

Exam

Name \_\_\_\_\_

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

- 1) A section that divides the body on the longitudinal plane into equal right and left parts is called: 1) \_\_\_\_\_
  - A) median (midsagittal)
  - B) oblique
  - C) transverse
  - D) frontal
  - E) coronal
  
- 2) Which of the following is the correct sequence, going from simplest to most complex, in the levels of structural organization of the human body: 2) \_\_\_\_\_
  - A) chemical level, tissue level, cellular level, organ system level, organ level, organismal level
  - B) cellular level, chemical level, tissue level, organ system level, organismal level, organ level
  - C) chemical level, cellular level, tissue level, organ level, organ system level, organismal level
  - D) cellular level, chemical level, tissue level, organ level, organ system level, organismal level
  - E) cellular level, tissue level, chemical level, organ level, organ system level, organismal level
  
- 3) Which of these regions are associated with the parts of the arm: 3) \_\_\_\_\_
  - A) femoral, popliteal, patellar
  - B) brachial, antecubital, carpal
  - C) nasal, oral, occipital
  - D) pelvic, pubic, inguinal
  - E) acromial, sacral, gluteal
  
- 4) The muscular system consists of the: 4) \_\_\_\_\_
  - A) muscles in the walls of hollow organs
  - B) muscles of the heart and those in the walls of the hollow organs
  - C) skeletal muscles
  - D) skeletal muscles and the muscles of the heart
  - E) muscles of the heart
  
- 5) The lymphatic system: 5) \_\_\_\_\_
  - A) synthesizes vitamin D
  - B) responds to internal and external changes by activating appropriate muscles and glands
  - C) secretes hormones that regulate processes such as growth, reproduction, and nutrient use (metabolism) by body cells
  - D) picks up fluid leaked from blood vessels and returns it to the blood
  - E) produces heat
  
- 6) Which system covers the external surface of the body and manufactures vitamin D: 6) \_\_\_\_\_
  - A) endocrine system
  - B) skeletal system
  - C) nervous system
  - D) integumentary system
  - E) lymphatic system
  
- 7) Which of these regions are NOT associated with the ventral (anterior) portion of the head: 7) \_\_\_\_\_
  - A) oral
  - B) orbital
  - C) buccal
  - D) nasal
  - E) occipital
  
- 8) Which of the following systems is matched most accurately to the life function it provides: 8) \_\_\_\_\_

- A) respiratory system – digestion
- B) nervous system – excretion
- C) muscular system – maintaining boundaries
- D) integumentary system – movement
- E) nervous system – responsiveness

- 9) Which of the following elements of a control system detects a change: 9) \_\_\_\_\_
- A) receptor
  - B) control center
  - C) effector
  - D) stimulus
  - E) efferent pathway
- 10) Which of the following statements is correct regarding the location of the spleen and stomach: 10) \_\_\_\_\_
- A) both of these organs are located medially
  - B) both of these organs are located in the left upper quadrant
  - C) the spleen is located in the left upper quadrant and the stomach is located in the right upper quadrant
  - D) both of these organs are located in the right upper quadrant
  - E) the spleen is located in the right upper quadrant and the stomach is located in the left upper quadrant
- 11) Which of these is NOT a survival need: 11) \_\_\_\_\_
- A) oxygen
  - B) water
  - C) reproduction
  - D) body temperature
  - E) nutrients
- 12) Which of the following is the correct order of elements in a control system: 12) \_\_\_\_\_
- A) receptor, stimulus, afferent pathway, control center, efferent pathway, effector, response
  - B) stimulus, receptor, efferent pathway, control center, afferent pathway, effector, response
  - C) receptor, stimulus, efferent pathway, control center, afferent pathway, effector, response
  - D) stimulus, receptor, afferent pathway, control center, efferent pathway, effector, response
  - E) effector, stimulus, efferent pathway, control center, afferent pathway, receptor, response
- 13) Which of the following activities does not represent an anatomical study: 13) \_\_\_\_\_
- A) viewing muscle tissue through a microscope
  - B) studying how the nerves conduct electrical impulses
  - C) observing the parts of a reproducing cell
  - D) examining the surface of a bone
  - E) making a section through the heart to observe its interior
- 14) The dorsal body cavity houses the: 14) \_\_\_\_\_
- A) heart and lungs
  - B) spinal cord and brain
  - C) tongue
  - D) urinary and reproductive organs
  - E) digestive and reproductive organs
- 15) The stomach, liver, intestines, bladder, rectum, and reproductive organs are housed in the: 15) \_\_\_\_\_
- A) abdominopelvic cavity

