

Exam

Name _____

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

- 1) Which research field below employs a variety of tools from other fields, including engineering, cell biology, and physics, to explain how the body works? 1) _____
 - A) physiology
 - B) genetics
 - C) molecular biology
 - D) oncology
 - E) biochemistry

- 2) The smallest living units capable of carrying out their own basic life functions are called _____. 2) _____
 - A) organs
 - B) cells
 - C) tissues
 - D) organelles
 - E) organ systems

- 3) _____ carry/carries oxygen to the cells of the body, while the synthesis of these cells is regulated by the hormone _____. 3) _____
 - A) Bone marrow : erythrocyte
 - B) Erythrocytes : erythropoietin
 - C) Bone marrow : erythropoietin
 - D) Erythropoietin : erythrocyte
 - E) Erythrocytes : bone marrow

- 4) Which of the following is NOT one of the major cell types found in the human body? 4) _____
 - A) endocrine cells
 - B) nervous cells
 - C) muscle cells
 - D) epithelial cells
 - E) connective tissue cells

- 5) Which of the following is NOT a primary type of tissue? 5) _____
 - A) skeletal
 - B) connective
 - C) muscle
 - D) nerve
 - E) epithelial

- 6) The tissue type that generates mechanical force and movement, and whose activity is controlled both on a voluntary and involuntary level, is _____. 6) _____
 - A) epithelial tissue
 - B) connective tissue
 - C) skeletal tissue
 - D) nervous tissue
 - E) muscle tissue

- 7) Tissue type that functions in the transport of specific molecules from one body compartment to another. 7) _____
 A) muscle tissue
 B) nervous tissue
 C) connective tissue
 D) epithelial tissue
 E) reticular tissue
- 8) Tissue type that lines internal hollow organs and external surfaces of the body, providing a barrier between the internal and external environment, is called _____. 8) _____
 A) muscle tissue
 B) reticular tissue
 C) connective tissue
 D) nervous tissue
 E) epithelial tissue
- 9) Glands are derived from what type of tissue? 9) _____
 A) muscle B) epithelial C) kleenex D) connective E) nerve
- 10) What type of tissue lines exocrine glands? 10) _____
 A) nerve
 B) connective
 C) muscle
 D) epithelial
 E) exonuclear
- 11) Endocrine glands are derived from what type of tissue? 11) _____
 A) connective B) reticular C) nerve D) muscle E) epithelial
- 12) What type of gland secretes products into ducts leading to the external environment? 12) _____
 A) endocrine glands B) neither endocrine nor exocrine
 C) both endocrine and exocrine D) exocrine glands
- 13) Tissue type that includes cells contained in an extracellular matrix composed of collagen and elastin. 13) _____
 A) connective tissue
 B) epithelial tissue
 C) endocrine tissue
 D) nervous tissue
 E) muscle tissue
- 14) Which of the following descriptions INCORRECTLY describes the tissue type? 14) _____
 A) Connective tissue is specialized for exchange between the internal and external environments.
 B) Muscle tissue is specialized for contraction and generation of force.
 C) Epithelial tissue lines the lumen of internal organs.
 D) Epithelial tissue forms glands.
 E) Nervous tissue is specialized for transmission of electrical impulses.

- 15) _____ is a general name for the non-cellular material that holds the widely scattered cells of connective tissue together. 15) _____
 A) Collagen
 B) Extracellular matrix
 C) Basement membrane
 D) Elastin
 E) Intracellular matrix
- 16) _____ is a protein found in the body that provides the tensile strength to resist stretching. 16) _____
 A) Collagen
 B) Vimentin
 C) Erythropoietin
 D) Basement membrane
 E) Elastin
- 17) Which of the following is a tissue type that includes the cells found within blood and bones? 17) _____
 A) epithelial tissue
 B) connective tissue
 C) nervous tissue
 D) muscle tissue
 E) endocrine tissue
- 18) The specific structures that attach bone to muscle are called _____. 18) _____
 A) intracellular matrix proteins
 B) extracellular matrix proteins
 C) aponeuroses
 D) tendons
 E) ligaments
- 19) Organs of the body are defined as _____. 19) _____
 A) two or more tissues combined to form a structure that allows each tissue to function independently
 B) a collection of cells that perform similar functions
 C) a collection of cells that function independently of one another
 D) a collection of tissues that function independently of one another
 E) a combination of two or more tissues that makes a structure which performs specific functions
- 20) Which of the following accurately represents the order of complexity for the components of the body, from least to most complex? 20) _____
 A) cells, tissues, organs, organ systems
 B) organ systems, organs, tissues, cells
 C) tissues, cells, organs, organ systems
 D) organ systems, cells, tissues, organs
 E) cells, tissues, organ systems, organs

