1. The subcutaneous layer consists mostly of _____.
   a. smooth muscle
   b. simple squamous epithelium
   c. areolar and adipose connective tissues
   d. melanin
   e. keratin

2. Which of the following statements about functions of the integumentary system is NOT true?
   a. It detects stimuli related to temperature and pain.
   b. It absorbs water and salts.
   c. It helps regulate body temperature.
   d. It participates in the synthesis of vitamin D.
   e. It protects against bacterial invasion and dehydration.

3. Supporting cells in nervous tissue are called _____.
   a. fibroblasts  b. neurons  c. mesenchymal cells  d. dendrites  e. neuroglia

4. Which word best describes the location of the lungs with reference to the liver?
   a. superior  b. inferior  c. distal  d. medial  e. anterior

5. Body structures known as _____ are composed of two or more different tissues and usually have recognizable shapes.
   a. cells  b. organs  c. organ systems  d. systems

6. The human body is estimated to have nearly 30 _____ cells with _____ cell types.
   a. million; about 25  
   b. billion; about 1000  
   c. trillion; about 200  
   d. million; about 1000  
   e. gazillion; more than I care to count

7. The periosteum is primarily made of _____.
   a. dense irregular connective tissue
   b. an epithelial membrane
   c. bone connective tissue
   d. stratified squamous epithelium
   e. hyaline cartilage

8. Which statement best describes connective tissue?
   a. usually contains large amount of extracellular matrix
   b. usually arranged in a single layer of cells
   c. primarily concerned with secretion
   d. cells usually very closely packed
   e. is avascular

9. Haversian canals contain _____.
   a. high concentrations of calcium salts
   b. the epiphyseal plate
   c. blood vessels
   d. articular cartilage
   e. osteocytes

10. Which of the following tissues is voluntary and striated?
a. stratified squamous epithelium  
b. simple squamous epithelium  
c. cardiac muscle  
d. dense irregular connective tissue  
e. skeletal muscle

11. Centers of ossification contain predominately _____.
   a. chondroblasts  
b. osteocytes  
c. osteoblasts  
d. osteogenic cells  
e. mesenchymal cells

12. If you found this in a person you’d know that they were over the age of 21.
   a. epiphyseal lines  
b. periosteum  
c. compact bone  
d. nutrient arteries  
e. a blood alcohol of over 0.08

13. The plasma membrane is described by the fluid-mosaic model. The fluidity is primarily due to _____.
   while the “mosaic” nature is primarily due to _____.
   a. water; phospholipids  
b. proteins; water  
c. proteins; phospholipids  
d. phospholipids; water  
e. none of the previous

14. Which is located most caudally?
   a. abdominal cavity  
b. mediastinum  
c. cranial cavity  
d. pelvic cavity  
e. pleural cavity

15. A major change in bone with aging that leads to increased brittleness is _____.
   a. increased osteoblast activity  
b. increased bone remodeling  
c. demineralization  
d. increased calcification  
e. none of the previous

16. Which tissue forms the major thickness of the walls of hollow organs?
   a. nervous  
b. areolar connective  
c. smooth muscle  
d. skeletal muscle  
e. stratified squamous epithelium
17. From diaphysis to epiphysis, the cartilage zones of the epiphyseal plate are _____.
   a. reserve, hypertrophic, proliferating, calcified
   b. calcified, hypertrophic, proliferating, reserve
   c. proliferating, hypertrophic, reserve, calcified
   d. reserve, calcified, hypertrophic, proliferating

18. The smallest component of the cytoskeleton are/is the ______.
   a. endoplasmic reticulum
   b. mitochondria
   c. intermediate filaments
   d. microfilaments
   e. microtubules

19. Chondroblasts are involved in _____ ossification and, in a teenager, in _____ growth.
   a. intramembranous; interstitial
   b. intramembranous; appositional
   c. endochondral; interstitial
   d. endochondral; appositional

20. Liver disease typically results in yellowish skin that is described as _____.
   a. pallor b. cyanotic c. erythematous d. jaundiced e. melanotic