- B) dorsal cavity
- C) spinal cavity
- D) cranial cavity
- E) thoracic cavity

- 16) Which of the following is NOT a necessary life *function*: 16) \_\_\_\_\_
- A) nutrients
  - B) maintaining boundaries
  - C) movement
  - D) responsiveness
  - E) metabolism
- 17) The study of the function of the body and body parts is called: 17) \_\_\_\_\_
- A) homeostasis
  - B) anatomy
  - C) physiology
  - D) irritability
  - E) negative feedback
- 18) Which of these regions in the abdominopelvic cavity are medial: 18) \_\_\_\_\_
- A) epigastric, umbilical, and hypogastric regions
  - B) umbilical, right lumbar, and left lumbar regions
  - C) epigastric, right, and left hypochondriac regions
  - D) iliac (inguinal), lumbar, and hypogastric regions
  - E) right and left iliac (inguinal), and hypogastric regions
- 19) The region that contains the navel is the: 19) \_\_\_\_\_
- A) umbilical region
  - B) orbital region
  - C) carpal region
  - D) anterior knee
  - E) inguinal region
- 20) The gluteal region is the: 20) \_\_\_\_\_
- A) posterior knee area
  - B) posterior surface of the head
  - C) shoulder blade region
  - D) buttock
  - E) curve of the shoulder
- 21) Which of the following orientation terms have opposite meanings (in humans): 21) \_\_\_\_\_
- A) medial and anterior
  - B) superficial and proximal
  - C) posterior and intermediate
  - D) distal and proximal
  - E) medial and distal
- 22) Your body thermostat is located in a part of the brain called the hypothalamus. Which of the following elements of a control system does this area in the brain represent: 22) \_\_\_\_\_
- A) stimulus
  - B) afferent pathway
  - C) efferent pathway

- D) effector
- E) control center

- 23) The ovary is part of which of the following two systems: 23) \_\_\_\_\_
- A) digestive and respiratory systems
  - B) reproductive and endocrine systems
  - C) digestive and endocrine systems
  - D) reproductive and respiratory systems
  - E) endocrine and respiratory systems
- 24) Elimination of metabolic wastes from the body is the function of the: 24) \_\_\_\_\_
- A) digestive and urinary systems
  - B) digestive system
  - C) urinary system
  - D) respiratory system
  - E) digestive and respiratory systems
- 25) Which ventral cavity subdivision has no bony protection: 25) \_\_\_\_\_
- A) spinal
  - B) pelvic
  - C) abdominal
  - D) cranial
  - E) thoracic
- 26) The system that controls and coordinates the body through hormones is the: 26) \_\_\_\_\_
- A) digestive system
  - B) nervous system
  - C) endocrine system
  - D) skeletal system
  - E) integumentary system
- 27) Which type of section could be used to separate the thoracic cavity from the abdominopelvic cavity: 27) \_\_\_\_\_
- A) dorsal                      B) transverse                      C) sagittal                      D) coronal                      E) ventral
- 28) Which of the following regional terms means the anterior surface of the elbow: 28) \_\_\_\_\_
- A) vertebral region
  - B) antecubital region
  - C) calcaneal region
  - D) scapular region
  - E) gluteal region
- 29) In describing the relationship of the thoracic and spinal cavities: 29) \_\_\_\_\_
- A) the thoracic cavity is superior to the spinal cavity
  - B) the thoracic cavity is medial to the spinal cavity
  - C) the thoracic cavity is proximal to the spinal cavity
  - D) the thoracic cavity is ventral to the spinal cavity
  - E) the thoracic cavity is inferior to the spinal cavity
- 30) Which of these structures is the most complex: 30) \_\_\_\_\_
- A) a tissue
  - B) a molecule

- C) a cell
- D) organ system
- E) an organ

31) Sarah fell while ice skating and broke a bone in her carpal region. Where is this region? 31) \_\_\_\_\_  
A) wrist                      B) shoulder                      C) lower leg                      D) hip                      E) knee

32) In anatomical position: 32) \_\_\_\_\_  
A) the body is erect with the feet parallel and the arms hanging at the sides with the palms facing forward  
B) the body is lying face up with the feet parallel and the arms at the sides with the palms facing forward  
C) the body is erect with the feet parallel and the arms hanging at the sides with the palms facing backward  
D) the body is lying face up with the feet parallel and the arms at the sides with the palms facing backward  
E) the body is lying face down with the feet parallel and the arms at the sides with the palms facing backward