- 21) Which of the following organ systems is primarily involved in the process of digestion? 21) _____
- A) cardiovascular system
 - B) integumentary system
 - C) immune system
 - D) gastrointestinal system
 - E) endocrine system
- 22) Which of the following is NOT a component of the gastrointestinal system? 22) _____
- A) gall bladder
 - B) liver
 - C) kidneys
 - D) stomach
 - E) salivary glands
- 23) Name the two organ systems that the kidneys belong to. 23) _____
- A) urinary and digestive systems
 - B) endocrine and gastrointestinal systems
 - C) urinary and skeletal systems
 - D) urinary and immune systems
 - E) endocrine and urinary systems
- 24) The uptake of nutrients across the epithelial cells of the gastrointestinal tract and into the bloodstream is called _____. 24) _____
- A) filtration
 - B) excretion
 - C) absorption
 - D) reabsorption
 - E) secretion
- 25) What organ system includes the pituitary gland, adrenal gland, and thyroid gland? 25) _____
- A) endocrine
 - B) cardiovascular
 - C) integumentary
 - D) immune
 - E) nervous
- 26) What organ system protects the body against pathogens and abnormal cells? 26) _____
- A) nervous
 - B) immune
 - C) integumentary
 - D) endocrine
 - E) respiratory
- 27) What organ system functions in communication between cells of the body? 27) _____
- A) nervous, integumentary, and endocrine
 - B) integumentary only
 - C) both nervous and endocrine
 - D) nervous only
 - E) endocrine only

- 28) What type of tissue separates the internal from the external environment? 28) _____
 A) nerve
 B) connective
 C) reticular
 D) epithelial
 E) plasma membrane
- 29) The lumen of which of the following systems is part of the INTERNAL environment? 29) _____
 A) cardiovascular system
 B) gastrointestinal system
 C) gastrointestinal and urinary systems
 D) respiratory system
 E) urinary system
- 30) What separates the internal environment of the body from the external environment? 30) _____
 A) plasma membrane of all body cells
 B) skin
 C) epithelium
 D) walls of blood vessels
 E) membranes of blood cells
- 31) Which of the following is NOT a part of the internal environment? 31) _____
 A) airways to lungs
 B) brain
 C) endocrine glands
 D) blood
 E) heart
- 32) The process whereby fluid from the bloodstream enters the tubules of the kidney is called _____ 32) _____
 A) secretion
 B) reabsorption
 C) excretion
 D) filtration
 E) absorption
- 33) The process whereby fluid in the kidney is transported from the tubules back into the bloodstream is called _____. 33) _____
 A) excretion
 B) absorption
 C) reabsorption
 D) filtration
 E) secretion
- 34) Referring to a membrane as "selectively permeable" describes its ability to _____. 34) _____
 A) restrict the movement of particular molecules across a membrane
 B) restrict only the movement of sodium across a membrane
 C) provide a minimal barrier that allows almost any molecule to move across a membrane
 D) restrict only the movement of potassium across the membrane
 E) provide a barrier that restricts the movement of all molecules across a membrane

