

The Human Body and Homeostasis Pre-Test

1 Microtubules help provide support for the cell. What body system has the same function?

- A** skeletal system
- B** digestive system
- C** circulatory system
- D** respiratory system

2 The skeletal system is important for maintaining homeostasis because it:

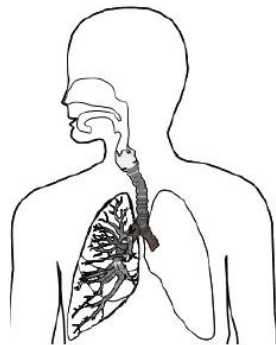
- A** protects your organs
- B** produced blood cells
- C** helps you move
- D** all of the above

Part of Muscular System	Description
smooth muscle	Found in digestive tract and walls of blood vessels. Acts involuntarily.
cardiac muscle	Specialized muscle found only in the heart. Acts involuntarily.
skeletal muscle	Attached to bones to aid movement. Acts voluntarily and involuntarily.
tendons	Strands of tough connective tissue that connect skeletal muscles to bones.

3 As part of an extended field investigation, Steve made the table above to summarize facts about the muscular system. Based on the information in the table, it can be concluded that

- A** there are three types of muscle
- B** tendons act voluntarily
- C** only skeletal muscle can act involuntarily
- D** not here

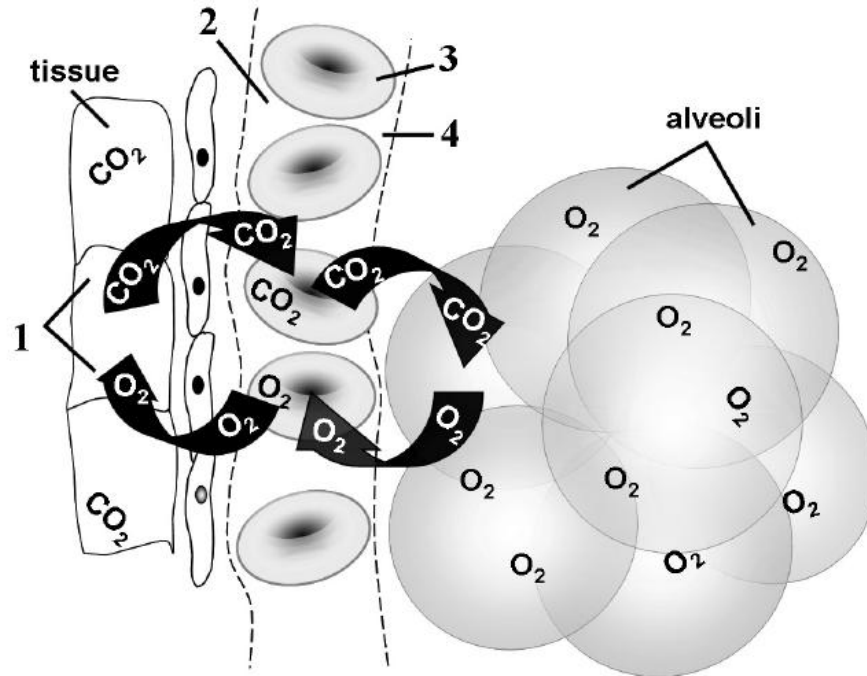
- 4 Riding a bicycle requires additional energy from leg muscles. Which of the following conditions may result from this activity, and which response helps restore the body to its normal condition?
- A increased carbon dioxide in the blood can be removed by breathing faster
 - B decreased oxygen can be replaced by digesting an apple
 - C increased sugars in the blood stream can be diluted by drinking water
 - D increased salt wastes can be removed by the heart
- 5 What part of a heating and air conditioning system performs a function similar to nasal hairs?
- A ducts
 - B thermostat
 - C filter
 - D cooling agent
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- 6 Which statement best describes the function of this human body system?
- A breaks down food into nutrients and wastes
 - B supplies O_2 to the blood, which in turn delivers O_2 to all parts of the body
 - C endocrine and reproductive
 - D nervous and digestive

USE THIS DIAGRAM TO ANSWER QUESTIONS 7-14

This diagram illustrates a vital process that occurs in the human body.