33) The lungs and heart are in the \_\_\_\_\_ body cavity. 33) \_\_\_\_\_  
A) spinal  
B) thoracic  
C) abdominopelvic  
D) cranial  
E) dorsal

34) The ribs are located in the: 34) \_\_\_\_\_  
A) right and left iliac regions  
B) right and left hypochondriac regions  
C) right and left pubic regions  
D) right and left lumbar regions  
E) right and left inguinal regions

35) Positive feedback systems: 35) \_\_\_\_\_  
A) operate in such a way that the initial stimulus is enhanced and increases  
B) regulate heart and breathing rates, and operate in such a way that the initial stimulus is shut off or reduced  
C) regulate heart and breathing rates, and operate in such a way that the initial stimulus is enhanced and increases  
D) operate in such a way that the initial stimulus is shut off or reduced  
E) regulate heart and breathing rates

36) Which of the following orientation and directional terms have the same meaning (in humans): 36) \_\_\_\_\_  
A) superior and caudal  
B) inferior and cephalad  
C) anterior and dorsal  
D) inferior and cranial  
E) anterior and ventral

37) The system that takes in oxygen and releases carbon dioxide to the exterior is the: 37) \_\_\_\_\_  
A) muscular system  
B) respiratory system

- C) urinary system
- D) cardiovascular system
- E) reproductive system

38) In describing the relationship between the patellar and popliteal regions:

38) \_\_\_\_\_

- A) the patellar region is lateral to the popliteal region
- B) the patellar region is anterior to the popliteal region
- C) the patellar region is proximal to the popliteal region
- D) the patellar region is superior to the popliteal region
- E) the patellar region is distal to the popliteal region

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

*Fill in the blank or provide a short answer:*

39) A cut that is made along the midline is called a \_\_\_\_\_ section.

39) \_\_\_\_\_

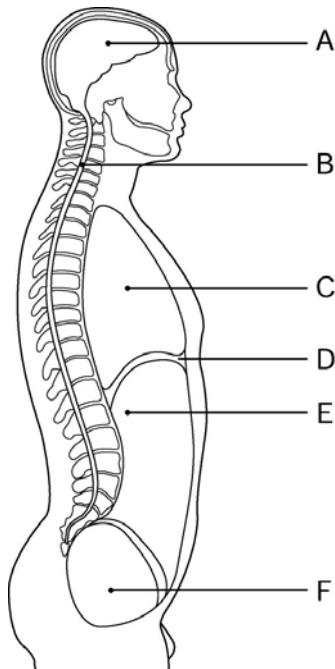


Figure 1.1

*Using Figure 1.1, identify the following:*

40) Label E points to the \_\_\_\_\_ cavity.

40) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

41) A control mechanism that responds to a stimulus by decreasing its intensity is called a \_\_\_\_\_ mechanism.

41) \_\_\_\_\_

42) The larynx is an organ of the \_\_\_\_\_ system.

42) \_\_\_\_\_

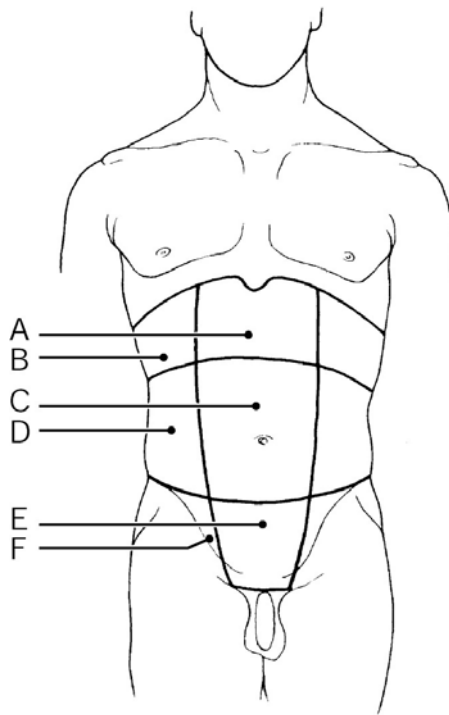


Figure 1.2

*Using Figure 1.2, identify the following:*

43) Label A points to the \_\_\_\_\_ region. 43) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

44) The body's ability to maintain stable internal conditions is referred to as \_\_\_\_\_. 44) \_\_\_\_\_

45) The abdominal cavity has \_\_\_\_\_ quadrants and \_\_\_\_\_ regions. 45) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

46) The navel is \_\_\_\_\_ to the spine. 46) \_\_\_\_\_

47) \_\_\_\_\_ is the process of breaking down ingested food in preparation for absorption. 47) \_\_\_\_\_