- 35) Extracellular fluid is composed of _____. 35) _____
A) interstitial fluid only
B) intracellular fluid only
C) plasma and intracellular fluid
D) plasma only
E) interstitial fluid and plasma
- 36) Total body water is composed of _____. 36) _____
A) extracellular fluid only
B) intracellular fluid only
C) intracellular and interstitial fluid
D) intracellular and extracellular fluid
E) plasma and intracellular fluid
- 37) Where is most of our total body water? 37) _____
A) in the lumen of the gastrointestinal tract
B) in the lumen of the kidneys
C) surrounding the cells
D) inside cells
E) in blood
- 38) Which of the following compartments contains most of the water found in the human body? 38) _____
A) intracellular fluid
B) interstitial fluid
C) plasma
D) lumen of the intestinal tract
E) extracellular fluid
- 39) What are the two extracellular fluid compartments of the body? 39) _____
A) intracellular fluid and interstitial fluid
B) interstitial fluid and plasma
C) intracellular fluid and plasma
D) interstitial fluid and blood
E) intracellular fluid and blood
- 40) The portion of body water outside of cells that bathes most cells of the body is called _____. 40) _____
A) interstitial fluid
B) plasma
C) extracellular fluid
D) intracellular fluid
E) intercellular fluid
- 41) The fluid compartment with a high sodium and protein concentration is called _____. 41) _____
A) intracellular and extracellular fluids
B) interstitial fluid
C) intracellular fluid
D) extracellular fluid
E) plasma

- 42) Which of the following best describes intracellular fluid? 42) _____
- A) rich in sodium and chloride
 - B) rich in sodium, potassium, and chloride
 - C) rich in proteins and chloride
 - D) rich in proteins and potassium
 - E) rich in potassium and chloride
- 43) The fluid compartment with a high sodium concentration that contains only trace amounts of protein is called _____. 43) _____
- A) intracellular and extracellular fluids
 - B) plasma
 - C) intracellular fluid
 - D) extracellular fluid
 - E) interstitial fluid
- 44) Homeostasis is a term which describes the process whereby the body _____. 44) _____
- A) maintains a constant internal and external environment
 - B) affects the external environment
 - C) maintains a variable internal environment
 - D) maintains a constant internal environment
 - E) maintains a constant external environment
- 45) Which of the following statements about homeostasis is FALSE? 45) _____
- A) The organ systems work together to maintain homeostasis.
 - B) The primary mechanism to maintain homeostasis is negative feedback.
 - C) The extracellular fluid is maintained in a state compatible for life.
 - D) Intrinsic control mechanisms maintain the extracellular fluid in constant state.
 - E) The intracellular fluid makes up the majority of the body fluids.
- 46) The maintenance of a stable internal environment compatible for life is called what? 46) _____
- A) microbiology
 - B) physiology
 - C) anatomy
 - D) biochemistry
 - E) homeostasis
- 47) What is the primary mechanism for maintaining homeostasis? 47) _____
- A) extrinsic control
 - B) negative feedback
 - C) positive feedback
 - D) intrinsic control
 - E) inherent control
- 48) Which of the following statements about homeostasis is FALSE? 48) _____
- A) Homeostasis is the maintenance of the internal environment.
 - B) The extracellular fluid is maintained in a state compatible for life.
 - C) Illness can result if homeostasis is disrupted.
 - D) The primary mechanism to maintain homeostasis is positive feedback.
 - E) The organ systems work together to maintain homeostasis.

- 49) Changes in the external environment alter the _____, which is detected by the _____, and that information is sent to the integrator. 49) _____
- A) regulated variable : sensor
 - B) set point : regulated variable
 - C) error signal : regulated variable
 - D) regulated variable : set point
 - E) sensor : regulated variable
- 50) The _____ determines the extent of the error signal in a feedback loop, in order to initiate the appropriate response. 50) _____
- A) effector
 - B) sensor
 - C) set point
 - D) regulated variable
 - E) integrator
- 51) The process of maintaining the internal environment in a state compatible for life is called _____, and it occurs primarily through _____. 51) _____
- A) positive feedback : intrinsic control
 - B) intrinsic control : negative feedback
 - C) negative feedback : intrinsic control
 - D) homeostasis : negative feedback
 - E) intrinsic control : homeostasis
- 52) Which of the following is an example of negative feedback? 52) _____
- A) At the time of birth, uterine contractions push the baby toward the cervix. Receptors in the cervix detect the pressure caused by the baby and cause the release of a hormone called oxytocin. This hormone stimulates stronger uterine contractions, which push more on the baby, causing an increase in pressure and another increase in oxytocin. The cycle continues until the baby is delivered from the mother.
 - B) If blood pressure increases above normal, baroreceptors in major arteries detect the change and send signals to the brain. Certain areas of the brain then send signals to the nerves that control the heart and blood vessels to make the heart beat slower and the blood vessels increase in diameter, which in turn reduce the blood pressure.
 - C) During a blood clot, platelets release ADP, which stimulates platelet aggregation, causing platelets to release more ADP.
 - D) During an infection, the body temperature set point is increased. The hypothalamus communicates to skeletal muscles to shiver and to blood vessels to decrease blood flow to the skin, causing a rise in body temperature.
 - E) Consumption of caffeine increases urine output, causing dehydration.
- 53) Thermoreceptors act as the _____ in the thermoregulatory feedback loop. 53) _____
- A) integrator
 - B) regulated variable
 - C) effector
 - D) sensor
 - E) set point