- 7 How does the structure of the alveoli help process 1 in the diagram?
- A small patterns on the surface of the alveoli correspond with the shapes of CO₂ and O₂ molecules and allow them to enter
 - B smooth, rounded membranes of the alveoli allow gas molecules to flow in and out freely
 - C the hollow interior of the alveoli has ample space for unlimited gas molecules
 - D thin walls of the alveoli let molecules of CO₂ and O₂ pass through easily
- 8 What two body systems are interacting in this diagram?
- A respiratory-excretory
 - B digestive-circulatory
 - C nervous-endocrine
 - D respiratory-circulatory

9 Study the diagram carefully. What process is illustrated in the diagram?

- A** photosynthesis
- B** gas exchange
- C** respiration
- D** gas deposition

10 The protein molecule that carries CO₂ and O₂ to and from tissues is found in which structure?

- A** 1
- B** 2
- C** 3
- D** 4

11 Identify structure 2.

- A** vein
- B** artery
- C** nerve
- D** capillary

12 Identify structure 3.

- A** vein
- B** artery
- C** red blood cell
- D** capillary

13 What is the original source of O₂ in the alveoli?

- A** lungs
- B** inhaled air
- C** nasal passages
- D** exhaled air

14 What is the major role of hemoglobin in red blood cells?

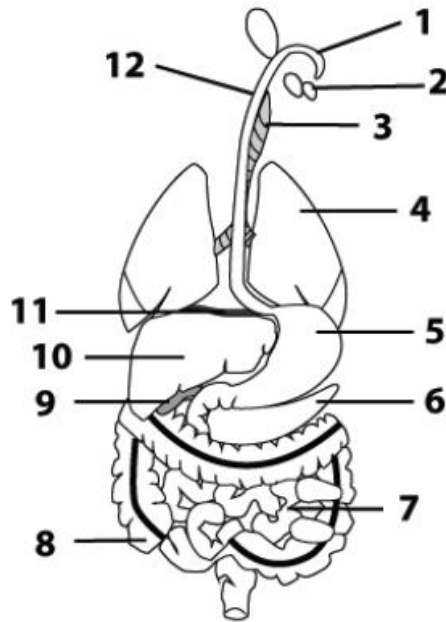
- A** carry food and oxygen to body cells
- B** prevent disease and fight infection
- C** carry digestive juices to the stomach
- D** send chemical messages to the nervous system

15 Which of the following is NOT a part of the respiratory system?

- A diaphragm
- B esophagus
- C lungs
- D trachea

16 The mitochondria, the cell membrane, and lysosomes perform the same functions for the cell that the _____ system does for our body.

- A skeletal
- B digestive
- C circulatory
- D respiratory



17 What two body systems are represented in this diagram?

- A respiratory and reproductive
- B muscular and skeletal
- C digestive and respiratory
- D circulatory and endocrine

- 18** The largest human body organ which regulates temperature and serves as a barrier against harmful microorganisms belongs to the -
- A** circulatory system
 - B** nervous system
 - C** digestive system
 - D** integumentary system
- 19** Which of the following is NOT a part of the integumentary system of the body?
- A** hair
 - B** bones
 - C** skin
 - D** finger and toe nails
- 20** When a person's body needs food, the brain helps maintain homeostasis by sending signals that make the person
- A** feel hungry.
 - B** perspire.
 - C** put on a sweater.
 - D** feel tired.
- 21** Two body systems work together to help remove waste products from blood. What are these two systems?
- A** circulatory and excretory
 - B** skeletal and digestive
 - C** circulatory and digestive
 - D** muscular and excretory
- 22** One of the functions of the endocrine system in the body is to -
- A** circulate blood to all parts of the body
 - B** collect waste products and remove them from the body
 - C** provide a strong framework for the body
 - D** produce enzymes to help digest food
- 23** Ovaries produce and secrete hormones in addition to eggs. To what human body systems to ovaries belong?
- A** integumentary and reproductive
 - B** excretory and muscular
 - C** endocrine and reproductive
 - D** nervous and digestive