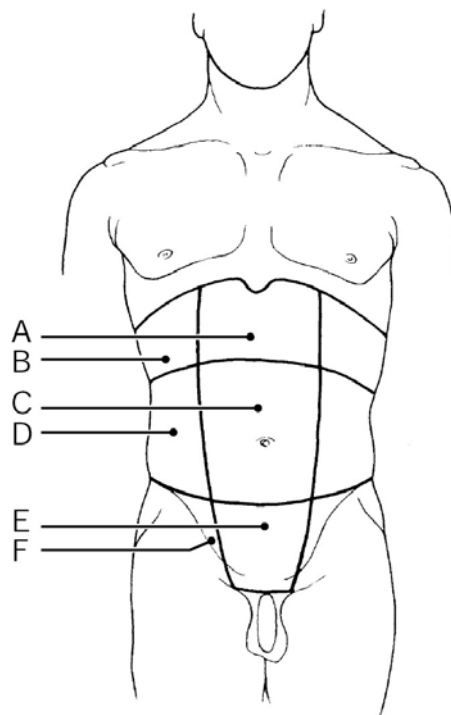


Figure 1.2

Using Figure 1.2, identify the following:

48) Label E points to the \_\_\_\_\_ region.

48) \_\_\_\_\_

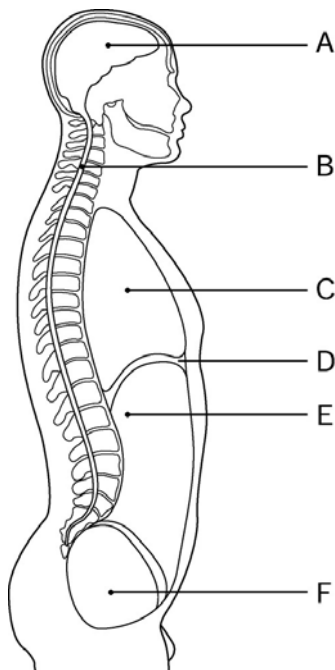


Figure 1.1

Using Figure 1.1, identify the following:

49) Label B points to the \_\_\_\_\_ cavity.

49) \_\_\_\_\_

50) Label F points to the \_\_\_\_\_ cavity.

50) \_\_\_\_\_

51) Ventral is a directional term synonymous with \_\_\_\_\_ in humans.

51) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

52) Groups of cells that have a common function are termed \_\_\_\_\_.

52) \_\_\_\_\_

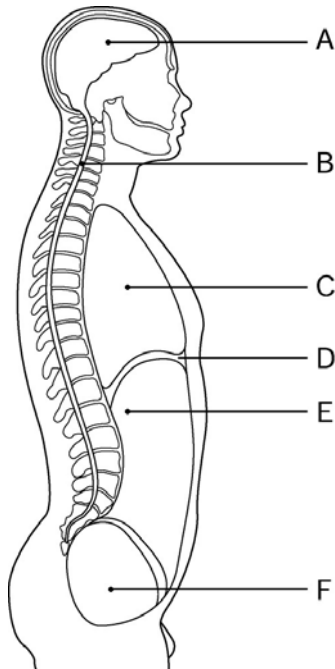


Figure 1.1

*Using Figure 1.1, identify the following:*

53) Label A points to the \_\_\_\_\_ cavity.

53) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

54) The central region of the thoracic cavity containing the heart is called the \_\_\_\_\_.

54) \_\_\_\_\_

55) The system that functions in the storage of minerals, such as calcium, is called the \_\_\_\_\_ system.

55) \_\_\_\_\_

56) The component of a control system that provides the means for the control center's response (output) is called the \_\_\_\_\_.

56) \_\_\_\_\_

57) The thoracic cavity is \_\_\_\_\_ to the abdominopelvic cavity.

57) \_\_\_\_\_

58) The \_\_\_\_\_ system is composed of kidneys, bladder, ureters, and urethra.

58) \_\_\_\_\_

*Fill in the blank or provide a short answer:*

59) The ability to sense changes and react to them is termed \_\_\_\_\_ or \_\_\_\_\_.

59) \_\_\_\_\_

60) The armpit area is called the \_\_\_\_\_ region.

60) \_\_\_\_\_

61) The epigastric region is \_\_\_\_\_ to the right hypochondriac region of the abdominopelvic cavity.