- 54) Luteinizing hormone-mediated regulation of estrogen during ovulation in women is an example of _____ 54) _____
- A) a positive feedback loop
 - B) both a positive and negative feedback loop
 - C) a quasi-negative feedback loop
 - D) a quasi-positive feedback loop
 - E) a negative feedback loop
- 55) The positive feedback loop involving luteinizing hormone and estrogen is terminated by _____. 55) _____
- A) nothing; the cycle cannot be terminated
 - B) ovulation, which decreases estrogen secretion
 - C) ovulation, which directly inhibits luteinizing hormone secretion
 - D) pregnancy
 - E) birth
- 56) Prolonged exposure to a cold environment, where the error signal for body temperature continues to increase in a negative direction (body temperature is below set point), is called _____. 56) _____
- A) hypothermia
 - B) poikilothermia
 - C) normothermia
 - D) hyperthermia
 - E) ectothermia
- 57) Animals whose body temperature changes with environmental temperatures, thereby not maintaining strict thermal homeostasis, are called _____. 57) _____
- A) endotherms
 - B) homeotherms
 - C) hypertherms
 - D) poikilotherms
 - E) hypotherms
- 58) The process whereby energy is transferred to and from the body through electromagnetic waves is called _____. 58) _____
- A) radiation
 - B) sweating
 - C) conduction
 - D) evaporation
 - E) convection
- 59) The process whereby energy is transferred to and from the body through direct contact with a solid body is called _____. 59) _____
- A) evaporation
 - B) sweating
 - C) convection
 - D) conduction
 - E) radiation

- 60) When a person sits on a metal chair on a cold day, they feel the cold of the metal. This is an example of _____. 60) _____
- A) evaporation
 - B) convection
 - C) conduction
 - D) cold feet
 - E) radiation
- 61) What are the primary components of sweat? 61) _____
- A) water and salt
 - B) water only
 - C) oil and salt
 - D) water and oil
 - E) water, oil, and salt
- 62) An increase in body temperature to greater-than-normal levels is called _____. 62) _____
- A) hypothermia
 - B) hyperthermia
 - C) convection
 - D) poikilothermia
 - E) conduction
- 63) Peripheral thermoreceptors monitor _____. 63) _____
- A) temperature in the heart
 - B) core body temperature
 - C) blood temperature
 - D) temperature in the hypothalamus
 - E) skin temperature
- 64) What is the thermoneutral zone? 64) _____
- A) The range of temperatures at which poikilothermic animals can maintain body temperature through convection only.
 - B) The range of temperatures at which homeothermic animals can maintain body temperature through evaporation only.
 - C) The range of temperatures at which homeothermic animals can maintain body temperature without regulatory systems.
 - D) The range of temperatures at which poikilothermic animals can maintain body temperature without regulatory systems.
 - E) The range of temperatures at which homeothermic animals can maintain body temperature by regulating blood flow to the skin only.
- 65) Following an increase in body temperature, which of the following responses will NOT occur? 65) _____
- A) an increase in sweat production
 - B) an increase in water on the skin
 - C) an increase in shivering
 - D) an increase in skin blood flow
 - E) an increase in skin temperature

