Bio-10-Q3W6-Skletal and Muscles-Skin-Qs. Bank

True/False
Indicate whether the statement is true or false.

____ 1. Once you have finished growing, your bones no longer change.

____ 2. Calcium is both deposited in and removed from bones.

____ 3. Calcium removed from bone is rapidly excreted in the urine as an unnecessary body waste.

____ 4. As a person ages, his or her bone density usually decreases.

____ 5. Because bones in an adult's skeleton are harder than children's bones, adults are less likely to break a bone in a fall.

____ 6. Osteoporosis is most common in older women because they rarely include milk in their diet.

Short Answer

7. Describe the change that takes place in your skin when you are exposed to ultraviolet light.
8. How does skin help regulate body temperature?
9. List three other functions of skin.
10. Compare and contrast *epidermis* and *dermis*.
11. Compare and contrast *voluntary muscle* and *involuntary muscle*.
12. Compare and contrast *axial skeleton* and *appendicular skeleton*.
13. Compare and contrast *compact bone* and *spongy bone*.
14. Describe the cause and effects of a sprain.
15. Why is the skin considered an organ? Give two important functions of skin.
16. Identify the following types of joints: skull, hip, ankle, knee, toe, and neck.
17. Why do people apply sunblocks?
18. Why does a third-degree burn heal slowly?
19. Distinguish the functions of the parts of the skin.
20. Explain one beneficial and one harmful effect of exposure to sunlight.
21. How does the buildup of lactic acid in muscle cells result in more oxygen being delivered to your cells?
22. How does the sliding filament theory explain muscle contraction?
23. A paramedic at an accident is aware of pressure points, which are areas where a major blood vessel crosses a bone close to the body's surface. How might the paramedic use these points to stop bleeding?
24. Bone fractures in children are often different from fractures in adults. Explain why this may be so.

Table 34-1 shows whether or not a karate expert should be able to break a board or a concrete patio block. The modulus of elasticity (E) is a ratio that measures the capability of a strained body to recover its size and shape after being stretched, bent, or otherwise deformed. The modulus of rupture (R) measures the maximum bending that a material can resist before breaking.

Breaking Parameters for Wood, Concrete, and Bone			
	Wood	**Concrete**	**Bone**
Elasticity modulus (E)	1.4	28.0	180
Rupture modulus (R)	3.6	4.5	210

Table 34-1

25. Why don't the bones of the karatekan's hand break during the karate strike? Refer to Table 34-1.
26. Would the karatekan be able to break a board with a bare fist or not? Refer to Table 34-1.

Essay

27. If you cut through to the center of a large leg bone, what bone components (in order, from the outside in) would you encounter?
28. How do blood vessels and nerves reach individual bone cells in compact bone?
29. What role does bone marrow play in the functioning of your circulatory system?
30. In what way is the skeleton a storehouse?

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 31. Which type of muscle makes up the heart?
a. cardiac
b. smooth
c. skeletal
d. all of these

____ 32. A(n) _____ muscle contracts under unconscious control.
a. voluntary
b. involuntary
c. skeletal
d. striated

____ 33. Contractions of _____ muscle are slow and prolonged.
a. skeletal
b. smooth
c. voluntary
d. all of these

____ 34. Which type of muscle is found in internal organs?
a. skeletal
b. striated
c. smooth
d. voluntary

____ 35. What is an effect of aging on the skin?
a. wrinkles
b. sagging
c. dryness
d. all of these

____ 36. The first reaction of the body to a cut is to restore the continuity of the _____.
a. skin
b. capillaries
c. sweat glands
d. none of these

____ 37. _____-degree burns involve the death of epidermal and dermal cells/layers.
a. First
b. Second
c. Third
d. Fourth

____ 38. By age 20, a person's bones stop growing because _____.
a. bone-forming cells are no longer present
b. less calcium is present in the body
c. hormones cause the growth centers at the ends of bones to degenerate
d. bone cells receive less oxygen and nutrients at that time

____ 39. Which of the following examples illustrates a pivot joint in use?
a. You wind up to pitch a baseball.
b. You wave good-bye to a friend.
c. You kick a football.
d. You look behind you.