61) \_\_\_\_\_

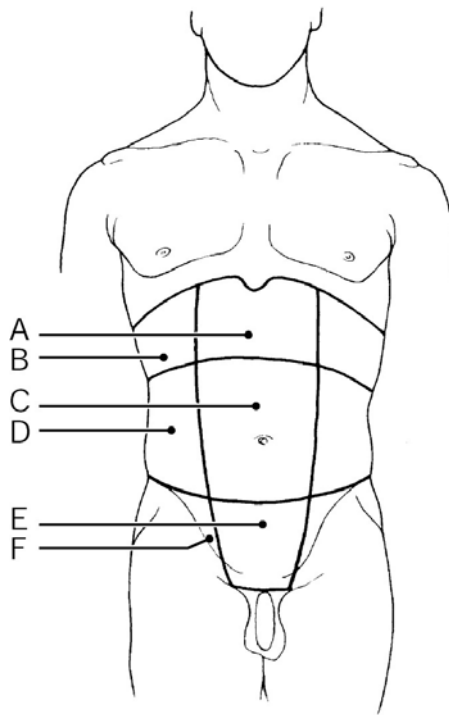


Figure 1.2

Using Figure 1.2, identify the following:

62) Label B points to the \_\_\_\_\_ region. 62) \_\_\_\_\_

63) Label C points to the \_\_\_\_\_ region. 63) \_\_\_\_\_

64) Blood is categorized as a \_\_\_\_\_ because it is composed of similar cells with a common function. 64) \_\_\_\_\_

65) The patellar region is \_\_\_\_\_ to the popliteal region. 65) \_\_\_\_\_

Fill in the blank or provide a short answer:

66) The cranial and spinal cavities are subdivisions of the \_\_\_\_\_ cavity. 66) \_\_\_\_\_

67) The function of the \_\_\_\_\_ system is to control body activities via hormones. 67) \_\_\_\_\_

Fill in the blank or provide a short answer:

68) \_\_\_\_\_ refers to all of the chemical reactions in the body. 68) \_\_\_\_\_

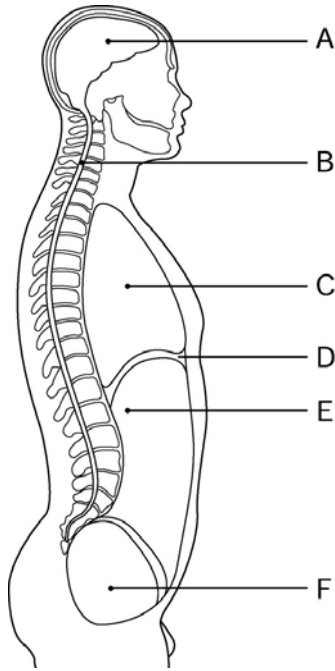


Figure 1.1

Using Figure 1.1, identify the following:

69) Label D points to the \_\_\_\_\_.

69) \_\_\_\_\_

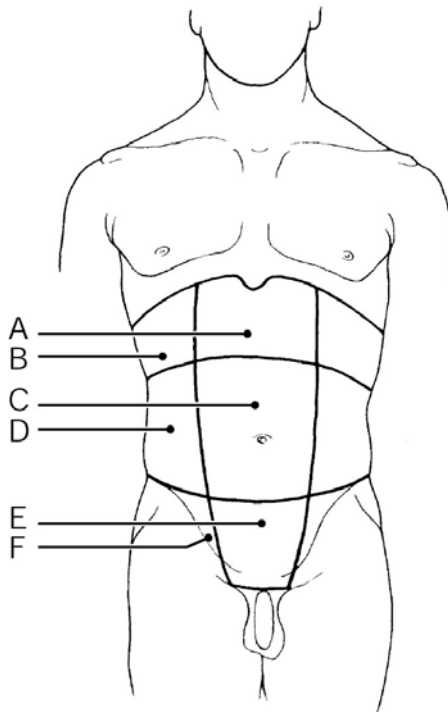


Figure 1.2

Using Figure 1.2, identify the following:

70) Label F points to the \_\_\_\_\_ region.

70) \_\_\_\_\_

Fill in the blank or provide a short answer:

71) The study of the body's small structures using a microscope is called \_\_\_\_\_.

