Name ___________________________  Sign Here ______________________________

**DUE DATE: April 18**
(No late exams accepted without a severe deduction of points.
I do accept a postmark with that date on it!)

**Anatomy & Physiology 1 – C Shuster**
**Madison College**
**Take home Exam**

1. Place your name and class section on the cover sheet in the space provided. You will be handing in both the cover sheet and the exam booklet together, so do not separate them. You may write on the exam booklet if you wish.

2. You will need 1 scantron only.

3. Use a #2 pencil ONLY!! Make sure your scantron is clean, devoid of bends, tears, staples, creases, etc. Anything you do that causes the scantron machine to mis-grade your scantron is your responsibility.

4. If you make erasures on your scantron, do them cleanly without removing the letter underneath the pencil mark. If you make a lot of erasures, you may want to check your scantron after the instructor has graded them.

5. If you wish, you may make a xerox copy of this exam. The Questions marked with an asterix (*) cover topics that are likely candidates for the final exam.

6. Significant Ambiguity Declaration (S.A.D.). If a student feels that a question is significantly ambiguous, the student may do the following:
   
   a. On the answer sheet, encircle the number of the question in doubt and write S.A.D. in the margin. An S.A.D. must be accompanied by an answer. No answer, no consideration of an S.A.D.

   b. Immediately upon completion of the examination, the student must contact the faculty member and discuss the S.A.D. Merely stating that a question is ambiguous will not gain consideration of an S.A.D. The onus of proof rests with the student. He must convince the professor that an ambiguity exists.

“The first sign of senility is that a man forgets his theorems. The second sign is that he forgets to zip up. The third sign is that he forgets to zip down.”
- Paul Hoffman

“Don’t believe everything you read on the Internet just because there’s a picture with a quote next to it.”
- Abraham Lincoln
Chapter 6 (Integument):
We will not be covering this chapter in class.
Make an outline of the chapters, and pay close attention to the astrix questions.

Some of the questions may draw from related material in other chapters. Use your INDEX!

*1. The skin carries out the first step in the synthesis of vitamin _____.
A. A   C. C
B. B   D. D
E. E

*2. Which of these is the deepest layer of the skin?
A. epidermis   C. endodermis
B. dermis      D. hypodermis

*3. Underneath the deepest layer of skin we find the: _________.
A. epidermis   C. endodermis
B. dermis      D. hypodermis

4. The newest keratinocytes would be found in which layer?
A. stratum basale   C. stratum corneum
B. stratum spinosum D. Stratum germanatium
E. A & C are correct

5. Skin color is due to the presence of melanin, myooglobin, and carotene.
A. True
B. False

*6. Lack of which pigment causes albinism?
A. Collagen
B. Reticulin
C. Fibroblasts
D. Elastic fibers
E. Melanin

7. Freckles are patches of skin with an unusual amount of carotene.
A. True
B. False

8. Straight hair is more ________ than hair with curls.
A. round
B. flat
C. thick
D. thin
E. oval

*9. Hair and nails are composed of ___________.
A. Collagen
B. Reticulin
C. Keratin
D. Elastic fibers
E. C & D
10. Merocrine sweat glands are responsible for both temperature control and milk production.
   A. True  B. False

11. Pattern baldness is relatively rare in women because women have higher estrogen levels
    than men.
   A. True  B. False

12. The pH of sweat is:
   A. acidic  B. alkaline  C. fairly neutral  D. sometimes low, sometimes high.

*13. ______ is/are necessary to infection control.
   A. The pH of sweat  B. Removal of unhealthy tissue  C. Melanin  D. A & B  E. All of the above

*14. The skin does not include
   A. the epidermis.  B. the papillary layer.  C. a mucous membrane.  D. the stratum basale.  E. the dermis.

15. These are all types of cells found in the epidermis except
   A. melanocytes.  B. fibroblasts.  C. stem cells.  D. keratinocytes  E. tactile (Merkel) cells.

