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Indicate whether the statement is true or false.

1. All cells are capable of reproducing.
   a. True
   b. False

2. Blood is a type of connective tissue.
   a. True
   b. False

3. The skin is part of the integumentary system.
   a. True
   b. False

4. Stem cells are not common to all multicellular organisms.
   a. True
   b. False

5. Cells eliminate carbon dioxide as a waste product.
   a. True
   b. False

6. The concentration of salt in the extracellular fluid influences how water enters and leaves cells.
   a. True
   b. False

7. The endocrine system functions with the circulatory system for the transport of hormones.
   a. True
   b. False

8. All proteins are enzymes.
   a. True
   b. False

9. Homeostatic control systems are grouped into two classes: intrinsic and extrinsic controls.
   a. True
   b. False

10. With positive feedback, a control system’s input and output continue to enhance each other.
    a. True
    b. False

11. Exocrine glands are the only structures in the body capable of secretion.
    a. True
    b. False

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12. Secretion refers to the release from a cell, in response to appropriate stimulation, of specific products that have, in large part, been synthesized by the cell.
    a. True
    b. False

13. Feedforward mechanisms bring about a response in reaction to a change in a regulated variable.
    a. True
    b. False

14. Intestine, heart, and skin do not consist of hormone-secreting cells.
    a. True
    b. False

15. Glands are formed during embryonic development by pockets of epithelial tissue that dip inward from the surface.
    a. True
    b. False

16. Not all activities performed by the muscular and nervous systems are directed toward maintaining homeostasis.
    a. True
    b. False

17. Enzymes are carbohydrates.
    a. True
    b. False

18. Factors that are homeostatically regulated are maintained at a constant, fixed level unless disease is present.
    a. True
    b. False

19. A lumen is a cavity within a hollow organ or tube.
    a. True
    b. False

20. Highly differentiated tissues such as nervous and cardiac muscle are incapable of new cell production.
    a. True
    b. False

21. The lungs remove carbon dioxide from the blood plasma.
    a. True
    b. False

22. Some organs, such as the heart, skin, and intestine, belong to more than one body system.
    a. True
    b. False

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23. The plasma surrounds and bathes all the body's cells.
    a. True
    b. False

24. Muscle cells produce movement by expanding.
    a. True
    b. False

25. Negative feedback operates to maintain a controlled factor in a relatively steady state, whereas positive feedback moves a controlled variable even further from a steady state.
    a. True
    b. False

26. All stem cells are found in the umbilical cord.
    a. True
    b. False

27. A mechanistic explanation of why a person breathes is to obtain oxygen.
    a. True
    b. False

28. A mechanistic explanation of why a person sweats is to cool off.
    a. True
    b. False

29. Endocrine glands secrete hormones through ducts into the blood.
    a. True
    b. False

30. To sustain life, the internal environment must be maintained in an absolutely unchanging state.
    a. True
    b. False

31. Most homeostatic mechanisms operate on the principle of positive feedback.
    a. True
    b. False

32. Organs are composed of two or more kinds of primary tissues.
    a. True
    b. False

33. The external environment is found outside cells but inside the body.
    a. True
    b. False

34. Tissues are composed of two or more types of cells organized to perform a particular function or functions.

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a. True
b. False

Indicate the answer choice that best completes the statement or answers the question.

35. Which of the following statements is NOT correct for connective tissue?
a. Bone is a connective tissue.
b. Blood is a connective tissue.
c. Elastin can be found in the extracellular material of connective tissue.
d. Connective tissue forms coverings and linings of the body cavities.

36. Which of the following is a type of connective tissue?
a. exocrine glands
b. endocrine glands
c. blood
d. smooth muscle tissue

37. The outer layer of the skin is composed of _____.
a. epithelial tissue
b. muscle tissue
c. connective tissue
d. exocrine tissue

38. Which of the following statements concerning negative feedback is NOT correct?
a. Negative feedback exists when a change in a regulated variable triggers a response that opposes the change.
b. Negative feedback exists when the input to a system increases the output, and the output limits its own production by inhibiting the input.
c. With negative feedback, a control system's input and output continue to enhance each other.
d. Most of the body's homeostatic control mechanisms operate on the principle of negative feedback.