- 66) Following a mild decrease in body temperature, which of the following responses will NOT occur? 66) _____
 A) a decrease in water on the skin
 B) an increase in skin blood flow
 C) a decrease in sweat production
 D) an increase in shivering
 E) a decrease in skin temperature
- 67) Which of the following structures of the body is NOT normally involved in the control of body temperature? 67) _____
 A) skin blood vessels
 B) hypothalamus
 C) chemoreceptors
 D) skeletal muscle
 E) sweat glands
- 68) Shivering to increase body temperature is characterized by _____. 68) _____
 A) rapid, involuntary bursts of muscle contraction
 B) maintained muscle contraction similar to a cramp
 C) slow, voluntary bursts of muscle contraction
 D) rapid, voluntary bursts of muscle contraction
 E) slow, involuntary bursts of muscle contraction
- 69) The ultimate cause of the increase in body temperature associated with an infection (fever) is a(n) 69) _____
 _____.
 A) pyrogen-induced upward movement of the set point
 B) increased error signal
 C) increased rate of sweating
 D) decrease in skin blood flow
 E) change in the thermoregulatory integrator from one area of the brain to another
- 70) The increase in the set point of body temperature that occurs during a fever is caused by the release 70) _____
 of substances from _____ that affect the hypothalamic temperature set point.
 A) erythrocytes
 B) nerve cells
 C) white blood cells
 D) red blood cells
 E) bacteria
- 71) A substance that causes a shift in the set point for body temperature is called a _____. 71) _____
 A) pyrogen
 B) poikogen
 C) hyperthermogen
 D) thermogen
 E) homeogen

- 72) In the hierarchy of resource allocation, which organ gets highest priority for energy allocation during exercise? 72) _____
- A) skeletal muscle
 - B) skin
 - C) heart
 - D) lungs
 - E) brain
- 73) What does it mean for an athlete to "carbo-load"? 73) _____
- A) The athlete consumes large volumes of water prior to an event.
 - B) The athlete consumes a high amount of starchy and sweet foods prior to an event.
 - C) The athlete burns off as much carbon dioxide as possible before starting an event.
 - D) The athlete consumes a lot of caffeine prior to an event.
 - E) The athlete takes diuretics to increase urine output prior to an event.
- 74) Fitness levels of athletes are typically assessed by _____, in order to compare between athletes of different sizes. 74) _____
- A) maximal oxygen consumption per height
 - B) maximal carbon dioxide production per minute
 - C) maximal work performed per kilogram of body weight
 - D) maximal distance that can be run per kilometer of height
 - E) maximal oxygen consumption per kilogram of body weight
- 75) In order to continue to progress in response to training, an athlete must _____. 75) _____
- A) progressively increase training intensity
 - B) continue to train at the same intensity
 - C) be sure to overdo it as often as possible
 - D) progressively decrease training intensity
 - E) reduce the time allowed for recovery
- 76) Which of the following could be considered a positive side effect of caffeine consumption prior to running a marathon? 76) _____
- A) increased diuresis
 - B) increased urinary excretion
 - C) reduced hydration state
 - D) increased liberation of fatty acids
 - E) increased carbohydrate metabolism

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 77) Physiologists use research tools from different fields that include biochemistry and cell biology. 77) _____
- 78) Cardiac muscle is located in the heart. 78) _____
- 79) Connective tissue forms both endocrine and exocrine glands. 79) _____
- 80) Exocrine glands secrete hormones. 80) _____
- 81) The immune system protects the body from invading microorganisms. 81) _____

- 82) Most of the cells of the body are able to directly exchange materials with the external environment. 82) _____
- 83) The internal and external environments are separated by the selectively permeable membranes of epithelial cells. 83) _____
- 84) The most abundant substance in the body is carbon. 84) _____
- 85) Intracellular and extracellular fluid are of the same ion composition. 85) _____
- 86) The homeostatic mechanisms of the body are unlimited in their ability to respond to changes in the external environment. 86) _____
- 87) Body temperature is a regulated variable. 87) _____
- 88) Effectors bring about a final response in a negative feedback loop. 88) _____
- 89) Positive feedback loops are impossible to stop once they have begun. 89) _____
- 90) On a regular basis, heat is produced in animals by metabolism. 90) _____
- 91) The set point for body temperature is 41°C. 91) _____
- 92) On a regular basis, heat is lost from the body through the process of insensible water loss. 92) _____
- 93) Peripheral thermoreceptors detect core body temperature. 93) _____
- 94) In the cold, blood flow to the skin increases. 94) _____
- 95) The brain has top priority when it comes to the distribution of resources during exercise. 95) _____

MATCHING. Choose the item in column 2 that best matches each item in column 1.