____ 40. After suffering widespread third-degree burns, the burn victim _____.
a. is unlikely to incur bacterial infection
b. recovers in a short time
c. has a harder time regulating body temperature
d. has slight damage to cells of the dermis

____ 41. The skin regulates the temperature of the body on a hot day by _____.
a. closing the pores
b. dilating blood vessels
c. constricting the blood
d. reducing access to the exterior

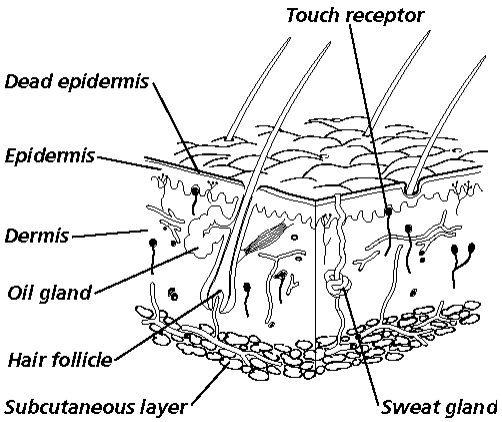

Figure 34-2

____ 42. Which portion of skin shown in Figure 34-2 changes when you get a suntan?
a. dead epidermis
b. epidermis
c. dermis
d. subcutaneous layer

____ 43. Which portion of skin shown in Figure 34-2 is where a pimple forms?
a. oil gland
b. sweat gland
c. hair follicle
d. subcutaneous layer

____ 44. Which portion of skin shown in Figure 34-2 contains sense receptors?
a. dead epidermis
b. epidermis
c. dermis
d. subcutaneous layer

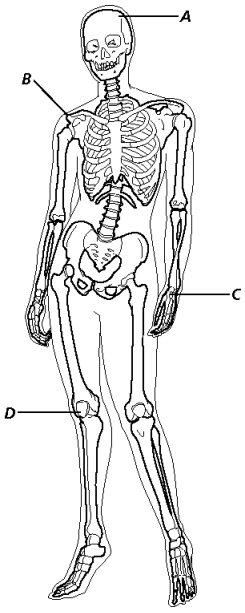

Figure 34-3

____ 45. Identify the ball-and-socket joints in Figure 34-3.
a. A
b. B
c. C
d. D

____ 46. Which joints in Figure 34-3 do not move?
a. A
c. C

b. B
d. D

____ 47. Which area shown in Figure 34-3 is not involved in the production of blood cells?
a. A
c. C
b. B
d. D

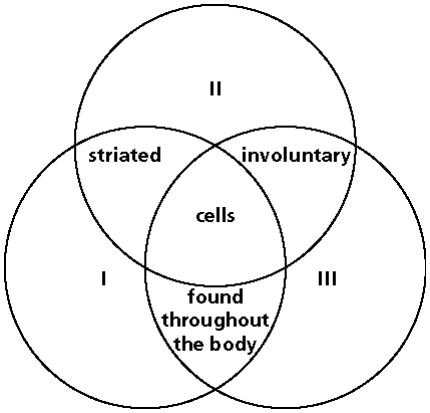

Figure 34-4

____ 48. Which type of muscle is labeled I in the Venn diagram shown in Figure 34-4?
a. cardiac
c. skeletal
b. filament
d. smooth

____ 49. Which type of muscle is labeled II in the Venn diagram shown in Figure 34-4?
a. cardiac
c. skeletal
b. filament
d. smooth

____ 50. Which type of muscle is labeled III in the Venn diagram shown in Figure 34-4?
a. cardiac
c. skeletal
b. filament
d. smooth

Completion
Complete each statement.

51. When an inadequate supply of oxygen is available to meet a muscle cell's oxygen needs, the _____ energy system is the primary source of ATP.
52. Muscle strength depends on the _____ of the fibers and the number of fibers that contract at a time.
53. Bones grow in length at the _____ of the bone.
54. Bones grow in diameter on the _____ surface of the bone.
55. Contraction of _____ muscle, the muscle of internal organs, is slow and prolonged.
56. The mineral _____, found in dairy products, is a critical part of the diet for healthy, strong bones.
57. The _____ produces red blood cells, some white blood cells, and cell fragments involved in blood clotting.
58. Beneath the scab of a wound, _____ begin to multiply to fill in the gap.