39. In which of the body systems is calcium mainly stored?
a. endocrine system
b. integumentary system
c. muscular system
d. skeletal system

40. Which one of these pairs is correctly matched?
a. anatomy/body function
b. bacteria/multicellular
c. organs/one primary tissue
d. physiology/body function

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41. Sweating is initiated in response to a rise in body temperature that occurs on exposure to a hot environment. Evaporation of the sweat cools the body. What kind of example is this?
    a. negative feedback
    b. positive feedback
    c. feedforward mechanism
    d. intrinsic (local) control mechanism

42. When a blood capillary is cut, a clot forms under which feedback control system?
    a. negative feedback
    b. positive feedback
    c. extrinsic control
    d. feedforward

43. Which one of these sequences represents the correct hierarchy of biological organization?
    a. cell, organ, tissue, system, organism
    b. cell, tissue, organ, system, organism
    c. tissue, cell, system, organism, organ
    d. organ, tissue, cell, organism, system

44. Which statements regarding stem cells is correct?
    a. They are well-differentiated embryonic cells.
    b. They may reproduce just one time.
    c. Their daughter cells may differentiate into a number of different specialized cell types.
    d. They cannot be readily grown.

45. What are the two systems concerned with the control of body functioning by extrinsic controls?
    a. nervous and respiratory
    b. nervous and endocrine
    c. endocrine and respiratory
    d. endocrine and lymphatic

46. Which of the following systems mainly distributes nutrients and oxygen through the body?
    a. circulatory system
    b. digestive system
    c. endocrine system
    d. integumentary system

47. Which of the following is an example of a positive-feedback system?
    a. body temperature regulation
    b. birth of a baby
    c. room temperature regulation
    d. blood pH regulation

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48. Which of the following is a mechanistic rather than a teleological explanation of a physiological phenomenon?
    a. A person breathes to obtain oxygen.
    b. A person sweats to cool off.
    c. A person's stomach secretes digestive juices because it is stimulated by the nervous system.
    d. A person's heart beats to pump blood.

49. In a negative-feedback loop, which component produces a response that changes a controlled condition?
    a. receptor
    b. control centre
    c. effector
    d. set point

50. Which of these tissues can be found on the outer layer of the skin?
    a. connective tissue
    b. endocrine tissue
    c. epithelial tissue
    d. muscle tissue

51. Which of these statements concerning internal environment is correct?
    a. It consists of intracellular fluid.
    b. It is in direct contact with the body's cells and consists of the extracellular fluid.
    c. It is inside the body but not in direct contact with the body's cells.
    d. It is outside of the body, keeping the fluid volume in unchanging composition.

52. Which statement does NOT describe the study of physiology?
    a. identifying the location of the stomach and how it is related to the location of pancreas
    b. describing the factors that affect cardiac output
    c. describing the process by which nerve impulses are transmitted
    d. explaining how the hormone thyroxin is synthesized in the thyroid glands

53. Which statement is correct for the respiratory system?
    a. It eliminates unwanted substances from the body.
    b. It consists of the heart, blood vessels, and lungs.
    c. It plays an important role in maintaining the proper pH of the internal environment by adjusting the rate of removal of acid-forming carbon dioxide.
    d. It is responsible for taking up nutrients for the body.

54. Platelets, which have negatively charged cell membranes, adhere to the positively charged surface of a torn blood vessel. As they do so, they release substances that attract more platelets to the damaged area and change the charge on their cell membranes to positive. More platelets adhere to the damaged area. The cycle repeats until the damaged area is sealed. What sort of feedback loop is formed, and why?
    a. This is a positive-feedback loop because the response reinforces the initial change.

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b. This is a negative-feedback loop because the response opposes the initial stimulus.
c. This is a negative-feedback loop because having too many platelets in one area blocks blood flow.
d. This is a positive-feedback loop because the response prevents a person from haemorrhaging to death.

55. Which of these types of tissues uses the terminology “smooth”?
a. connective tissue
b. epithelial tissue
c. glandular tissue
d. muscle tissue

56. Which of these statements regarding endocrine glands is correct?
a. They consist of ducts.
b. They secrete hormones internally into the blood capillaries.
c. They are derived from connective tissue.
d. They include the salivary glands.

57. The hormone insulin enhances the transport of glucose (sugar) from the blood into most of the body’s cells. Its secretion is controlled by a negative-feedback system between the concentration of glucose in the blood and the insulin-secreting cells. Therefore, which of the following statements is correct?
a. A decrease in blood glucose concentration stimulates insulin secretion, which in turn further lowers the blood glucose concentration.
b. An increase in blood glucose concentration stimulates insulin secretion, which in turn lowers the blood glucose concentration.
c. A decrease in blood glucose concentration stimulates insulin secretion, which in turn increases the blood glucose concentration.
d. An increase in blood glucose concentration stimulates insulin secretion, which further increases the blood glucose concentration.