71) \_\_\_\_\_

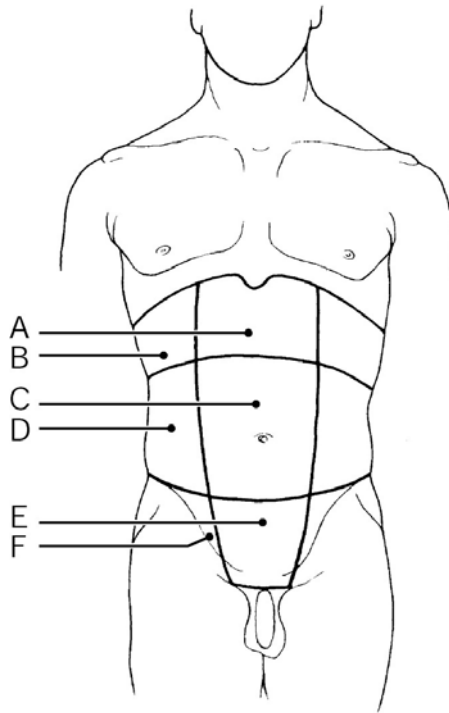


Figure 1.2

Using Figure 1.2, identify the following:

72) Label D points to the \_\_\_\_\_ region.

72) \_\_\_\_\_

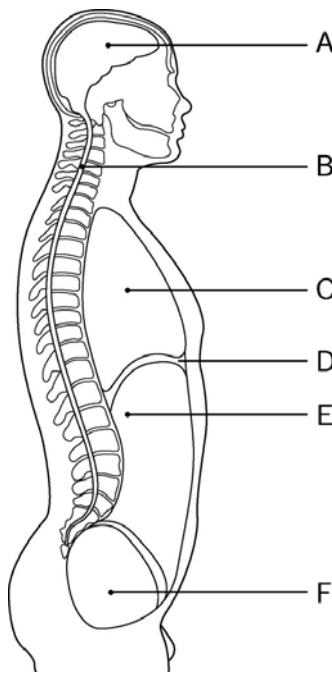


Figure 1.1

Using Figure 1.1, identify the following:

73) Label C points to the \_\_\_\_\_ cavity.

73) \_\_\_\_\_

Fill in the blank or provide a short answer:

- 74) The right and left iliac (inguinal) regions are lateral to the \_\_\_\_\_ region. 74) \_\_\_\_\_
- 75) The breakdown of ingested foods into simple molecules that can then be absorbed into the bloodstream is termed \_\_\_\_\_. 75) \_\_\_\_\_
- 76) The three medial regions of the abdominopelvic cavity are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. 76) \_\_\_\_\_
- 77) Blood clotting and the birth of a baby are examples of the \_\_\_\_\_ feedback mechanism. 77) \_\_\_\_\_

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

- 78) The heel of the foot constitutes the plantar region. 78) \_\_\_\_\_
- 79) The lymphatic system collects fluids leaked by the cardiovascular system and returns them to the bloodstream. 79) \_\_\_\_\_
- 80) The spleen and the tonsils are part of the digestive system. 80) \_\_\_\_\_
- 81) The endocrine system is the fast-acting body control system. 81) \_\_\_\_\_
- 82) The thoracic cavity is separated from the abdominopelvic cavity by the diaphragm. 82) \_\_\_\_\_
- 83) The dorsal body cavity is subdivided into four quadrants and nine regions. 83) \_\_\_\_\_
- 84) As body temperature drops below normal, chemical reactions proceed too rapidly and body proteins begin to break down. 84) \_\_\_\_\_
- 85) The spinal cavity is part of the ventral body cavity. 85) \_\_\_\_\_
- 86) The hypogastric region is directly superior to the umbilical region. 86) \_\_\_\_\_
- 87) There is no physical structure that separates the abdominal cavity from the pelvic cavity. 87) \_\_\_\_\_
- 88) The highest level of structural organization in humans is the organ level. 88) \_\_\_\_\_
- 89) Most homeostatic control mechanisms are negative feedback reactions. 89) \_\_\_\_\_
- 90) *Proximal* means farther from the origin of a body part. 90) \_\_\_\_\_
- 91) The sacral region is on the ventral (anterior) body surface. 91) \_\_\_\_\_
- 92) Excretion is the process of removing wastes from the body. 92) \_\_\_\_\_

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

Match the following:

- |               |                                      |           |
|---------------|--------------------------------------|-----------|
| 93) Tarsal    | A) ankle                             | 93) _____ |
| 94) Inguinal  | B) area where thigh meets body trunk | 94) _____ |
| 95) Umbilical | C) navel                             | 95) _____ |

*Match the following:*

- |              |                    |           |
|--------------|--------------------|-----------|
| 96) Dorsal   | A) behind          | 96) _____ |
| 97) Ventral  | B) toward the side | 97) _____ |
| 98) Lateral  | C) in front of     | 98) _____ |
| 99) Superior | D) above           | 99) _____ |

*Match the following.*

- |   |                   |            |
|---|-------------------|------------|
| 100) Regulation of water and electrolytes | A) urinary system | 100) _____ |
|---|-------------------|------------|