Matching

Match each item with the correct statement below.

a. myofibril
b. joint
c. keratin
d. marrow
e. sarcomere
f. bursa
g. melanin
h. osteoblast
i. ligament

____ 59. One of the functional units of a myofibril
____ 60. Smaller fiber in a muscle fiber
____ 61. Band of tissue connecting bone to bone
____ 62. Cell pigment that colors skin and protects it from solar radiation
____ 63. Protein in dead epidermal cells that protects and waterproofs underlying cells
____ 64. Soft tissue that fills center cavities of bones
____ 65. Potential bone cell found in cartilage of embryo
____ 66. Fluid-filled sac between bones
____ 67. Where two or more bones meet

Problem

Because different muscles in the human body perform different functions, you might expect that there is variation in the kinds of contractions that occur. When you stand watching a game, you tense your leg muscles to maintain a fixed position. This prolonged contraction is called isometric (meaning "same length"). On the other hand, when you are walking and moving your legs, the contraction is rapid and is called isotonic (meaning "same force"). Two muscles in your leg, the gastrocnemius and soleus muscles, help you to extend your foot. The gastrocnemius is used in jumping and performing other rapid movements of the foot. The soleus is used principally for support against gravity.

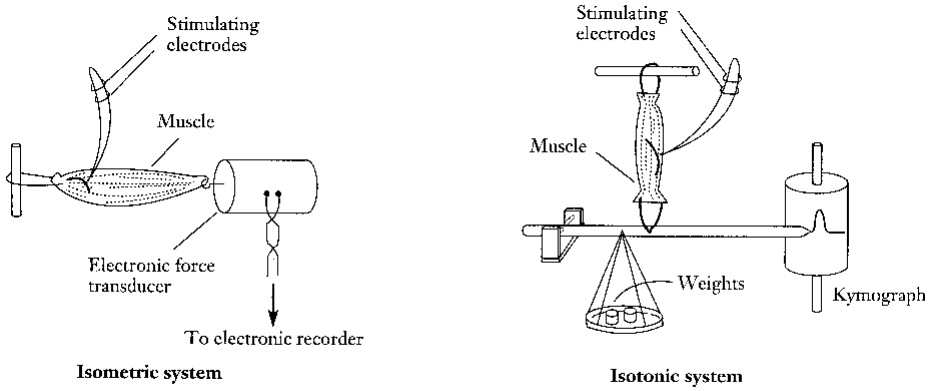

Figure 34-1

68. In which system of Figure 34-1 do you think the twitch will last longer? Why?
69. In which system of Figure 34-1 do you think the shape of the muscle shows greater change during stimulus? Describe the change that must take place.
70. In which system in Figure 34-1 does the muscle not have to overcome inertia?
71. Observe the two systems shown in Figure 34-1. In which system does the muscle have to pull against gravity?

Bio-10-Q3W6-Skletal and Muscles-Skin-Qs. Bank
Answer Section

TRUE/FALSE

1. ANS: F PTS: 1
2. ANS: T PTS: 1
3. ANS: F PTS: 1
4. ANS: T PTS: 1
5. ANS: F PTS: 1
6. ANS: F PTS: 1

SHORT ANSWER

7. ANS:
   Exposure to sunlight causes an increase in melanin production in epidermal pigment cells, in an attempt to protect cells from the damaging effects of ultraviolet light.

   PTS: 1
8. ANS:
   When capillaries dilate, blood flow to the skin increases, and excess heat is lost to the environment. When blood vessels constrict, body heat is conserved. Sweat produced by sweat glands in the dermis also helps cool the body by evaporation.

   PTS: 1
9. ANS:
   (1) serves as protective layer; (2) functions as a sense organ; (3) produces vitamin D

   PTS: 1
10. ANS:
    Both epidermis and dermis are layers of skin. The epidermis is the outer, thinner portion of the skin. The dermis is the inner, thicker portion of the skin.

    PTS: 1 DIF: B OBJ: 34-1 NAT: C5 | F1 | F5
11. ANS:
    Both types of muscle control are in the human body. Voluntary muscle is under conscious control, whereas involuntary muscle is not under voluntary control.

    PTS: 1 DIF: B OBJ: 34-7 NAT: A1 | C5 | E1
12. ANS:
    Both skeletal systems provide support for the body. The axial skeleton includes the skull, the vertebral column, ribs, and sternum. The appendicular skeleton includes the bones of the arms, legs, shoulders, and pelvic girdle.

    PTS: 1 DIF: B OBJ: 34-6 NAT: B2 | C5 | F1
13. ANS:

Both types of bone are components of a human bone. Compact bone is the outer layer of hard bone. The inner spongy bone is less dense and is filled with holes like a sponge.

