Exercise Physiology 12th edition Powers Test Bank

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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

1) The term homeostasis is defined as
   A) a constant metabolic demand placed upon the body.
   B) the maintenance of a constant internal environment.
   C) a low metabolic rate.
   D) a change within the internal environment.

2) Exercise physiologists use the term steady state to denote
   A) a steady and unchanging level of a physiological variable.
   B) a constant ambient environment.
   C) a changing internal environment.
   D) an increase in body heat storage.

3) A series of interconnected components that serve to maintain a physical or chemical parameter of the body near a constant value is called
   A) homeostasis.
   B) steady state.
   C) a biological control system.
   D) a static system.

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4) The general components of a biological control system include the
   A) receptor, control center, and organ.
   B) receptor, control center, and effector.
   C) effector, remote control, and stimulus.
   D) receptor and integrating center.

5) Most control systems of the body operate via
   A) positive feedback.
   B) low-gain receptors.
   C) negative feedback.
   D) feed-forward mechanisms.

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6) The gain of a biological control system can be thought of as the
   A) precision with which the control system maintains homeostasis.
   B) the amount of correction needed to maintain a constant internal environment.
   C) positive feedback needed to maintain homeostasis.
   D) stimulus that triggers the biological control system to bring the internal environment back to normal.

7) Exercise training can improve homeostatic control via
   A) an increase in positive feedback.
   B) an increase in negative feedback.
   C) a decrease in negative feedback.
   D) cellular adaptation.

8) Cellular adaptation to environmental stress (i.e., hot environment) is called
   A) acclimation.
   B) adaptation.
   C) homeostatic conversion.
   D) accommodation.

9) A chemical messenger that is released from one cell and stimulates nearby cells is an example of
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   A) autocrine signaling.
   B) endocrine signaling.
   C) juxtacrine signaling.
   D) paracrine signaling.

10) Endocrine signaling involves the release of_____ into the bloodstream.
   A) heat shock proteins
   B) neurotransmitters
   C) hormones
   D) transcription factors

11) The formation of mRNA in the cell is called
   A) transcription.
   B) translation.
   C) transduction.
   D) transfection.

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12) Translation is the production of a protein from mRNA; this occurs at the
- A) nucleus.
- B) ribosome.
- C) mitochondria.
- D) Golgi apparatus.

13) The cellular factor that "turns on" genes to promote the production of mRNA is called a
- A) myonuclei.
- B) mRNA transducer.
- C) transcriptional activator.
- D) DNA transcriber.

14) Autocrine signaling occurs when a cell produces
- A) and releases a chemical messenger into the extracellular fluid; this messenger then acts upon the cell that produced the messenger.
- B) a signal that acts upon cells at a distant location.
- C) chemical signals that are released into the blood and carried throughout the body.
- D) a signal that acts within the cell that produced the signal.

15) The term cell signaling refers to
- A) depolarization of the cell.
- B) hyperpolarization of the cell.
- C) a system of communication between cells.
- D) None of the above answers are correct.

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16) Hormesis refers to a biological process
- A) that leads to cell death.
- B) in which low-to-moderate doses of a potentially harmful stress results in a beneficial adaptive effect.
- C) whereby cells decrease in size due to reduced rates of protein synthesis.
- D) None of the above answers are correct.

17) The relationship between hormesis/exercise intensity/duration is best described by
- A) a straight line.
- B) a bell-shaped curve.
- C) a sigmodal wave.
- D) None of these answers are correct

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18) Recent evidence reveals that exercising skeletal muscles release extracellular vesicles (EVs). These EVs can be described as
A) small membrane-bound sacs containing bioactive molecules.
B) bioactive soluble polypeptides.
C) insoluble proteins.
D) None of these answers are correct

19) Extracellular vesicles are a unique signaling mechanism that uses
A) ONLY paracrine signaling to convey messages.
B) ONLY endocrine signaling to convey messages.
C) both paracrine and endocrine signaling to convey messages.
D) both autocrine and endocrine signaling to convey messages.

20) Stress proteins (i.e., heat shock proteins) are manufactured by cells in response to exercise and other stresses. Importantly, increasing the cellular levels of heat shock proteins
A) can lead to an increased production of free radicals.
B) can lead to further disruptions in homeostasis.
C) can lead to an increased degree of cellular injury.
D) can repair damaged cellular proteins and restore homeostasis.

21) During 60 minutes of constant-load submaximal exercise, the body temperature reaches a plateau after 35-45 minutes. This is an example of
A) homeostasis.
B) effector.
C) a steady state.
D) changing internal environment.

22) In order to maintain blood glucose homeostasis, which of the following events would likely occur in response to a significant rise in blood glucose?
A) decreased insulin secretion from the pancreas
B) increased uptake of glucose by cells
C) release of blood glucose from the liver
D) All of the above answers are correct

23) Which of the following physiological events is an example of positive feedback?
A) regulation of blood glucose
B) regulation of body temperature
C) labor contractions during childbirth
D) the cellular stress protein response

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24) In negative feedback, the response of the system is
- A) to increase the gain of the receptor.
- B) to modify the receptor's response to the stimulus.
- C) opposite to that of the stimulus.
- D) to increase the stimulus.

25) Some cells communicate by cell-to-cell contact. This type of signaling is called
- A) intracrine signaling and requires that the cytoplasm of one cell makes contact with the cytoplasm of another cell.
- B) juxtacrine signaling and requires that the cytoplasm of one cell makes contact with the cytoplasm of another cell via a small junction connecting the cell membranes.
- C) autocrine signaling and requires that hormones be released by one cell.
- D) None of the above answers are correct

26) The most important control systems in the body are those systems that regulate a physiological variable that is required to sustain life. Which of the following control systems would likely have a large gain?
- A) cardiovascular control system
- B) pulmonary control system
- C) temperature control system
- D) All of the above answers are correct

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27) Negative feedback is an important class of biological control systems in the body that serves to restore normal values of a variable to maintain homeostasis. Which of the following examples illustrate a negative feedback control system of the body?
- A) regulation of CO_2 concentrations in the blood
- B) control of body temperature
- C) regulation of blood glucose
- D) All of the above answers are correct

28) Which of the following statements about exercise-induced gene expression is correct?
- A) Exercise training results in activation of cell signaling pathways in the active skeletal muscles
- B) Exercise training activates specific transcriptional activators
- C) Dissimilar modes of exercise (e.g., resistance vs. endurance) promote the expression of different genes
- D) All of the above are correct

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Answer Key

Test name: Chapter 02

1) B
2) A
3) C
4) B
5) C
6) A
7) D
8) A
9) D
10) C
11) A
12) B
13) C
14) A
15) C
16) B
17) B
18) A
19) C
20) D
21) C
22) B
23) C
24) C
25) B
26) D
27) D
28) D

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