of this control system:
- a) controlled variable
  - b) sensor
  - c) control center
  - d) effector(s)
- 29) During long, sustained aerobic exercise, a lot of heat is generated that elevates body temperature. Describe how a homeostatic control system would likely work to cool body temperature back to normal. Specify each component of the control system.

Write your answer in the space provided or on a separate sheet of paper.

- ) As food is chemically digested by the stomach, the pH of the gut fluids becomes very acidic. However, when the chyme is further processed in the small intestine, the gut fluid pH cannot remain that acidic. Explain the physiological processes that occur to chyme as it enters the duodenum to ensure that the pH is not damaging to the small intestine.
- ) Explain the meaning of this statement: Fats are easy to absorb but difficult to digest.
- ) Following the end of the school year, you celebrate a great semester by gorging on pizza. Assuming that your pizza has several meat toppings, discuss *where* in the digestive tract those meat toppings will be digested.

Biol 160

Name \_\_\_\_\_

Write your answer in the space provided or on a separate sheet of paper.

- ) You have been asked to test the effectiveness of drug X in preventing the growth of certain types of cancerous cells. Your responsibilities include designing and executing the experimental approach. After completing the study, you realize that no control variables were defined. How will this impact your drug study?
- ) While out on a trip to a remote location in South America, you discovered an organism on a beautiful tropical flower. You have no idea about the classification of this organism. What features or characteristics of the new organism should you look for to at least be able to determine the kingdom it belongs to?
- ) Describe how denaturing a protein alters the function of that protein.
- ) During a triathlon, many individuals reach a point in which their muscles are in oxygen debt, a state characterized by low or no oxygen available for cellular respiration. Describe how oxygen debt would impact energy production in these athletes.
- ) In experiments with HeLa cells, you discover that a new chemical agent blocks cell growth by inhibiting protein synthesis. Describe where in the cell the drug is most likely having an effect.
- ) If you ingest and digest a meal that contains components necessary for normal body function but too large to be transported across the plasma membrane through pores, by diffusion, or aided by transport proteins, how could the macromolecules enter the cell?

ANSWER. Write the word or phrase that best completes each statement or answers the question.

eters from the accompanying figure to answer the following questions.