58. Which of the following statements applies to extracellular fluid?
a. It is the external environment of the body.
b. It is inside each cell.
c. It consists of the plasma and interstitial fluid.
d. It consists of plasma only.

Enter the appropriate word(s) to complete the statement.

59. The _____ system controls and coordinates bodily activities that require swift responses, especially to changes in the external environment.

60. The _____ system eliminates waste products other than carbon dioxide, and plays a key role in regulating the volume, electrolyte composition, and acidity of the extracellular fluid.

61. _____ are composed of two or more types of primary tissue organized to perform a particular function or functions.

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62. _____ are the blood vessels in which materials are mixed between the blood plasma and the interstitial fluid.

63. The body cells are in direct contact with and make life-sustaining exchanges with the _____.

64. The _____ system consists of all hormone-secreting tissues.

65. _____ glands secrete through ducts in the skin.

66. _____ refers to the abnormal functioning of the body associated with disease.

67. _____ refers to maintenance of a relatively stable internal environment.

68. _____ tissue is composed of cells specialized for contraction and force generation.

69. Homeostasis is primarily operated by _____ mechanisms.

70. _____ cells are specialized to send electrical signals.

71. The internal environment consists of the _____, which is made up of _____, the fluid portion of the blood, and _____, which surrounds and bathes all cells.

72. The term _____ refers to the abnormal functioning of the body associated with disease.

73. The _____ system is the transport system of the body.

74. A _____ is a collection of organs that perform related functions and interact to accomplish a common activity that is essential for survival of the whole body.

75. The two major control systems of the body are the _____ and the _____.

76. _____ muscle tissue composes the heart.

77. The _____ is the liquid part of the blood.

78. The smallest unit capable of carrying out the processes associated with life is the _____.

Match the components labelled a. through d. with their correct role.
Temperature-sensitive nerve cells monitor the body temperature and provide information about its status to a temperature-control centre in the hypothalamus, a part of the brain. The hypothalamus can bring about adjustments in body temperature by inducing shivering or sweating, among other things.

a. controlled variable

b. integrator

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c. sensor
d. effector

79. body temperature

80. temperature-sensitive nerve cells

81. skeletal muscles and sweat glands

82. hypothalamus

Match the terms labelled a. through d. with their correct physiological events. (Options may be used more than once or not at all.)
a. intrinsic control
b. negative-feedback control
c. positive-feedback control
d. feedforward control

83. increased blood flow into muscle tissue in response to a localized increase in carbon dioxide

84. the release of a hormone to lower blood calcium level when it gets too high

85. increased cardiac activity to elevate blood pressure when systemic pressure is low

86. rapid clotting of blood due to increasing levels of platelet activity at a site of vessel damage

Match the terms labelled a. through d. with their correct descriptions. (Options may be used more than once or not at all.)
a. nervous tissue
b. epithelial tissue
c. muscle tissue
d. connective tissue

87. This tissue type is composed of cells specialized for contraction.

88. This tissue type is made up of cells specialized in the exchange of materials between the cell and its environment.

89. This tissue type connects, supports, and anchors various body parts.

90. The heart is made of this type of tissue.

91. Bone is this tissue type.

92. Glands are a derivative of this tissue type.

93. The digestive tract is lined with this tissue.

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94. The brain is made primarily of this tissue.

95. The blood is this tissue type.

96. This tissue is distinguished by relatively few cells within an extracellular material.

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Answer Key

1. False

2. True

3. True

4. False

5. True

6. True

7. True

8. False

9. True

10. True

11. False

12. True

13. False

14. False

15. True

16. True

17. False

18. False

19. True

20. False

21. True

22. True

23. False

24. False

25. True

26. False

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27. False

28. False

29. False

30. False

31. False

32. True

33. False

34. False

35. d

36. c

37. a

38. c

39. d

40. d

41. a

42. b

43. b

44. c

45. b

46. a

47. b

48. c

49. c

50. c

51. b

52. a

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53. c

54. a

55. d

56. b

57. b

58. c

59. nervous

60. urinary

61. Organs

62. Capillaries

63. internal environment
extracellular fluid

64. endocrine

65. Exocrine

66. Pathophysiology

67. Homeostasis

68. Muscle

69. negative-feedback

70. Nerve

71. extracellular fluid; plasma; interstitial fluid

72. pathophysiology

73. circulatory

74. body system

75. nervous system; endocrine system
endocrine system; nervous system

76. Cardiac

77. plasma

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78. cell

79. a

80. c

81. d

82. b

83. a

84. b

85. b

86. c

87. c

88. b

89. d

90. c

91. d

92. b

93. b

94. a

95. d

96. d