16. Skin covering the fingertips has:
   A. Hair follicles  B. Sebaceous Glands  C. Sweat glands  D. A & B  E. All of the above.
17. This image shows structures of the skin and subcutaneous tissue. What does “3” represent?
A. stratum basale
B. stratum spinosum
C. stratum corneum
D. dermis
E. hypodermis

18. What does "1" represent?
A. stratum corneum
B. epidermis
C. papillary layer
D. reticular layer
E. hypodermis

19. _______ are found in the layer of the skin represented as "2".
A. Collagen and living keratinocytes
B. Collagen and dead keratinocytes
C. Collagen and fibroblasts
D. Elastic fibers and melanocytes
E. Elastic fibers and dendritic cells

20. Layer "1" represents _______, whereas layer "2" represents ____________.
A. simple squamous epithelium; areolar tissue
B. stratified squamous epithelium; dense irregular connective tissue
C. dense irregular connective tissue; stratified squamous epithelium
D. simple squamous epithelium; stratified squamous epithelium
E. dense regular connective tissue; stratified squamous epithelium
21. This image shows strata and cell types of the epidermis. "2" represents a ________, whereas "4" represents a ________.
A. dead keratinocyte; dendritic cell  
B. living keratinocyte; dead keratinocyte  
C. melanocyte; dendritic cell  
D. living keratinocyte; melanocyte  
E. melanocyte; living keratinocyte

*22. The stratum corneum contains:
A. a mucous membrane.  
B. a lot of tactile cells.  
C. immune cells.  
D. stem cells.  
E. up to 30 layers of dead cells.

*23. Which cell participates with the sense of touch?
A. fibroblasts  
B. melanocytes  
C. keratinocytes  
D. dendritic (Langerhans) cells  
E. tactile (Merkel) cells

24. With regards to the skin, mitosis happens the fastest in the:
A. stratum basale.  
B. stratum spinosum.  
C. stratum granulosum.  
D. stratum lucidum.  
E. stratum corneum.

25. Which of these cells help protect against toxins, microbes and other pathogens?
A. keratinocytes  
B. melanocytes  
C. adipocytes  
D. dendritic (Langerhans) cells  
E. tactile (Merkel) cells
26. Which of these are fingerprints?
A. dermal papillae.  
B. epidermal ridges.  
C. stratum basale.  
D. elastin and adipose in the dermis.  
E. subcutaneous fat.

27. Quick mitosis of _______ cause calluses and corns.
A. melanocytes.  
B. keratinocytes.  
C. fibroblasts.  
D. tactile cells.  
E. red blood cells.

28. _________ is not found in most of the outer layer of the skin?
A. Stratum basale  
B. Stratum spinosum  
C. Stratum granulosum  
D. Stratum lucidum  
E. Stratum corneum

29. In the manufacturing of leather, the _________ portion of the dermis is used, because of the high concentration of ____________ .
A. areolar; collagen  
B. areolar; keratin  
C. reticular; collagen  
D. reticular; keratin  
E. papillary; keratin

30. The hypodermis has a lot of:
A. epithelial tissue  
B. muscular tissue  
C. nervous tissue  
D. adipose tissue  
E. keratinized tissue

31. Which of these might suggest that someone was punched in the face? The presence of:
A. pallor.  
B. melanin.  
C. an erythema.  
D. a hematoma.  
E. jaundice.

32. What makes our lips red?
A. hemoglobin  
B. myoglobin  
C. melanin  
D. carotene  
E. keratin

33. Which of these might suggest that someone has anemia?
A. pallor  
B. an erythema  
C. A hematoma  
D. flushed skin  
E. jaundice

34. Differences in skin color in people from different parts of the world are due to differences in:
A. UV radiation exposure.  
B. quantity of hemoglobin carried in the blood.  
C. quantity of melanin produced.  
D. number of melanocytes.  
E. number of keratinocytes.

35. Which of these is a raised area of melanized skin?
A. hemangioma  
B. mole  
C. freckle  
D. flexion line  
E. friction ridge
36. So, what is a pilus, anyway?
A. a hair.
B. a hair follicle.
C. a tiny muscle that moves a hair.
D. a sensory nerve fiber around the base of a hair.
E. a gland associated with a hair follicle.

