Chapter 6: Skeletal System

1. What are the functions of the skeletal system?
2. What are the components of the skeletal system?
3. What is the classification of bones (short, long, etc), where in the body do you find an example of each.
4. What is the function and location of the following typical long bone structures:
   a. Epiphysis (proximal, distal)
   b. Diaphysis
   c. epiphyseal line
   d. periosteum
   e. endosteum
   f. compact bone
   g. spongy bone (cancellous)
   h. medullary cavity
   i. articular cartilage
   j. Sharpey's fibers
5. Describe the design of bones. Where is compact vs spongy bone found, and why.
6. What is yellow marrow, what is red marrow; where in a bone do you find these, what is their function?
7. What is the structure of a flat bone. Which structures in a typical long bone are not found in flat bones?
8. What is the function of the following structures found in compact bone:
   a. osteon (Harvesian System)
   b. lamella (concentric, circumferential, interstitial)
   c. Haversian (central) canal
   d. Volkmann's (perforating) canal
   e. Osteocytes
   f. Lacunae
   g. canaliculi.
9. Describe the structure of spongy bone (Trabeculae).
10. What is the chemical composition of bone (organic vs. inorganic components)?
11. What are the functions of the following bone cells and where do you find them:
    a. osteoprogenitor cell
    b. osteocytes
    c. osteoblasts
    d. osteoclasts (secretes HCl)?
12. How does blood supply get to all parts of the bone?
13. Describe the process of Intramembranous ossification.
14. Describe the process of Endochondrial ossification.
15. Describe appositional growth, what is it and how does this relate to bone growth
16. Describe the process of bone growth at the epiphyseal cartilage.
17. How do the hormones PTH and Calcitonin affect bone remodeling? Under what conditions are they produced and how is their production stopped? What is the purpose of this hormone action?
18. How do growth hormone, thyroid hormone, sex hormones (estrogen and testosterone) affect bone growth? At what stages in life are each of these most active?
19. What is mechanical bone remodeling. What is the purpose of it? When and how does it occur?
20. Describe the process of bone repair after it breaks.
21. Describe the different bone fractures discussed in class?
22. Describe the following bone disorders (what causes them): osteoporosis, osteosarcoma, osteomalacia (rickets), paget’s.
23. Describe the following bone disorders (what causes them): osteoporosis, osteomalacia (rickets)

Bones problem set: Label the structures where indicated and, in the boxes, describe the stages in endochondral ossification of a long bone.
Sample Exam Questions:

**Multiple Choice:** For each question, fill in the letter of the correct answer on your scantron form.

1. Osteoblasts in the mature bone are found:
   A. In lacunae
   B. In the periosteum and endosteum
   C. Within the compact bone
   D. In the red bone marrow
   E. In the yellow bone marrow

2. The membrane found lining the bones is called:
   A. Endosteum
   B. Perforating fibers
   C. Spongy bone
   D. Epiphysis

3. The Haversian (central) canals
   A. Are found in spongy bone
   B. Bring blood toward the marrow/medullary cavity
   C. Carry red bone marrow
   D. Carry yellow bone marrow
   E. None of the above

4. A passageway connecting neighboring osteocytes in an osteon is a:
   A. Central canal
   B. Lamella
   C. Lacuna
   D. Canaliculus
   E. Perforating canal

5. Which one of the following best describes intramembranous bone formation?
   A. Cartilage turns directly into bone tissue.
   B. Bone replaces a membrane.
   C. Blood vessels, osteogenic cells and osteoblastic cells migrate into an area where cartilage tissue is breaking down.
   D. Fibrocartilage cells proliferate, die and are replaced by dense connective tissue.
TRUE/FALSE:  Mark an A on your scantron for each true statement and a B on your scantron for each false statement

6. Appositional bone growth is responsible for increasing the length of a growing bone.
7. Calcitonin release is stimulated in response to high blood calcium levels.
8. Red marrow is responsible for red blood cell production.
9. During endochondral ossification, mesenchymal cells convert to osteoblasts to turn membrane into bone.
10. Osteoblast release HCl.