PTS: 1 DIF: B OBJ: 34-5 NAT: B2 | B6 | C5

14. ANS:
Caused by forcible twisting of a joint, a sprain can result in injury to the bursa, ligaments, or tendons of the joint.

PTS: 1 DIF: B OBJ: 34-4 NAT: B2 | C5 | E1

15. ANS:
The skin is an organ because it consists of tissues joined together to perform specific activities. Functions of the skin include regulation of body temperature and fluids to maintain homeostasis, protection from physical and chemical damage, and sensing information from the environment.

PTS: 1 DIF: B OBJ: 34-2 NAT: C5 | F1 | F5

16. ANS:
skull—fixed, hip—ball-and-socket, ankle—gliding, knee—hinge, toe—hinge, neck—pivot

PTS: 1 DIF: A OBJ: 34-4 NAT: B2 | C5 | E1

17. ANS:
People apply sunblocks to block the sun's ultraviolet rays to help prevent sunburn and skin cancer.

PTS: 1 DIF: A OBJ: 34-2 NAT: C5 | F1 | F5

18. ANS:
A third-degree burn destroys the epidermis and dermis. Skin no longer functions and must regrow or be replaced by a skin graft.

PTS: 1 DIF: A OBJ: 34-3 NAT: C5 | F1 | F5

19. ANS:
The epidermal layer contains keratin that produces the tough, waterproof covering of the body. The epidermis also produces melanin, a pigment that protects the skin from the sun. The dermal layer contains blood vessels, nerves that signal sensory information, and hair follicles that regulate temperature. The dermis also produces vitamin D when exposed to ultraviolet light.

PTS: 1 DIF: A OBJ: 34-1 NAT: C5 | F1 | F5

20. ANS:
When exposed to the ultraviolet rays in sunlight, dermis cells produce vitamin D, a nutrient that aids calcium absorption. However, exposure to ultraviolet light can damage skin cells and accelerate the aging process.

PTS: 1 DIF: B OBJ: 34-2 NAT: C5 | F1 | F5

21. ANS:
Excess lactic acid in the bloodstream makes the blood more acidic. This stimulates rapid breathing, which supplies more oxygen to the muscle cells. The oxygen breaks down the lactic acid.

PTS: 1 DIF: A OBJ: 34-7 NAT: A1 | C5 | E1

22. ANS:
The sliding filament theory states that actin filaments within a sarcomere slide toward one another during contraction. Myosin filaments do not move.

PTS: 1 DIF: B OBJ: 34-9 NAT: A1 | C5 | E2

23. ANS:
Pressing a blood vessel against a bone may provide the only way to control bleeding effectively.

PTS: 1 DIF: A OBJ: 34-6 NAT: B2 | C5 | F1

24. ANS:
The composition of a child's bones is different from an adult's bones. A child's bones have more collagen and fewer minerals than an adult's. This makes a child's bones less brittle and less likely to break in two.

PTS: 1 DIF: A OBJ: 34-5 NAT: B2 | B6 | C5

25. ANS:
The force on the bones would have to be far greater in order to break them because the modulus of rupture of bone is much higher than that of the board.

PTS: 1 DIF: A OBJ: 34-6 NAT: B2 | C5 | F1

26. ANS:
Yes, the bones in the karatekan's hand are able to bend the board beyond its modulus of rupture.

PTS: 1 DIF: A OBJ: 34-6 NAT: B2 | C5 | F1

ESSAY

27. ANS:
nerve and blood vessel-filled membrane; compact bone; spongy bone; marrow

PTS: 1

28. ANS:
through osteon systems

PTS: 1

29. ANS:
Red bone marrow produces red blood cells, some white blood cells, and cell fragments involved in clotting.

PTS: 1

30. ANS:
Calcium, phosphorus, and other minerals are stored in bone. Fat is also stored as yellow marrow.

PTS: 1

MULTIPLE CHOICE

31. ANS: A PTS: 1 DIF: B OBJ: 34-7
NAT: A1 | C5 | E1
32. ANS: B PTS: 1 DIF: B OBJ: 34-7
NAT: A1 | C5 | E1
33. ANS: B PTS: 1 DIF: B OBJ: 34-7
NAT: A1 | C5 | E1
34. ANS: C PTS: 1 DIF: B OBJ: 34-7
NAT: A1 | C5 | E1
35. ANS: D PTS: 1 DIF: B OBJ: 34-2