37. A fetus is covered with __________, which is usually replaced by __________ before birth.
A. pilus; terminal hair
B. lanugo; terminal hair
C. vellus; terminal hair
D. vellus; lanugo
E. lanugo; vellus

38. This image shows the structure of a hair and its follicle. What does "1" represent?
A. bulb
B. root
C. shaft
D. medulla
E. cuticle

39. We contract arrector pili muscles to cause:
A. hairs to stand on end trapping an insulating layer of warm air next to the skin.
B. generation of heat to raise the body temperature.
C. hairs to stand on end to make the individual appear bigger.
D. hairs to stand on end with no apparent function.
E. an increased ability to feel pain.

40. A REALLY hairy guy has:
A. telogenism.
B. anagenism.
C. catagenism.
D. alopecia.
E. hirsutism.

41. A finger nail has a thin area of dead skin at the proximal end. It is called the:
A. eponychium (cuticle).
B. lunule.
C. nail plate.
D. nail body.
E. nail root.

42. This image shows the anatomy of a fingernail. What does "2" represent?
A. free edge
B. nail body
C. eponychium (cuticle)
D. lunule
E. nail root
43. Nails grow due to mitosis in the:
A. nail plate  
B. nail fold  
C. eponychium  
D. hyponychium  
E. nail matrix

44. Oily hair is caused by__________ glands found with the hair follicles.
A. merocrine sweat  
B. apocrine sweat  
C. sebaceous  
D. ceruminous  
E. mammary

45. _________ form clumps called dander.
A. melanocytes  
B. keratinocytes  
C. fibroblasts.  
D. stem cells.  
E. B & C are correct.

46. What is ear wax (mostly)?.
A. Sebum.  
B. Cerumen.  
C. Sweat.  
D. Wax.  
E. Mucus.

47. What do we excrete through the skin?
A. Cerumen  
B. Ca++  
C. Nitrogenous wastes  
D. Bacteria  
E. All of this, and more.

48. Which is TRUE regarding alopecia?
A. It commonly occurs in both genders.  
B. It occurs as we age.  
C. It is genetic.  
D. It is influenced by hormones.  
E. All of this, and more.

49. The "ABCD rule" for recognizing a possibly malignant melanoma refers to the following characteristics of the raised area on the skin:
A. asymmetry, border irregularity, color, and diameter  
B. asymmetry, brightness, color, and diameter  
C. aspect, brightness, color, and distance  
D. aspect, border irregularity, color, and distance  
E. area, border irregularity, color, and density

50. The least common but most deadly type of skin cancer is
A. basal cell carcinoma.  
B. squamous cell carcinoma.  
C. malignant melanoma.  
D. skin lymphoma.  
E. skin sarcoma.

51. Basal cell carcinoma arises from cells of the stratum __________, whereas malignant melanoma is mitosis of:___________.
A. spinosum; keratinocytes  
B. spinosum; melanocytes  
C. basale; fibroblasts  
D. basale; melanocytes  
E. basale; keratinocytes
*52. ___________ burns involve the epidermis, all of the dermis, and often some deeper tissue.
A. First-degree
B. Second-degree
C. Third-degree
D. Partial-thickness
E. Malignant

*53. If a person has a third degree burn, what is the first threat to life?
A. dehydration.
B. eschar.
C. heat loss.
D. pain.
E. infection.

Bone Tissues and the Skeleton:

Some of the questions may draw from related material in other chapters. Use your INDEX!

*54. The majority of blood cells are produced where?
A. bones
B. thymus gland
C. cardiovascular system
D. reticular tissues
E. More than one is correct.

55. The humerus is a/an __________, while the os coxae are ________ bones.
A. long, square
B. long, irregular
C. regular, irregular
D. regular, square
E. long, sphenoid

56. Which of these would not be found on an X-ray of a toddler’s hand?
A. growth plates
B. epiphyseal lines
C. epiphysis
D. diaphyses
E. More than one is correct.