24 The human body has specialized organs which collect and process substances from the blood. The concentrated substances are then secreted as hormones to regulate body processes. These specialized organs are called -

- A** ducts
- B** glands
- C** organelles
- D** nodes

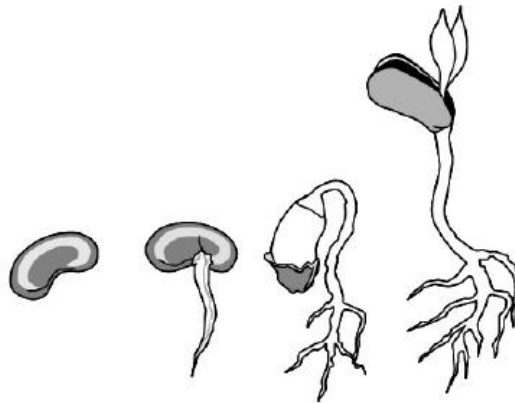
System A	System B	System C	System D
transports proteins to body cells	absorbs nutrients	provides protection for tissues and organs	produces chemicals to regulate bone growth
transports oxygen to body cells	breaks down food into simple substances	provides structure and frame for body	maintains proper blood sugar level
helps with removing wastes from cells	converts food into energy	provides new red blood cells	helps to shape mood and feelings

25 Name the body system in column A: _____

26 Name the body system in column B: _____

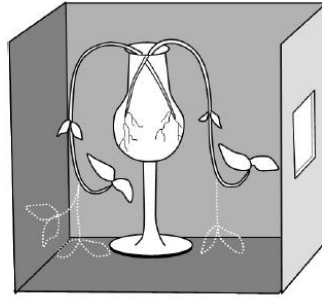
27 Name the body system in column C: _____

28 Name the body system in column D: _____



- 29** In a germinating seed, the downward growth of roots and upward growth of stems are the plant's responses to gravity. Which statement best describes this phenomenon?
- A** downward growth of roots – positive response to gravity
upward growth of stems – negative response to gravity
 - B** downward growth of roots – negative response to gravity
upward growth of stems – negative response to gravity
 - C** downward growth of roots – negative response to gravity
upward growth of stems – positive response to gravity
 - D** downward growth of roots – positive response to gravity
upward growth of stems – positive response to gravity
- 30** How would you predict a plant's stems and roots would respond in the microgravity of space?
- A** without the stimulus of gravity, the roots and stems will grow in all directions
 - B** roots and stems don't need gravity and will grow normally in microgravity
 - C** the roots will grow upward and the stems downward
 - D** the stems and roots will both grow downward

Use the following investigation to answer the next four questions.



In 1779, Charles Bonnet placed bean seedlings in a vase of water inside a closed, dark box. The seeds were allowed to grow for several days. A small shutter in the side of the box was opened after the plants had grown for several days.

- 29** Study the diagram illustrating Charles Bonnet's experiment. What was the purpose of his experiment?
- A** to examine how the location of a light source affects seedlings grown in the dark
 - B** to compare the growth rate of bean seedlings grown in the dark with those grown in the light
 - C** to investigate how the addition of light affects seedlings grown in the dark
 - D** to compare a plant's response to light with a plant's response to gravity
- 30** What was the purpose of the shutter in Bonnet's investigation?
- A** to maintain a constant temperature in the box
 - B** to provide an opening for CO₂ and O₂ exchange
 - C** to allow Bonnet to check the status of his experiment
 - D** to regulate the independent variable
- 31** Charles Bonnet's research was in the field of -
- A** zoology
 - B** genetics
 - C** microbiology
 - D** botany
- 32** What did Bonnet *most likely* do to increase the reliability of his results?
- A** discarded results that disproved his hypothesis
 - B** repeated his investigation many times
 - C** recorded his data and graphed the results
 - D** changed his experiment to include other variables

Directions: Use the information given below to answer the following questions.