Match the following functions to the correct tissue type:

- | | | |
|---|----------------------|-----------|
| 96) Specialized for exchange of material. | A) nervous tissue | 96) _____ |
| 97) Conducts signals via electrical impulses. | B) connective tissue | 97) _____ |
| 98) Provides structural support. | C) epithelial tissue | 98) _____ |
| 99) Contracts to generate a force. | D) muscle tissue | 99) _____ |

Match the following descriptions with the correct function:

- | | | |
|--|---------------|------------|
| 100) Elimination from the body. | A) filtration | 100) _____ |
| 101) Movement from the lumen of the gastrointestinal tract to blood. | B) absorption | 101) _____ |
| 102) Movement from blood into the kidney tubules. | C) excretion | 102) _____ |

Match the following descriptions with the correct mechanism of heat exchange:

- | | | |
|---|----------------|------------|
| 103) Exchange of heat by direct contact with an object. | A) evaporation | 103) _____ |
| 104) Exchange of heat in the form of electromagnetic waves. | B) radiation | 104) _____ |
| 105) Loss of heat by conversion of a liquid to a vapor. | C) conduction | 105) _____ |
| 106) Movement of heat by movement of a gas or liquid carrying the heat. | D) convection | 106) _____ |

Match the organ to the organ system with which it belongs.

- | | | |
|--------------------|----------------------------|------------|
| 107) Adrenal gland | A) nervous system | 107) _____ |
| 108) Esophagus | B) gastrointestinal system | 108) _____ |
| 109) Blood vessels | C) cardiovascular system | 109) _____ |
| 110) Bronchi | D) endocrine system | 110) _____ |
| 111) Brain | E) respiratory system | 111) _____ |

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

- 112) Describe the four general groups of cells (tissues) that are found in the body, outlining the important characteristics of each group.
- 113) Describe the essential role of water in the body and how it is compartmentalized throughout the body.
- 114) Describe the negative feedback mechanism involved in the control of body temperature.
- 115) Describe the physical mechanisms whereby heat is transferred between objects. What role does the protective layer play in that process?
- 116) Outline how the body responds in the event that the hypothalamic thermoreceptors detect an increase in core temperature.
- 117) Describe the condition whereby the set point temperature of the body is increased in response to an infection.

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

- 118) The smallest living units, capable of carrying out its own basic life processes are _____. 118) _____
- 119) Cells that carry oxygen in the bloodstream are called _____. 119) _____
- 120) Name the types of tissue described below. 120) _____
- This tissue is specialized for transport and exchange of material.
This tissue is a major component of bone, ligaments, and blood.
This tissue is specialized for generating electrical signals.
This tissue is specialized to contract.
- 121) Name the two types of glands and describe their secretions. 121) _____
- 122) The specific structures that attach bone to bone are called _____. 122) _____
- 123) The layer of epithelial cells that coats the inside (lumen) of blood vessels is called the _____. 123) _____
- 124) The _____ is the interior compartment of a hollow organ or vessel. 124) _____
- 125) What organ system(s) provides communication between the cells of the body? 125) _____
- 126) The process whereby enzymes are moved into the gastrointestinal tract to digest nutrients is called _____. 126) _____
- 127) The process whereby fluid and ions that have not been removed by the kidneys exit the body as urine is referred to as _____. 127) _____
- 128) The fluid (non-cellular) portion of blood is called _____. 128) _____
- 129) The fluid compartment with a high protein and potassium concentration is called _____. 129) _____
- 130) Most of the water in the body is found (inside cells / in blood / bathing cells). 130) _____
- 131) Define homeostasis. 131) _____
- 132) Insulin is a hormone that regulates blood glucose levels. It is released when glucose levels increase above normal. Based on the concept of negative feedback, insulin (increases / decreases) blood glucose levels. 132) _____
- 133) List the essential components of a feedback loop and describe their function. 133) _____

- 134) Prolonged exposure to a hot environment, where the error signal for body temperature continues to increase in a positive direction (body temperature is above set point), is called _____.
- 135) The process whereby energy is consumed in the transition of water from liquid to gaseous state is called _____.
- 136) _____ are released by white blood cells in response to an infection, causing an increase in set point temperature.
- 137) The range of external temperatures within which the body needs only to make adjustments in skin blood flow to maintain set point temperature is called the _____.
- 138) What organ is at the top of the hierarchy for resource allocation?

