

NAME _____

DATE _____

SPMD 201 – Human Anatomy for Sports Medicine
Skeletal Tissue
Chapter 6

Multiple Choice

- _____1. Which of the following membranes covers the surface of a mature bone?
- A. periosteum
 - B. perichondrium
 - C. peritendineum
 - D. peritoneum
- _____2. Cancellous bone tissue:
- A. very dense.
 - B. contains concentric lamellae.
 - C. contains interconnecting plates called trabeculae.
 - D. has many spaces and lacks osteocytes.
- _____3. Intramembranous ossification:
- A. forms the bones of the roof of the skull.
 - B. is the process that produces most of the skeletal system.
 - C. occurs when bones develop from cartilage.
 - D. occurs when osteoblasts invade the spaces left by dying cartilage cells.
- _____4. Haversian systems:
- A. are found in spongy bone tissue.
 - B. lack concentric lamellae.
 - C. are the basic units of compact bone tissue.
 - D. do not contain osteocytes.
- _____5. A passageway connecting neighboring osteocytes in an osteon is a:
- A. central canal.
 - B. lamella.
 - C. canaliculus.
 - D. lacuna.

- _____6. Which of the following events occurs last?
- A. Osteoprogenitor cells become osteoblasts.
 - B. A membrane of delicate collagen fibers develops.
 - C. Cancellous bone is formed.
 - D. Periosteum is formed.
- _____7. The flat bones of the skull develop from:
- A. hyaline cartilage.
 - B. areolar tissue.
 - C. compact bone.
 - D. fibrous connective tissue.
- _____8. The medullary cavity is:
- A. empty in adult bones.
 - B. the site where osteoblasts are found.
 - C. lined with endosteum.
 - D. filled with fibrocartilage and elastin fibers.
- _____9. Which of the following events occurs last?
- A. Blood vessels grow into the primary ossification center.
 - B. Cartilage is calcified in the cartilage model.
 - C. A cartilage model is formed by chondroblasts.
 - D. Osteoblasts produce trabeculae and lamellae on the surface of calcified cartilage.
 - E. Secondary ossification centers appear in the epiphyses.
- _____10. Long bones grow in length at the:
- A. epiphyseal plate.
 - B. articular cartilage.
 - C. center of the shaft.
 - D. endosteum-periosteum junction.
- _____11. The longitudinal growth of long bones ceases when:
- A. chondroblasts take over mitosis of osteoclasts.
 - B. the epiphyseal plate is completely replaced with bone tissue.
 - C. the epiphyseal becomes separated from the diaphysis.
 - D. the perichondrium becomes periosteum.

- _____ 12. It takes approximately _____ years for all of the bones in the body to become completely ossified.
- A. 15
 - B. 20
 - C. 25
 - D. 30
- _____ 13. Storage of lipids that represent an important energy reserve in bone occurs in areas of:
- A. red marrow.
 - B. yellow marrow.
 - C. bone matrix.
 - D. ground substance.
- _____ 14. Compact bone is usually found where:
- A. bone is not heavily stressed.
 - B. stresses arrive from many directions.
 - C. trabeculae are aligned with extensive cross-bracing.
 - D. stresses arrive from a limited range of directions.
- _____ 15. Mature bone cells found in lacunae are called:
- A. osteoblasts.
 - B. osteocytes.
 - C. osteoclasts.
 - D. osteoprogenitors.

Alternate Choice

1. The skull contains medullary / sinus (circle one) cavities that are filled with air / marrow (circle one).
2. In adults, yellow marrow is greater than / less than (circle one) red marrow.
3. Haversian / Volkmann's (circle one) canals run *perpendicular* to the bone's long axis.
4. Organic framework (e.g., collagen) provides the bone with strength / flexibility (circle one).
5. The bone matrix is composed of 33% / 67% (circle one) inorganic salts (e.g., calcium and phosphate).

6. Endochondral ossification takes place in cartilage / connective tissue (circle one).
7. Secondary ossification centers appear in the diaphyses / epiphyses (circle one).
8. The site of red blood cell production in *adults* is associated with the axial skeleton / limbs (circle one).

Fill-In

1. The process of replacing other tissues with bone is called _____.
2. _____ are maintenance cells in bone tissue.
3. The shaft of a long bone is referred to as the _____.
4. The unit structure of adult compact bone is the Haversian system or _____.
5. Concentric layers of bone surrounding an osteon are called _____.
6. When a long bone is completely ossified, the band of bone separating the primary and secondary ossification centers is referred to as the epiphyseal _____.

Short Answer

1. Define *diaphysis*, *epiphysis*, *epiphyseal line*, and *epiphyseal plate*.
2. Define red and yellow bone marrow. Where are they located in an adult and in a child?
3. What are *osteoblasts*, *osteoclasts*, and *osteocytes*?
4. What is Wolff's Law?
5. How do cancellous bone and compact bone differ?

Multiple Choice

- | | | | | | |
|----|---|-----|---|-----|---|
| 1. | A | 6. | C | 11. | B |
| 2. | C | 7. | D | 12. | C |
| 3. | A | 8. | C | 13. | B |
| 4. | C | 9. | E | 14. | D |
| 5. | B | 10. | A | 15. | B |

Alternate Choice

- | | | | |
|----|--------------|----|----------------|
| 1. | sinus; air | 6. | cartilage |
| 2. | greater than | 7. | epiphyses |
| 3. | Volkman's | 8. | axial skeleton |
| 4. | flexibility | | |
| 5. | 67% | | |

Fill-In

- | | | | |
|----|--------------|----|----------|
| 1. | ossification | 5. | lamellae |
| 2. | osteocytes | 6. | line |
| 3. | diaphysis | | |
| 4. | osteon | | |