**Regulating Glucose in the
Bloodstream**

If the concentration of glucose in a person's bloodstream is not kept within a certain range, serious health problems can result. When the concentration of glucose increases, special cells in the pancreas secrete a hormone called insulin. Insulin acts to decrease the amount of glucose in the bloodstream by moving glucose from the blood into body cells.

Other special cells in the pancreas release a hormone called glucagon when the amount of glucose in the blood decreases. Glucagon causes muscle and liver cells to release stored glucose into the bloodstream. In this way, the pancreas helps the body maintain a 'Constant level of glucose in the blood.

- 33** After a person eats a large meal, glucose begins to move into the bloodstream and the level of insulin released by the pancreas –
- A** increases
 - B** decreases
 - C** remains the same
 - D** is equal to the level of glucagon
- 34** The pancreas of a person with Type I diabetes produces little or no insulin. People with this condition must get insulin injections to prevent -
- A** low levels of glucose in the blood
 - B** high levels of glucagon in the muscle and liver cells
 - C** high levels of glucose in the blood
 - D** high levels of glucagon in the blood

35 A basketball player helps maintain stable body temperature during the game by perspiring. The sweat helps cool his body by evaporating. What is this an example of?

- A** mitosis
- B** homeostasis
- C** respiration
- D** digestion

36 The skin helps regulate body temperature by allowing excess heat to escape from the body. It does this by producing sweat. If your body lost the ability to sweat, what could happen to you if you competed at a track meet?

- A** nothing
- B** you would start to shiver
- C** you would overheat
- D** you could win the races easier

37 A person develops an elevated body temperature from a bacterial infection. The fever is a response from the body to help fight the infection by -

- A** slowing the growth of the bacterial infection
- B** increasing the energy level of the body
- C** increasing the body's heart rate
- D** stopping additional bacteria from entering the body

38 The process by which an organism's internal environment is kept stable in spite of changes in the external environment is called

- A** growth
- B** digestion
- C** homeostasis
- D** respiration

39 The presence of a harmful material in the stomach will probably cause:

- A** the absorption of water in the stomach
- B** vomiting
- C** the absorption of food in the small intestine
- D** the stomach to stop churning

40 Identify the statement that describes a bird's response to an external stimulus

- A** A bird sings a song to attract a mate.
- B** A bird cleans its feathers after landing in a tree.
- C** A bird flies away when it sees a cat nearby
- D** A bird eats when it feels hungry.

41 Identify the statement that describes a cat's response to an internal stimulus

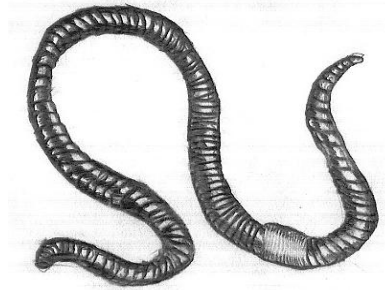
- A** A cat eats when it feels hungry.
- B** A cat runs in the house to get out of the rain.
- C** A cat hisses when it sees a dog.
- D** A cat purrs while it is scratched.

42 A signal that comes from outside the body and causes an organism to react in some way is called a(n) -

- A** external stimulus
- B** response
- C** internal stimulus
- D** message

43 Earthworm live in the soil and prefer dark, moist environments. When they see light, they respond _____ by moving away from it. This is a response to an _____ stimulus

- A** negatively, external
- B** positively, external
- C** negatively, internal
- D** positively, external



One way your body responds to a cold environment is by shivering.

44 Which two body systems are involved here to maintain body temperature? _____

45 How does shivering help to maintain body temperature? _____