57. The precursor cell of both osteoblasts and osteoclasts are called osteogenic cells.
A. True
B. False

58. “Osteoid” refers to the matrix of bone tissue with the minerals removed.
A. True
B. False
59. Intramembranous ossification occurs mostly in newborns, while endochondral ossification is more common in teens.
   A. True B. False

*60. Bones get thicker via ___________ growth.
   A. endochondral C. longitudinal
   B. interstitial D. epiphyseal
   E. More than one is correct.

61. Hypercalcemia directly causes __________.
   A. a lowered response of the nervous system C. depression
   B. gigantism D. acromegaly

*62. Parathyroid hormone (PTH) directly attaches to which?
   A. the periosteum C. glycoproteins
   B. the endosteum D. receptors on osteoblasts.

63. Osteomalacia commonly causes bone to be brittle.
   A. True B. False

*64. Osteoporosis may lead to kyphosis.
   A. True B. False

*65. Which of these is not a function of the skeleton?
   A. store calcium and phosphate ions. C. provide support for most muscles.
   B. store red blood cells. D. protect the CNS.
   E. More than one is correct.

*66. All bone tissue is an example of ____________ tissue.
   A. connective C. dense regular
   B. epithelial D. dense irregular
   E. reticular

67. Which of these would you NOT expect to find in a long bone?
   A. osseous tissue. C. adipose tissue.
   B. nervous tissue. D. cartilage.
   E. transitional epithelium.

*68. Which of these becomes modified on a long bone for the articulation?
   A. an epiphyses. C. an articular cartilages.
   B. a diaphysis. D. a periosteum.
   E. an endosteam

69. The external membrane on a bone is called the ____________, whereas the internal surface is lined with ____________.
   A. osseous facia; mucous membrane C. mucous membrane, endosteam
   B. deep facia, endosteam D. periosteum; endosteam
   E. endosteam; periosteum
70. Cells that make osteoid are called:
A. Osteogenic (osteoprogenitor) cells
B. Osteoblasts
C. Osteoclasts
D. Osteocytes
E. More than one is correct.

71. Once ____________ become trapped in lacunae, they turn into ____________.
A. osteogenic cells; osteoblasts
B. osteoblasts; osteoclasts
C. osteoblasts; osteocytes
D. osteocytes; osteoclasts
E. osteocytes; osteoblasts

72. What do we call the inorganic component of the bone tissue?
A. Proteoglycans
B. Glycoproteins
C. Collagen
D. Hydroxyapatite
E. Glycosaminoglycans

73. Spicules and trabeculae are characteristics of which of the following?
A. compact bone.
B. bone matrix.
C. yellow bone marrow.
D. red bone marrow.
E. cancellous bone.

74. ____________ makes bone tissue hard, but ____________ give it flexibility.
A. Hydroxyapatite and other minerals; proteins
B. Collagen and elastic fibers; minerals
C. Glycoproteins; proteoglycans
D. Calcium carbonate; calcium phosphate
E. Proteins; collagen

75. What would you find in the diaphysis of an adult femur?
A. spongy bone
B. hemopoietic tissue
C. red bone marrow
D. yellow bone marrow
E. compact bone

76. What does one get from Intramembranous ossification?
A. irregular bones of the vertebrae.
B. flat bones of the skull.
C. long bones of the limbs.
D. short bones of the wrist.
E. short bones of the ankle.

77. During Endochondral ossification, ____________ is replaced by bone.
A. embryonic mesenchyme.
B. fibrous membranes.
C. hyaline cartilage.
D. transitional epithelium.
E. fibrocartilage.

78. The ____________ is the area where, during growth in length, bone can be seen replacing hyaline cartilage.
A. metaphysis
B. primary ossification center
C. secondary ossification center
D. osteoid tissue
E. epiphyseal line
79. Achondroplastic dwarfism is NOT:
A. genetic
B. a problem at the epiphyseal plate
C. a problem with hyaline production.
D. shortened long bones, but not flat bones.
E. an autoimmune disorder.

80. Bones are remodeled throughout life by:
A. intramembranous ossification.
B. endochondral ossification.
C. interstitial growth.
D. appositional growth.
E. metaphysical growth.

