

## Skeletal Lecture Test Questions – Set 2

1. If cartilage becomes impregnated with mineral salts it:
  - a. is then referred to as bone
  - b. functions as usual, but with more strength
  - c. degenerates
  - d. transforms into bone marrow
  - e. is iodized
  
2. The amorphous ground substance of cartilage or osseous tissue is:
  - a. proteoglycans
  - b. various calcium salts
  - c. various magnesium and iron salts
  - d. lipids
  - e. polypeptides
  
3. Appositional growth occurs:
  - a. only in cartilage
  - b. only in bone
  - c. beneath periosteum or perichondrium
  - d. within the central diaphysis of a replacement bone
  - e. within the epiphyseal ossification centers of a replacement bone
  
4. Bones of the cranium develop from:
  - a. areolar tissue, which is then ossified following cellular hypertrophy
  - b. hyaline cartilage
  - c. synovial membrane
  - d. a special mesenchymal membrane, directly, with no cartilaginous stage
  - e. nervous tissue
  
5. Which of the following exerts the most direct, significant, influence in controlling intracartilaginous ossification and bone repair:
  - a. ground substance
  - b. marrow type
  - c. blood supply
  - d. shape of the bone
  - e. all of the above exert equal influences
  
6. At one time in life almost the entire skeleton consists of:
  - a. reticular tissue
  - b. sesamoid bones
  - c. compact bone
  - d. fibrous cartilage
  - e. hyaline cartilage

7. Intracartilaginous ossification of a long bone begins in a primary center within the:
  - a. central diaphysis
  - b. diaphysis, just beneath the perichondrium
  - c. centers of the epiphyses
  - d. epiphyseal-diaphyseal junctions
  - e. epiphyses, just beneath the perichondrium
  
8. Relative growth in length of long bones is determined by:
  - a. alkaline phosphatase
  - b. spicular lengths
  - c. the type of cartilage present
  - d. closure of the epiphyseal discs (metaphyses)
  - e. none of the above
  
9. Relative growth in length of a bone is determined by:
  - a. intramembranous ossification
  - b. diaphyseal diameter
  - c. closure of the epiphyseal plates (metaphyses)
  - d. unknown minerals in the matrix
  - e. periosteal thickness
  
10. Which would be the first to appear in the development of an intracartilaginous bone:
  - a. osteocyte
  - b. osteoblast
  - c. chondroblast
  - d. mesenchymal cell
  - e. chondrocyte
  
11. Which of the following would be the last to appear in the development of an intracartilaginous bone:
  - a. osteocyte
  - b. osteoblast
  - c. chondroblast
  - d. chondrocyte
  - e. mesenchymal cell
  
12. All osseous tissue first forms as:
  - a. woven (spicular)
  - b. hyaline cartilage
  - c. compact
  - d. lamellar
  - e. fibrous cartilage

13. Osseous tissue is decreased by:
- mesenchymal cells
  - kyphosis
  - osteoclasts
  - conversion from red to yellow marrow
  - iron deposition
14. Woven bone does not contain:
- spicules
  - lacunae
  - lamellae
  - osteocytes
  - canaliculi
15. Which of the following would be a bone(s) formed by intracartilaginous ossification:
- femur
  - tarsals
  - radius
  - ribs
  - all of the above
16. Which of the following would not develop from a mesenchymal cell:
- osteoblast
  - chondroblast
  - goblet cell
  - fibroblast
  - myeloid (stem) cell
17. Which of the following can normally be temporary, being replaced by osseous tissue:
- hyaline cartilage
  - fibrous cartilage
  - elastic cartilage
  - all of the above
  - none of the above
18. Which of the following would be the first to appear in a developmental sequence:
- chondrocyte
  - hypertrophied chondrocyte
  - chondroblast
  - mesenchymal cell
  - fibroblast
19. Which of the following bone's epiphyseal plates fuse last in a normal person:
- femur
  - calcaneus
  - clavicle
  - atlas
  - ulna

20. The following is not a normal component of osseous matrix:
- calcium (Ca)
  - lead (Pb)
  - collagenous fibers
  - phosphate (PO<sub>4</sub>)
  - hydroxide (OH)
21. The function of canaliculi:
- chambers for the precipitation of mineral salts
  - diffusion passageways for nourishing osteocytes
  - spaces to decrease the density of bones
  - contain collagenous fibers, to prevent them from being entrapped within the osseous matrix
  - this is unknown
22. Mature osseous tissue is systematically replaced, because:
- the organic matrix degenerates
  - fresh minerals will be more available
  - the strength can be adjusted
  - shape changes can occur, to match new stress patterns
  - all of the above
23. Diffusion passages, containing tissue fluid, for nourishing osteocytes:
- osteoclasts
  - spicules
  - canaliculi
  - fontanelles
  - sutures
24. The most abundant precipitated salt in osseous matrix:
- lead citrate
  - hydroxyapatite
  - sodium chloride
  - proteoglycans
  - barium hypochondrite
25. The source for mesenchymal cells in cartilage and bone regeneration and remodeling:
- red bone marrow
  - joint capsule
  - blood vessels
  - inner zone of perichondrium and periosteum
  - spongy bone
26. Growth in diameter of a bone is produced by:
- secondary ossification centers of the epiphyses
  - primary ossification centers within original hyaline cartilage
  - appositional layers of osseous tissue beneath the periosteum
  - additional layers of periosteum