*Match the following:*

- |                |                        |            |
|----------------|------------------------|------------|
| 101) Popliteal | A) posterior knee area | 101) _____ |
| 102) Oral      | B) mouth               | 102) _____ |

*Match the following.*

- |  |                    |            |
|--|--------------------|------------|
| 103) Heat production                             | A) nervous system  | 103) _____ |
| 104) Responds to stimuli (internal and external) | B) muscular system | 104) _____ |

*Match the following:*

- |               |  |            |
|---------------|--|------------|
| 105) Proximal | A) close to the origin of the body part or the point of attachment of a limb to the body trunk | 105) _____ |
|---------------|--|------------|

*Match the following.*

- |                            |                    |            |
|----------------------------|--------------------|------------|
| 106) Site of hematopoiesis | A) skeletal system | 106) _____ |
|----------------------------|--------------------|------------|

*Match the following:*

- |               |                  |            |
|---------------|------------------|------------|
| 107) Patellar | A) armpit        | 107) _____ |
| 108) Axillary | B) anterior knee | 108) _____ |

*Match the following:*

- |           |                               |            |
|-----------|-------------------------------|------------|
| 109) Deep | A) toward the body surface    | 109) _____ |
|           | B) away from the body surface |            |

*Match the following:*

- |              |          |            |
|--------------|----------|------------|
| 110) Femoral | A) thigh | 110) _____ |
|--------------|----------|------------|

*Match the following:*

- |             |  |            |
|-------------|--|------------|
| 111) Distal | A) farther from the origin of a body part or the point of attachment of a limb to the body trunk | 111) _____ |
|-------------|--|------------|

Match the following:

112) Coxal

A) hip

112) \_\_\_\_\_

Match the following.

113) Houses blood cells involved in immunity

A) lymphatic system

113) \_\_\_\_\_

B) respiratory system

Match the following:

114) Orbital

A) eye area

114) \_\_\_\_\_

Match the following:

115) Inferior

A) below

115) \_\_\_\_\_

Match the following.

116) Slow-acting body control system

A) digestive system

116) \_\_\_\_\_

B)  
endocrine system

Match the following:

117) Medial

A) toward the midline

117) \_\_\_\_\_

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

118) Describe anatomical position. Explain why anatomical position is used.

119) Explain the difference between homeostatis and metabolism.

120) List and explain the eight necessary human life functions.

121) Explain how scratching an itch is an example of the negative feedback mechanism.

122) Describe the role of the effector in the negative feedback system.

123) List, and briefly define, the human body's organization levels from smallest to largest.

124) List and explain the three major body planes and sections.

125) Distinguish between *anatomy* and *physiology*.

126) Identify the two dorsal body cavities, and state their locations and the organs contained therein.

127) List the four quadrants and nine regions of the abdominopelvic cavity. Explain why this cavity has these subdivisions.

128) List and explain the five survival needs of humans.

- 1) A
- 2) C
- 3) B
- 4) C
- 5) D
- 6) D
- 7) E
- 8) E
- 9) A
- 10) B
- 11) C
- 12) D
- 13) B
- 14) B
- 15) A
- 16) A
- 17) C
- 18) A
- 19) A
- 20) D
- 21) D
- 22) E
- 23) B
- 24) C
- 25) C
- 26) C
- 27) B
- 28) B
- 29) D
- 30) D
- 31) A
- 32) A
- 33) B
- 34) B
- 35) A
- 36) E
- 37) B
- 38) B
- 39) midsagittal or median
- 40) abdominal
- 41) negative feedback
- 42) respiratory
- 43) epigastric
- 44) homeostasis
- 45) 4; 9
- 46) ventral or anterior
- 47) Digestion
- 48) hypogastric
- 49) spinal
- 50) pelvic
- 51) anterior

- 52) tissues
- 53) cranial
- 54) mediastinum
- 55) skeletal
- 56) effector
- 57) superior
- 58) urinary or excretory
- 59) irritability; responsiveness
- 60) axillary
- 61) medial
- 62) right hypochondriac
- 63) umbilical
- 64) tissue
- 65) ventral or anterior
- 66) dorsal
- 67) endocrine
- 68) Metabolism
- 69) diaphragm
- 70) right iliac (inguinal)
- 71) microscopic anatomy
- 72) right lumbar
- 73) thoracic
- 74) hypogastric
- 75) digestion
- 76) epigastric region, umbilical region, hypogastric region
- 77) positive
- 78) FALSE
- 79) TRUE
- 80) FALSE
- 81) FALSE
- 82) TRUE
- 83) FALSE
- 84) FALSE
- 85) FALSE
- 86) FALSE
- 87) TRUE
- 88) FALSE
- 89) TRUE
- 90) FALSE
- 91) FALSE
- 92) TRUE
- 93) A
- 94) B
- 95) C
- 96) A
- 97) C
- 98) B
- 99) D
- 100) A
- 101) A
- 102) B
- 103) B