NAT: C5 | F1 | F5

36. ANS: A PTS: 1 DIF: B OBJ: 34-3
NAT: C5 | F1 | F5

37. ANS: C PTS: 1 DIF: B OBJ: 34-3
NAT: C5 | F1 | F5

38. ANS: C PTS: 1 DIF: B OBJ: 34-5
NAT: B2 | B6 | C5

39. ANS: D PTS: 1 DIF: B OBJ: 34-4
NAT: B2 | C5 | E1

40. ANS: C PTS: 1 DIF: B OBJ: 34-3
NAT: C5 | F1 | F5

41. ANS: B PTS: 1 DIF: B OBJ: 34-2
NAT: C5 | F1 | F5

42. ANS: B PTS: 1 DIF: A OBJ: 34-2
NAT: C5 | F1 | F5

43. ANS: A PTS: 1 DIF: A OBJ: 34-2
NAT: C5 | F1 | F5

44. ANS: C PTS: 1 DIF: A OBJ: 34-1
NAT: C5 | F1 | F5

45. ANS: B PTS: 1 DIF: B OBJ: 34-4
NAT: B2 | C5 | E1

46. ANS: A PTS: 1 DIF: B OBJ: 34-4
NAT: B2 | C5 | E1

47. ANS: A PTS: 1 DIF: A OBJ: 34-4
NAT: B2 | C5 | E1

48. ANS: C PTS: 1 DIF: A OBJ: 34-7
NAT: A1 | C5 | E1

49. ANS: A PTS: 1 DIF: A OBJ: 34-7
NAT: A1 | C5 | E1

50. ANS: D PTS: 1 DIF: A OBJ: 34-7
NAT: A1 | C5 | E1

COMPLETION

51. ANS: anaerobic

PTS: 1 DIF: B OBJ: 34-8 NAT: A1 | C5 | E2

52. ANS: thickness

PTS: 1 DIF: B OBJ: 34-8 NAT: A1 | C5 | E2

53. ANS: ends

PTS: 1 DIF: B OBJ: 34-5 NAT: B2 | B6 | C5

54. ANS: outer

PTS: 1 DIF: B OBJ: 34-5 NAT: B2 | B6 | C5

55. ANS: smooth

PTS: 1 DIF: B OBJ: 34-7 NAT: A1 | C5 | E1

56. ANS: calcium

PTS: 1 DIF: B OBJ: 34-6 NAT: B2 | C5 | F1

57. ANS: red marrow

PTS: 1 DIF: B OBJ: 34-6 NAT: B2 | C5 | F1

58. ANS: skin cells

PTS: 1 DIF: B OBJ: 34-3 NAT: C5 | F1 | F5

MATCHING

59. ANS: E PTS: 1 DIF: B OBJ: 34-8
NAT: A1 | C5 | E2
60. ANS: A PTS: 1 DIF: B OBJ: 34-8
NAT: A1 | C5 | E2
61. ANS: I PTS: 1 DIF: B OBJ: 34-6
NAT: B2 | C5 | F1
62. ANS: G PTS: 1 DIF: B OBJ: 34-2
NAT: C5 | F1 | F5
63. ANS: C PTS: 1 DIF: B OBJ: 34-1
NAT: C5 | F1 | F5
64. ANS: D PTS: 1 DIF: B OBJ: 34-6
NAT: B2 | C5 | F1
65. ANS: H PTS: 1 DIF: B OBJ: 34-5
NAT: B2 | B6 | C5
66. ANS: F PTS: 1 DIF: B OBJ: 34-4
NAT: B2 | C5 | E1
67. ANS: B PTS: 1 DIF: B OBJ: 34-4
NAT: B2 | C5 | E1

PROBLEM

68. ANS:
In the isotonic system, each twitch will last longer because the muscle must change shape and more work must be done.

PTS: 1 DIF: A OBJ: 34-9 NAT: A1 | C5 | E2

69. ANS:
The change in shape is greater in the isotonic system. The muscle must shorten.

PTS: 1 DIF: A OBJ: 34-9 NAT: A1 | C5 | E2

70. ANS:
In the isometric system, the muscle does not have to overcome inertia and pull against gravity.

PTS: 1 DIF: A OBJ: 34-9 NAT: A1 | C5 | E2

71. ANS:

in the isotonic system because the muscle has to lift the attached weights

PTS: 1 DIF: A OBJ: 34-9 NAT: A1 | C5 | E2