21. Which of the following correctly sequences these 5 events of endochondral ossification?
   1. osteoblasts move in and deposit bone in the diaphysis
   2. chondrocytes in the center of the cartilage model enlarge, calcify, and die
   3. epiphyseal arteries penetrate the epiphysis, and ossification begins there
   4. capillaries from the penetrating nutrient artery grow into disintegrating lacunae
   5. spongy bone in the diaphysis is resorbed, creating a marrow cavity
   a. 2, 1, 5, 4, 3
   b. 1, 5, 4, 2, 3
   c. 3, 4, 5, 1, 2
   d. 2, 4, 1, 5, 3
   e. 4, 2, 1, 3, 5

22. The epidermis and dermis form the _____.
   a. skin
   b. a cutaneous membrane
   c. an epithelial membrane
   d. a & b
   e. a, b & c

23. Which of the following abdominal regions are wholly or partly in the RUQ?
   a. umbilical b. epigastric c. hypogastric d. a & b e. a & c

24. Which of the following features are found in both compact and spongy bone?
   a. concentric lamellae
   b. interstitial lamellae
   c. lacunae
   d. a & b
   e. b & c

25. The extracellular fluid found in the microscopic spaces between closely-packed epithelial cells is called _____.

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a. intracellular fluid
b. interstitial fluid
c. cytosol
d. lymph
e. a or c

26. Which of the following is lateral and caudal to the hypogastric region?
   a. epigastric  b. iliac  c. lumbar  d. hypochondriac  e. none of these

27. Epithelia that consist of more than one layer of cells are termed _____.
   a. striated  b. stratified  c. simple  d. squamous  e. a & d

28. The connective tissue layer of a mucous membrane is called the _____.
   a. ground substance  b. matrix  c. plasma membrane  d. epithelial membrane  e. none of the previous

29. Which of the following are sudoriferous glands?
   a. eccrine  b. apocrine  c. sebaceous  d. a & b  e. a, b & c

30. Blood is externally supplied to the perforating (Volkmann’s) canals from the _____ arteries.
   a. nutrient  b. periosteal  c. epiphyseal  d. metaphyseal  e. diaphyseal

31. Which of the following is NOT true about thick skin compared to thin skin?
   a. Thick skin has a thicker dermis.
   b. Thick skin has fewer hair follicles.
   c. Thick skin has fewer sebaceous glands.
   d. Thick skin has more sensory receptors.
   e. Thick skin has more epidermal layers.

32. Ribosomes are assembled in and by the _____.
   a. nucleolus  b. endoplasmic reticulum  c. Golgi complex  d. lysosome  e. peroxisome

33. In adult areolar connective tissue, the cell primarily responsible for producing collagen and elastin is the _____.
   a. mesenchymal cell  b. fibroblast  c. osteoblast  d. osteocyte  e. chondrocyte
34. The small cavities in which some connective cells reside are termed ______.
   a. central canals
   b. lacunae
   c. lamellae
   d. lumens
   e. perforating canals

35. Jessica is examining a slide in lab and notices intercalated discs and striations. She immediately knows that she is viewing ________.
   a. stratified squamous epithelium
   b. simple squamous epithelium
   c. cardiac muscle
   d. skeletal muscle
   e. loose connective tissue

36. Numerous short motile projections of the plasma membrane are called ______.
   a. cilia  b. flagella  c. microtubules  d. microfilaments  e. nucleoli

37. Which use of the word “fiber” refers to a variety of extracellular protein threads?
   a. keratin fibers
   b. muscle fibers
   c. nerve fibers
   d. connective tissue fibers
   e. microtubules and microfilaments

38. The matrix of connective tissue is composed of ______.
   a. cells, fibers & ground substance  d. cells & ground substance
   b. cells & fibers  e. fibers and basement membrane
   c. fibers & ground substance

Written Portion

1. Give meanings for the following word roots.
   peri-   hyper-   intra-
   -tomy   papilla-

2. Sketch and label the abdominal quadrants (no abbreviations), including the anatomical reference point used to draw the dividing lines.

3. Give the anatomical term for these body regions.
   head-  loin-  midline chest-
   groin-  spinal column-

4. Name the major compartments of the ECF.

5. Name the dorsal body cavities, from superior to inferior.

6. Name the major components of the cytoplasm (not its chemicals).

7. Label the lettered lines only on these diagrams. (See webpage for potential art to label.)