Examination

1. Regarding the composition of bone in the average adult, inorganic matter accounts for about
   a. 40% to 50% of total bone volume
   b. 5% to 10% of total bone volume
   c. 25% to 30% of total bone volume
   d. 60% to 70% of total bone volume
   e. 80% to 90% of total bone volume

2. Regarding the principal cells of bone construction and remodeling, the large cells with multiple nuclei that are associated with bone resorption are called the
   a. Osteoblasts
   b. Osteoclasts
   c. Osteocytes
   d. Osteons
   e. Osteophytes

3. The hormone that increases osteoclastic activity and decreases the kidney clearance of calcium is
   a. parathyroid hormone
   b. calcitonin
   c. vitamin D
   d. 1,25-dihydroxy-vitamin D
   e. estrogen

4. Regarding vitamin D,
   a. it decreases bone resorption
   b. it increases the renal clearance of calcium
   c. it is really a hormone rather than a vitamin
   d. it helps decrease the absorption of calcium from the intestine
   e. the active form works with calcitonin on bone

5. The shaft of long bones is covered by
   a. the periosteum
   b. compact bone
   c. the endosteum
   d. cancellous bone
   e. yellow marrow

6. Bone that consists of irregular anastomosing bars that is porous and loosely constructed, like a sponge, is called
   a. red marrow
   b. compact bone
   c. endosteum
   d. cancellous bone
   e. yellow marrow
7. By the age of _______ the largest amount of bone mass in the body has developed for most people.
   a. 50 to 55
   b. 20 to 25
   c. 45 to 50
   d. 40 to 45
   e. 30 to 35

8. The substance that facilitates the absorption of calcium from the intestine into the bloodstream, that decreases the urinary excretion of calcium, and inhibits the loss of calcium from bone is
   a. parathyroid hormone
   b. phosphate
   c. vitamin D
   d. 1,25-dihydroxy-vitamin D
   e. estrogen

9. Without treatment, women can lose up to _______ of their bone mass in the first 5 to 7 years after menopause.
   a. 10%
   b. 20%
   c. 30%
   d. 35%
   e. 25%

10. The most common bones for fracture due to osteoporosis are the
    a. bones of the wrist
    b. heads of the femurs
    c. vertebral bodies in the spine
    d. phalanges
    e. ribs

11. Factors that can increase the risk for developing osteoporosis include all of the following EXCEPT
    a. menopause
    b. family history of broken bones in older relatives
    c. smoking
    d. obesity
    e. Asian descent

12. The primary problem that leads to the earlier development of osteoporosis in the disorder of the female athletic triad is the
    a. lack of ovulation
    b. increase in estrogen levels
    c. lack of calcium absorption from the intestines
    d. increase in calcium clearance by the kidneys
    e. decrease in production of the active form of vitamin D

13. The most common finding as osteoporosis is developing is
    a. backache
    b. a fracture
    c. loss of height
    d. no symptoms
    e. Dowager's Hump

14. Which of the following statements is true?
a. Quantitative Computerized Tomography produces images of the vertebral bodies and can be relied upon as a basis for treatment because of its fairly good precision.
b. Quantitative Computerized Tomography is relatively unreliable for following bone density changes post treatment.
c. Quantitative Computerized Tomography can also measure femoral neck density.
d. Ultrasound can image bone density in such bones as the patella, tibia, and radius.
e. Ultrasound is a reliable screening test for determining changes in bone density and results for a given individual are fairly uniform.

15. Dual Energy X-Ray Absorptiometry (DEXA) scanning is currently the procedure of choice for the medical community for assessing and diagnosing osteoporosis for all of the following reasons EXCEPT

a. It uses sound attenuation and speed of transmission through bone
b. It has a high degree of precision for the spine.
c. It measures both the lumbar spine and femoral neck.
d. It allows for standardization of data based on age, weight, height, and ethnic background.
e. It has a high degree of precision for the femoral neck.

16. The precision of DEXA scanning of the spine is around
   a. 5%
   b. 4%
   c. 3%
   d. 2%
   e. 1%

17. Normal x-rays are not sensitive enough in detecting bone loss until at least _____ of bone mass has been lost.
   a. 10%
   b. 30%
   c. 45%
   d. 50%
   e. 55%

18. By the year 2000, there were over _____ in the United States over the age of 50.
   a. 100 million people
   b. 60 million people
   c. 50 million people
   d. 75 million people
   e. 90 million people

19. Treatment of osteoporosis may consist of all of the following EXCEPT
   a. vitamin D
   b. calcium supplements
   c. hormone replacement therapy
   d. an exercise program
   e. parathyroid hormone

20. Regarding hip fractures with osteoporosis, in most studies, between _____ of patients die due to the fracture or its complications within three months.
   a. 1% and 5%
   b. 5% and 10%
   c. 10% and 20%
   d. 20% and 30%
   e. 30% and 40%