- e. an inner zone of expanding hyaline cartilage beneath the perisoteum
27. Cartilaginous matrix has all of the following features, except:
- a. semi-solid gel
  - b. compressible
  - c. flexible
  - d. substances diffuse through it
  - e. contains precipitated mineral salts
28. Which of the following would be associated with a bone (as an organ):
- a. osteocyte
  - b. myeloid cell
  - c. chondrocyte
  - d. fibroblast
  - e. all of the above at some time in its life
29. All of the following cartilages are permanent, except:
- a. costal
  - b. epiphyseal plates
  - c. tracheal
  - d. elastic
  - e. fibrous
30. The removal of immature osseous tissue, as well as mature bone for remodeling, is the responsibility of:
- a. mesenchymal cells
  - b. inner zone
  - c. osteoblasts
  - d. osteoclasts
  - e. synovial fluid
31. The main inorganic component of osseous matrix:
- a. bicarbonate
  - b. sodium chloride
  - c. proteoglycans
  - d. iron
  - e. hydroxyapatite
32. Which of the following would contain typical osseous tissue - i.e. organic matrix, inorganic matrix, osteocytes in lacunae, and canaliculi:
- a. spicules
  - b. lamellae
  - c. spongy bone
  - d. intramembranous bone
  - e. all of the above

33. Which of the following would be a bone formed by intracartilaginous ossification:
- a. tibia
  - b. patella
  - c. parietal
  - d. nasal
  - e. frontal

34. Cartilage degeneration is caused by:
- a. normal aging process
  - b. osteoclasts
  - c. matrix mineralization from secretions of hypertrophied chondrocytes
  - d. an inner zone of mesenchymal cells, just beneath the perichondrium
  - e. none of the above

35. If the blood supply to a bone in repair is inadequate, what will occur:
- a. failure to progress any further
  - b. cartilage initially develops, to be later replaced by osseous tissue
  - c. only spongy bone will develop
  - d. mesenchymal cells will develop into myeloid cells
  - e. nothing, since this is only critical for cartilage repair

36. Which of the following would be a bone formed by intramembranous ossification:
- a. patella
  - b. parietal
  - c. nasal
  - d. frontal
  - e. all of the above

37. Which of the following would be found in osseous matrix:
- a. collagenous fibers
  - b. hydroxyapatite
  - c. ferrous sulphate
  - d. sodium phosphate
  - e. all of the above



38. The difference between spongy and compact bone is they represent different arrangements of the same tissue.
39. Spongy bone can be shaped in two ways, exemplified by that of membrane bones and that of the primary and secondary ossification centers in replacement (enchondral) bones.
40. The inorganic components of bone matrix include various salts of calcium, magnesium, iron, phosphate, hydroxide and carbonate.

41. Calcium is the only inorganic component of bone matrix.
42. Canaliculi are present in bone, but not in cartilage, because the matrix is solid and does not permit diffusion of nutrients and wastes.
43. Osteocytes freely move about in bone through minute canals, the canaliculi.
44. At birth, membrane bone development is complete.
45. Growth in diameter of a bone is appositional.
46. For a long bone, endochondral ossification begins in the central diaphysis.
47. Closure of the diploe determines the relative growth in length of long bones.
48. Lamellar bone is never replaced.
49. Intracartilaginous ossification begins in the epiphyses.
50. Cartilage and bone tissue both begin formation as chondroblasts.
51. Hyaline cartilage is always permanent.
52. Elastic cartilage is always permanent.
53. Fibrous cartilage is always permanent.
54. Cartilage may occasionally regenerate imperfectly, as dense fibrous or as osseous tissue.
55. Cartilage has excellent regenerative ability, typically reforming itself as the original.
56. Of the skeletal tissues, cartilage has the greatest power of regeneration
57. Cartilage and osseous tissue both begin formation from mesenchymal cells.
58. Osteoblasts develop from osteoprogenitor cells.

59. Osteoprogenitor cells develop from osteoblasts.
60. Mature spongy bone contains lamellae.
61. All osseous tissue first appears in lamellar form.
62. Osseous tissue is formed by hypertrophied chondrocytes which secrete enzymes to precipitate minerals in the matrix.
63. Intramembranous ossification passes through more steps (stages) than intracartilaginous.
64. Cartilage and osseous tissue both begin formation from osteoclasts.
65. For a long bone, the primary ossification center will be in the distal epiphyses.