81. Bone grow in length via adding:
A. hyaline.
B. elastic.
C. fibrocartilage
D. fibrous membrane.
E. A&C are correct.

82. A growing long bone in a child has only two areas of cartilage at the epiphysis. These two areas are:
A. elastic cartilage and epiphyseal plate.
B. epiphyseal plate and epiphyseal line.
C. primary and secondary ossification centers.
D. fibrocartilage and articular cartilage.
E. articular cartilage and epiphyseal plate.

83. ____________ is the process of dissolving bone and returning its minerals to the bloodstream.
A. Mineralization
B. Mineral deposition
C. Crystallization
D. Resorption
E. Ossification

84. Which is FALSE regarding Parathyroid hormone (PTH)? It:
A. promotes calcium reabsorption by the kidneys.
B. stimulates osteoclast activity.
C. lowers blood calcium.
D. promotes calcitriol synthesis.
E. inhibits osteoblast activity.

85. The skin, kidneys, and liver all are involved in the production of which important hormone critical to the mineralization of bone?
A. Growth hormone
B. Testosterone
C. Estrogen
D. Calcitonin
E. Calcitriol

86. Which of these is FALSE regarding calcitriol? It causes:
A. cartilage growth in the epiphyseal plate
B. increased osteoclast activity
C. more intestinal absorption of Ca2+
D. less calcium in the urine
E. more phosphate in the urine
87. Which of the following would not put someone at risk of hypocalcemia?
A. Lactation
B. Pregnancy
C. Removal of the parathyroid glands
D. Removal of the thyroid gland
E. Lack of exposure to UV radiation

88. Blood Ca2+ deficiency stimulates __________ secretion, which leads to ______________.
A. calcitonin; more urinary phosphate reabsorption
B. calcitriol; more urinary phosphate excretion
C. parathyroid hormone; increased osteoclast activity
D. growth hormone; increased osteoblast activity
E. thyroid hormone; less urinary calcium excretion

89. What is a symptom of hypocalcemia?
A. emotional disturbances.
B. depression of the nervous system.
C. muscle weakness.
D. sluggish reflexes.
E. spasms.

90. Arteriosclerosis is an example of:
A. the solubility product has been reached.
B. artery mineralization by osteoblasts.
C. abnormal calcification of a tissue.
D. accumulation of collagenous fibers in blood vessels.
E. ossification of an entire blood vessel.

91. John has a thyroid tumor that is actively secreting. What might we expect?
A. an elevated level of osteoclast activity.
B. an elevated level of osteoblast activity.
C. a reduced rate of endochondral ossification.
D. a rise in blood calcium concentration.
E. increasingly brittle bones.

*92. A soft callus characterizes:
A. endochondral ossification.
B. intramembranous ossification.
C. bone growth at the metaphysis.
D. the remodeling of bone.
E. the healing of a fracture.

*93. Osteoporosis is most common in women after menopause because of the lack of ___________, which would otherwise inhibit ______________.
A. dietary calcium; estrogen production
B. osteoblasts; osteoclast activity
C. estrogen; osteoclast activity
D. parathyroid hormone; osteocyte activity
E. exercise; osteoblast activity
*94. A fracture in which the bone is broken into three or more pieces is called a [__________] fracture.
   A. linear
   B. pott
   C. comminuted
   D. greenstick
   E. compound

95. Soft bones due to mineral deficiencies is called [__________] in children and [__________] in adults.
   A. osteomalacia; rickets
   B. rickets; osteomalacia
   C. osteoporosis; osteomalacia
   D. osteomyelitis; osteosarcoma
   E. osteomyelitis; osteomalacia

*96. Bone protrudes through skin in a fracture called
   A. complete.
   B. incomplete.
   C. closed.
   D. open.
   E. displaced.