- 104) A
- 105) A
- 106) A
- 107) B
- 108) A
- 109) B
- 110) A
- 111) A
- 112) A
- 113) A
- 114) A
- 115) A
- 116) B
- 117) A

118) Anatomical position is defined as standing erect, feet parallel to the arms, palms facing forward. Anatomical position is used because it is a standard position; it also helps us to avoid confusion. Additionally, anatomical position is a reference point that helps us accurately describe body parts and position.

119) Homeostasis is the body's attempt to maintain balance during which time internal conditions may vary. Metabolism is all chemical reactions that occur in the body.

- 120) 1. Maintenance of boundaries—keeps the internal environment distinct from the external environment; membranes perform this function at the cellular level and skin performs this function for the organism.  
2. Movement—includes a change in the position of the body or the propelling of a substance (such as blood, urine, or food) through the body organs; constitutes a major role of the muscular system.  
3. Responsiveness (irritability)—the ability to react to stimuli; constitutes a major role of the nervous system.  
4. Metabolism—includes all the chemical reactions that occur within the body's cells.  
5. Excretion—elimination of carbon dioxide by the lungs and nitrogenous wastes by the kidneys.  
6. Digestion—the process of breaking down ingested foodstuffs into simpler molecules that can then be absorbed into the blood for delivery to the body's cells.  
7. Growth—an increase in size, which is usually accompanied by an increase in the number of cells.  
8. Reproduction—the production of new cells for growth and repair, and also the production of offspring.

- 121) 1. Stimulus or input is the itch.  
2. A receptor carries the information about the stimulus (itch) to the brain via an afferent pathway.  
3. Control center (brain) analyzes this information and turns on an effector which will cancel the stimulus.  
4. Information reaches the effector via the efferent pathway from the brain. Muscles move the hand to scratch the itch.  
5. Scratching continues until the itch goes away. The brain shuts off the effector once homeostasis is restored.

122) The effector is the control center's output and response to the stimulus. The effector's job is to cancel or shut off the control mechanism.

- 123) 1. chemical level:  
    a. atoms are the basic building blocks of matter  
    b. molecules are units formed by atoms combining
2. cellular level: cells are the smallest living unit in living organisms
3. tissue level: tissues are groupings of cells performing a common function
4. organ level: an organ is a structure consisting of two or more tissue types
5. organ system level: an organ system describes a group of organs functioning cooperatively for a common purpose
6. organism level: a human organism consists of all of the organ systems of the

ody working together to promote healthy functioning

b (homeostasis)

- 124) 1. Sagittal—cut is made along the longitudinal (lengthwise) plane of the body (or an organ), dividing it into right and left parts.  
2. Frontal (coronal)—cut is made along the longitudinal (lengthwise) plane of the body (or an organ), dividing it into anterior and posterior parts.  
3. Transverse (cross-section)—cut is made along the transverse (horizontal) plane, dividing the body into superior and inferior parts.
- 125) Anatomy is the study of the structure and shape of the body and body parts, and their relationships to one another. Physiology is the study of how the body and its parts work or function.
- 126) 1. Cranial cavity—the superior posterior space inside the bony skull that houses the brain.  
2. Spinal cavity—the inferior posterior space inside the bony vertebral column that houses the spinal cord.
- 127) 1. The four quadrants are:  
a. right upper quadrant  
b. right lower quadrant  
c. left upper quadrant  
d. right lower quadrant  
2. The nine regions are:  
a. epigastric region  
b. umbilical region  
c. hypogastric region  
d. right hypochondriac region  
e. left hypochondriac region  
f. right lumbar region  
g. left lumbar region  
h. right iliac region  
i. left iliac region

This cavity has been subdivided into these quadrants and regions because it is large and has many organs.

- 128) 1. Nutrients—include carbohydrates, proteins, and fats, which are taken in via the diet for energy and cell building.  
2. Oxygen—required to release energy from food.  
3. Water—accounts for over 60% of the body weight, and provides the basis for various body fluids.  
4. Appropriate body temperature—when too high or too low, physiological activities cease, primarily because molecules are destroyed or become nonfunctional.  
5. Appropriate atmospheric pressure—the force exerted on the surface of the body by the weight of air; is essential for normal operation of the respiratory system and breathing.