Answer Key

Testname: UNTITLED24

- 1) B
- 2) B
- 3) B
- 4) A
- 5) A
- 6) E
- 7) D
- 8) E
- 9) B
- 10) D
- 11) E
- 12) D
- 13) A
- 14) A
- 15) B
- 16) A
- 17) B
- 18) D
- 19) E
- 20) A
- 21) D
- 22) C
- 23) E
- 24) C
- 25) A
- 26) B
- 27) C
- 28) D
- 29) A
- 30) C
- 31) A
- 32) D
- 33) C
- 34) A
- 35) E
- 36) D
- 37) D
- 38) A
- 39) B
- 40) A
- 41) E
- 42) D
- 43) E
- 44) D
- 45) D
- 46) E
- 47) B
- 48) D
- 49) A
- 50) E

Answer Key

Testname: UNTITLED24

- 51) D
- 52) B
- 53) D
- 54) A
- 55) B
- 56) A
- 57) D
- 58) A
- 59) D
- 60) C
- 61) A
- 62) B
- 63) E
- 64) E
- 65) C
- 66) B
- 67) C
- 68) A
- 69) A
- 70) C
- 71) A
- 72) E
- 73) B
- 74) E
- 75) A
- 76) D
- 77) TRUE
- 78) TRUE
- 79) FALSE
- 80) FALSE
- 81) TRUE
- 82) FALSE
- 83) TRUE
- 84) FALSE
- 85) FALSE
- 86) FALSE
- 87) TRUE
- 88) TRUE
- 89) FALSE
- 90) TRUE
- 91) FALSE
- 92) TRUE
- 93) FALSE
- 94) FALSE
- 95) TRUE
- 96) C
- 97) A
- 98) B
- 99) D
- 100) C

Answer Key

Testname: UNTITLED24

- 101) B
- 102) A
- 103) C
- 104) B
- 105) A
- 106) D
- 107) D
- 108) B
- 109) C
- 110) E
- 111) A

- 112) Nervous tissue - Neurons are specialized for the transmission of information in the form of electrical signals. They typically possess a number of branches that function to receive or transmit those electrical signals. Some are even capable of detecting sensory information.
- Muscle tissue - Muscle cells are involved in force development and movement. They tend to be elongated in shape and can be under either voluntary or involuntary control.
- Epithelial tissue - Epithelial cells are arranged as a sheet-like layer of cells connected to a thin, non-cellular basement membrane. These cells are found in many shapes, sizes, and layer thicknesses. They are closely associated with their neighbors, providing a barrier separating body fluids from the external environment. Certain epithelial cells are specialized to transport specific molecules from one compartment to another.
- Connective tissue - This tissue encompasses many cell types including blood cells, bone cells, and many others. In a narrow sense, these cells provide physical support for other structures like tendons and ligaments. In a broader sense, the term connective tissue encompasses fluids like blood and lymph that "connect" parts of the body by providing an avenue for communication.
- 113) Water is the most abundant molecule in the human body. It acts as a solvent for a variety of solutes within the body. There are three compartments that comprise total body water (TBW). Extracellular fluid (1/3 of TBW), the fluid outside of cells, is composed of two compartments: 1) the fluid component of blood (plasma), which is composed mostly of sodium and protein, and 2) the fluid that bathes cells (interstitial), which is composed primarily of sodium with little protein present. The other component of TBW is intracellular fluid (2/3 of TBW). This fluid is present inside cells (cytoplasm). Intracellular fluid is relatively high in protein and potassium, and is separated from extracellular fluid by a cell membrane that is selectively permeable, allowing only specific ions through.
- 114) There are a number of structures involved in regulating body temperature. The hypothalamus acts as the integrator for the regulation of body temperature (set point of 37°C). The body's temperature sensors are located within the hypothalamus (central) and throughout the skin (peripheral). However, the skin is not as sensitive to temperature changes as the hypothalamus. At the same time, the skin acts as an effector through alterations in blood flow and sweating. Skeletal muscles are another effector organ for temperature control.
- The hypothalamus compares input from the peripheral and central thermoreceptors to the set point thereby determining the extent of the error signal. It then responds to that error signal by activating effector organs. The specific effector organ(s) activated will depend upon the direction of change in the error signal. If the error signal is positive (above set point), the effector organs that enhance heat loss (sweating and increased skin blood flow) will be activated. However, if the error signal is negative (below set point), then the effector organs that generate and/or conserve heat (decrease skin blood flow, stop sweating, shivering) will be activated. Thus, the feedback loop for temperature will attempt to limit the change in body temperature, thereby returning it back to set point.