*97. Give the correct series of events during bone repair:
   A. bone remodeling → soft callus formation → hard callus formation → hematoma formation
   B. bone remodeling → hard callus formation → soft callus formation → hematoma formation
   C. hematoma formation → soft callus formation → hard callus formation → bone remodeling
   D. hematoma formation → hard callus formation → soft callus formation → bone remodeling
   E. soft callus formation → hard callus formation → hematoma formation → bone remodeling

98. During the repair process, areas of fibrocartilage are called [__________], whereas a bony collar formed around the fracture is called [__________].
   A. fracture hematoma; granulation tissue
   B. granulation tissue; soft callus
   C. fracture hematoma; hard callus
   D. granulation tissue; hard callus
   E. soft callus; hard callus

*99. The most common bone disease:
   A. Osteomyelitis
   B. Osteoporosis
   C. Osteosarcoma
   D. Osteomalacia
   E. Rickets

100. Condyles are found in the axial skeleton only.
   A. True
   B. False

101. You can palpate both the medial epicondyle and condyle of the humerus.
   A. Yes
   B. No
*102. Paranasal sinuses are lined by mucous membranes, and filled with mucus.
A. True  B. False

103. Sutures are found in the os coxae and facial bones of adults.
A. True  B. False

104. All ribs articulate with the vertebral column and sternal body.
A. True  B. False

*105. Men have one rib fewer than women.
A. True  B. False

*106. There are ____ bones in the pollex.
A. 1  B. 2  C. 3  D. 4

107. Can the pubic symphysis be palpated? Try it!
A. True  B. False

108. Medial and lateral condyles of the femur are involved in the hip joint.
A. True  B. False

109. How many bones are found in the adult skeleton on average?

110. All the bones listed below belong to the axial skeleton, except ____________, which belongs to the appendicular.
A. lacrimal  B. vomer  C. navicular  D. coccyx  E. malleus

*111. Any bony bump, where (often) a muscle attaches:

*112. Adults have fewer bones than kids because:
A. osteoporosis leads to bone loss with age  B. separate bones gradually fuse with age
C. many bones are replaced by cartilage with age  D. bones are reabsorbed with age
E. osteoclast activity overcomes osteoblast activity with age
113. A hole through a bone that usually allows passage for nerves and blood vessels is called a/an:
A. canal. C. fissure.  
B. alveolus. D. foramen.  
E. sinus.  

114. All the bones listed below belong to the appendicular skeleton except the
A. talus. C. hyoid.  
B. hamate. D. lunate.  
E. pisiform.  

115. Most of the bones of the skull are connected by immovable joints called
A. sinuses. C. lines.  
B. canals. D. fissures.  
E. sutures.  

116. Which of these does not have sinus?
A. sphenoid bone.  
B. frontal bone.  
C. temporal bone.  
D. maxilla.  
E. parietal bone.  

117. The ________ houses the pituitary gland (hypophysis) and is found in the ________.
A. foramen magnum; occipital bone  
B. sella turcica; sphenoid bone  
C. lambdoid suture; parietal bones  
D. supraorbital margin; frontal bone  
E. occipital condyle; occipital bone  

118. Fontanels are __________ in an infant.
A. spaces between the unfused cranial bones  
B. cartilages covering cranial bones  
C. fibrous connective tissues lining the cranial cavity  
D. fibrous connective tissues lining the orbits  
E. fibrous connective tissues lining paranasal sinuses  

119. A common problem with the spine is a lateral curvature called
A. scoliosis. C. kyphosis.  
B. lordosis. D. osteosis.  
E. slipped disc.  

120. The axis is the only vertebra with a
A. transverse foramen.  
B. spinous process.  
C. dens (odontoid process).  
D. vertebral arch.  
E. superior articular facet.
121. The spinous process has a bifid tip in most ____________ vertebrae.
A. cervical
B. thoracic
C. lumbar
D. sacral
E. coccygeal

122. In a herniated ("ruptured" or "slipped") disc, the ring of fibrocartilage called the _____________ cracks and the _____________ oozes out.
A. nucleus pulposus; anulus fibrosus
B. lamina; nucleus pulposus
C. anulus fibrosus; nucleus pulposus
D. anulus fibrosus; body
E. nucleus pulposus; lamina

*123. Costal cartilages connect
A. the clavicles with the sternum.
B. true ribs with the scapula.
C. floating ribs with xiphoid process.
D. false ribs with the viscera and peritoneum.
E. ribs with the sternum.

124. ___________ do(does) not belong to the pectoral girdle.
A. The glenohumeral joint
B. The acromioclavicular joint
C. The sternoclavicular joint
D. The sacroiliac joint
E. The clavicle and scapula

*125. The acromion is a feature of the
A. clavicle.
B. scapula.
C. ulna.
D. scaphoid.
E. pollex.

126. The glenoid cavity of the ____________ articulates with the head of the __________.
A. scapula; sternum
B. radius; humerus
C. humerus; scapula
D. sternum; humerus
E. scapula; humerus

127. Which one of features listed below is not found in the ethmoid bone?
A. crista galli
B. inferior nasal conchae
C. middle nasal conchae
D. superior nasal concha
E. perpendicular plate
128. In some cases the epiphyseal plate of the long bones of children closes too early. What might be the cause?
A. overproduction of thyroid hormone
B. elevated levels of sex hormones
C. too much vitamin D in the diet
D. osteoblast activity exceeds osteoclast activity
E. more than one of the above are correct.

*129. The olfactory nerve tracts could be most easily damaged by a fracture of the ___ bone.
A. frontal
B. ethmoid
C. sphenoid
D. maxillary
E. temporal

130. The "funny bone" refers to the
A. lateral epicondyle.
B. capitulum.
C. medial epicondyle.
D. olecranon process.
E. more than one is correct.

131. The tibia is one of the major weight-bearing bones of the leg and articulates inferiorly with this weight-bearing bone called the
A. femur.
B. talus.
C. calcaneus.
D. fibula.
E. more than one is correct

132. When doing CPR, to move blood out of the heart you always find the inferior end of the sternum as a landmark and then move superiorly before beginning compression. The inferior end of the sternum that you do not want to compress is the
A. manubrium.
B. body.
C. gladiolus.
D. xiphoid process.
E. more than one is correct

133. The palatine process of the maxillary bone along with the palatine bone form the
A. superior wall of the nasal cavity.
B. lateral wall of the nasopharynx.
C. posterior wall of the orbit of the eye.
D. hard palate or anterior root of the oral cavity.
E. more than one is correct

134. Which of the following fetal skull bones is not paired?
A. maxillary
B. occipital
C. frontal
D. vomer
E. more than one is correct
135. A fracture of the distal end of the radius and ulna is called a
A.  colles.  C.  comminuted.
E.  compound.

136. A soft callus forms during
A.  endochondral ossification.  C.  bone growth at the metaphysis
B.  intramembranous ossification.  D.  the remodeling of bone.
E.  the healing of a fracture.

137. The main reason osteoporosis is most common in elderly women is their lack of
A.  estrogen.  C.  parathyroid hormone.
E.  more than one is correct.

138. The skeletal system performs all of the following functions except
A.  protective enclosure of the viscera.  
B.  maintenance of electrolyte balance.  
C.  maintenance of acid-base balance.  
D.  regulation of body temperature.  
E.  production of blood cells.

139. Osteocytes pass nutrients and chemical signals to other osteocytes and osteoblasts by way of ______ that are found in slender channels called ______.
A.  gap junctions; canaliculi
B.  cytoplasmic processes; Haversian canals
C.  gap junctions; perforating canals
D.  tight junctions; nutrient foramina
E.  gap junctions; Haversian canals

140. At the epiphyseal plate, in the zone of calcification
A.  osteoclasts erode spongy bone to form the marrow cavity.
B.  osteoblasts deposit bone along the calcified matrix forming spongy bone with osteocytes.
C.  minerals are deposited between lacunae, chondrocytes die, and a calcified matrix is left.
D.  hydroxyapatite is deposited onto collagenous fibers.
E.  chondroblasts deposit more cartilage to increase the size of the epiphyseal plate.