Answer Key

Testname: UNTITLED24

- 115) Radiation refers to the transfer of energy from an object that is emitting electromagnetic waves. Thus, these waves can either be directed at the body (i.e., from the sun) or emitted from the body. Heat is always transferred from a warmer body to a colder body. You could also say that a cold environment absorbs more radiant energy.
- Conduction is the transfer of energy between two solid objects that are in contact with one another. As with radiation, heat is always transferred from a warmer to a colder object.
- Evaporation refers to the heat that is absorbed as water transitions from a liquid to a gaseous state. That process absorbs energy, and can either be insensible (undetectable) or sensible.
- At the same time, a protective layer of air is present at the surface of the body that will decrease one's loss of heat to the environment (convection). This barrier can also inhibit the evaporation of sweat from the skin. As that barrier is broken down by wind or water moving over the skin, the rate of temperature loss, as well as evaporation, is increased.
- 116) The thermoreceptor within the hypothalamus detects an error signal in the regulated variable. That positive error signal results in increased output to particular effectors. Sweat glands are stimulated to increase the rate of sweat production. This increases the amount of heat that the body can lose by evaporation of sweat from the skin, as long as the humidity is not too high. At the same time, the blood vessels in the skin dilate, thereby increasing the rates of conductive and radiative heat loss from the skin. The blood can carry the heat from the inner organs of the body to its cooler outer region (the skin). Both of these responses have the effect of increasing the rate at which heat is lost from the body, thereby reducing body temperature and returning core temperature to set point.
- 117) The body typically maintains core temperature at 37°C. However, when we become sick, the temperature of the body is increased. In response to a bacterial or viral infection, white blood cells release pyrogens that stimulate an increase in hypothalamic set point temperature. This creates a negative error signal that must be corrected by decreased sweating, decreased skin blood flow, and muscle shivering. This decrease in the rate of sweat production reduces the amount of heat lost by evaporation. The rates of radiative and conductive heat loss from the skin are reduced as the blood vessels that feed the skin are constricted and blood flow is reduced. One of the byproducts of muscle contraction is heat. Thus, the involuntary bursts of skeletal muscle contraction (shivering) produce heat in an attempt to correct the error signal. This increase in temperature stimulates the immune system to fight the infection.
- 118) cells
- 119) erythrocytes
- 120) epithelial, connective, nervous, muscle
- 121) Exocrine glands secrete their product into ducts that lead to an epithelial surface. Endocrine glands secrete their product (hormones) into the bloodstream where the hormones travel throughout the body.
- 122) ligaments
- 123) endothelium
- 124) lumen
- 125) nervous and endocrine
- 126) secretion
- 127) excretion
- 128) plasma
- 129) intracellular fluid
- 130) inside cells
- 131) Homeostasis is the process whereby the body maintains the internal environment in a state compatible for life.
- 132) decreases
- 133) Sensor - detects the regulated variable
Set point - value to which the regulated variable is compared by the integrator
Integrator - determines the extent of the error signal in order to provide appropriate effector response
Effector - that which can alter the regulated variable
- 134) hyperthermia
- 135) evaporation
- 136) Pyrogens
- 137) thermoneutral zone
- 138) brain