141. In the zone of bone deposition, ______ cells rapidly invade the calcified matrix and lay down bone. Then ______ cells erode the spongy bone to form the marrow cavity.
A.  osteoblast; osteoclast
B.  osteoblast; osteocyte
C.  osteocyte; osteoclast
D.  osteoclast; osteoblast
E.  chondroblast; osteoclast

142. The pituitary gland is housed in the:
A.  vomer bone.  
B.  sinuses of the ethmoid.  
C.  sella turcica of the sphenoid.  
D.  foramen lacerum.
143. Wolff's law is concerned with
A. vertical growth of bones being dependent on age.
B. the thickness and shape of a bone being dependent on stresses placed upon it.
C. the function of bone being dependent on shape.
D. the diameter of the bone being dependent on the ratio of osteoblasts to osteoclasts.

144. Which of the following glands or organs produces hormones that tend to decrease blood calcium levels?
A. pineal gland                                C. parathyroid
B. thyroid                                      D. spleen
E. more than one of the above are correct.

145. Bone grows in two ways, appositional and interstitial. Appositional growth is:
A. growth at the epiphyseal plate.
B. the secretion of new matrix against existing bone.
C. along the sides of the bone only.
D. the lengthening of hyaline cartilage.
E. more than one of the above are correct.

146. Which of the following statements best describes "interstitial growth"?
A. Growth occurs in the lining of the long bones.
B. Fibroblasts give rise to chondrocytes that differentiate and form cartilage.
C. Unspecialized cells from mesenchyme develop into chondrocytes, which divide and form cartilage.
D. Chondrocytes in the lacunae divide and secrete matrix, allowing the cartilage to grow from within.

147. In the epiphyseal plate, cartilage grows:
A. from the diaphysis to the epiphysis.      C. from the edges inward.
B. from the epiphysis to the diaphysis.      D. in a circular fashion.

148. Osteogenesis is the process of:
A. bone healing.                              C. bone formation.
B. bone remodeling.                           D. bone formation and bone remodeling.

The following questions may take a little research. Your author does not directly address these questions. You can use any source you want to answer the questions.

149. A farmer's finger is pulled completely off his hand by a piece of farm machinery. This is
A. A displaced fracture.                      C. An avulsion.
E. An open fracture.

150. Which of the following would normally be impossible to palpate on a living person?
A. The superior nuchal line                  C. The zygomatic arch
B. The occipital condyles                    D. The mastoid process
E. The supraorbital ridge
151. Nerves and blood vessels that supply the lower teeth pass through this foramen. Dentists inject anesthetics near this foramen to deaden sensation from the lower teeth. This foramen is called the
A. mental foramen.       C. supraborital foramen.
B. infraorbital foramen.  D. mandibular foramen.

152. Look this one up! Which of these is not a common fracture?
A. distal radius       C. head of the femur
B. lateral malleolus    D. middle of the clavicle
E. coronoid process of the jaw.

153. Look this one up! The ___ is fractured more often than any other bone in people over the age of 70. HINT to get you started: what do four of these have in common?
A. proximal end of femur  C. distal end of femur
B. ischium                  D. Ilium
E. acetabulum

154. It is thought that remodeling or bone growth is in response to the forces placed on it. Which of the following hypotheses may explain how mechanical forces communicate with cells responsible for bone remodeling?
   NOTE: your author doesn’t talk about this, so look it up!
A. An increase in the synthesis of growth hormone directs the remodeling process.
B. Vitamin D enhances the remodeling process by attracting osteoblasts.
   Active bone makes Vitamin D.
C. Bone deposition by osteoblasts is directly affected by horizontal stress.
D. Electrical signals seem to direct the osteoblasts and therefore the remodeling process.

155. Which is true regarding the hyoid bone?
A. It is the only bone of the body that does not articulate with any other bone.
B. As its name suggest, it is shaped like a “w”.
C. It is covered with mucosa.
D. It contains a structure called the “cornu”.
E. More than one of these is correct.

156. Which of the following statements best describes what fingernails actually are?
A. Finger nails are a modification of the epidermis.
B. Finger nails are derived from osseous tissue.
C. Finger nails are extensions of the carpal bones.
D. Finger nails are a separate tissue from the skin, formed from a different embryonic layer.