

Board Question Breakdown (Anatomic Sciences section)

The Anatomic Sciences portion of part I of the Dental Board exams consists of 100 test items. They are broken up into the following distribution:

Gross Anatomy (50 questions):

Head - 28 questions broken down in this fashion:

- **Oral cavity** - 6 questions
- **Extraoral structures** - 12 questions
- **Osteology** - 6 questions
- **TMJ and muscles of mastication** - 4 questions

Neck - 5 questions

Upper Limb - 3 questions

Thoracic cavity - 5 questions

Abdominopelvic cavity - 2 questions

Neuroanatomy (CNS, ANS +) - 7 questions

Basic Histology (23 questions):

Ultrastructure (cell organelles) - 4 questions

Basic tissues - 4 questions

Bone, cartilage & joints - 3 questions

Lymphatic & circulatory systems - 3 questions

Endocrine system - 2 questions

Respiratory system - 1 question

Gastrointestinal system - 3 questions

Genitourinary systems - (reproductive & urinary) 2 questions

Integument - 1 question

Oral Histology (16 questions):

Tooth & supporting structures - 9 questions

Soft oral tissues (including dentin) - 5 questions

Temporomandibular joint - 2 questions

Developmental Biology (11 questions):

Osteogenesis (bone formation) - 2 questions

Tooth development, eruption & movement - 4 questions

General embryology - 2 questions

National Board Part 1: Review questions for histology/oral histology

(Answers follow at the end)

1. Normally most of the circulating white blood cells are
 - a. basophilic leukocytes
 - b. monocytes
 - c. lymphocytes
 - d. eosinophilic leukocytes
 - e. neutrophilic leukocytes

2. Blood platelets are products of
 - a. osteoclasts
 - b. basophils
 - c. red blood cells
 - d. plasma cells
 - e. megakaryocytes

3. Bacteria are frequently ingested by
 - a. neutrophilic leukocytes
 - b. basophilic leukocytes
 - c. mast cells
 - d. small lymphocytes
 - e. fibrocytes

4. It is believed that worn out red cells are normally destroyed in the spleen by
 - a. neutrophils
 - b. macrophages
 - c. megakaryocytes
 - d. monocytes
 - e. mast cells

5. Which of the following does not exhibit phagocytic properties?
 - a. monocytes
 - b. basophils
 - c. platelets
 - d. eosinophils
 - e. PMN's (PMLs)

6. The circulating white blood cells which are fewest in number are the
- monocytes
 - neutrophils
 - basophils
 - lymphocytes
 - eosinophils
7. Myelopoiesis refers to the formation of
- erythrocytes, granulocytes and agranulocytes
 - erythrocytes only
 - mononuclear cells only
 - both erythrocytes and granulocytes
 - neutrophilic leukocytes only
8. The largest cell typically present in bone marrow is the
- megakaryocyte
 - fixed reticular cell
 - myeloblast
 - proerythroblast
 - reticulocyte
9. Long bone grows in length as a result of
- removal of calcified cartilage
 - endochondral deposition of bone tissue
 - interstitial growth of cartilage tissue
 - appositional deposition of bone tissue
 - interstitial growth of bone tissue
10. Which one of the following tissues is reduced in amount during the termination of the growth of an individual?
- fibrocartilage
 - elastic cartilage
 - lamellar bone
 - cancellous bone
 - hyaline cartilage
11. Sharpey's fibers represent
- the innervation of the bone tissue
 - periosteal fibers
 - sharp spines of the stratum spinosum cells
 - collagen(ic) fibers attaching tendons and ligaments to bone
 - collagen(ic) fibers binding lamellae together

12. Which of the following would be least evident during adolescence?
- a. lamellar bone
 - b. parallel-fibered bone
 - c. primary vascular canals
 - d. secondary vascular canals
 - e. woven bone
13. The oldest lamella of a Haversian system (osteon) is
- a. the most peripheral lamella
 - b. not calcified
 - c. the most central lamella
 - d. adjacent to endosteum
 - e. adjacent to periosteum
14. In a slide showing spongy bone formed solely by intramembranous ossification, all of the following features may be found upon microscopic examination except
- a. non-lamellar bone
 - b. osteoclasts
 - c. lamellar bone
 - d. calcified cartilage
 - e. periosteum
15. Demineralized bone consists chiefly of
- a. sialic acid and other mucopolysaccharides
 - b. osteoid
 - c. amorphous hydroxyapatite
 - d. canaliculi and lacunae
 - e. collagen
16. The formation of bone in the absence of a pre-existing cartilage framework is called
- a. nonlamellar
 - b. lamellar
 - c. intramembranous
 - d. intercartilaginous
 - e. endochondral

17. Which one of the following is a correct statement concerning Haversian systems (osteons)?
- a. are found in fetal skeletons
 - b. are found in spongy bone
 - c. develop around Volkman's canals
 - d. develop around a blood vessel
 - e. are most common during rapid growth of adolescence
18. Osteoclasts arise from
- a. osteocytes
 - b. osteoblasts
 - c. osteoclasts
 - d. monocytes
 - e. osteoprogenitor cells
19. Osteocytes arise most directly from
- a. chondrocytes
 - b. osteoblasts
 - c. osteoclasts
 - d. monocytes
 - e. osteoprogenitor cells
20. Fibrocartilage is characterized at the light microscopic level by
- a. basophilia
 - b. elastic fibers
 - c. perichondrium
 - d. collagen(ic) fibers
 - e. mineralized matrix
21. The microscopic structure of certain parts of the temporomandibular joint differs from corresponding parts of most other articulations of the human body. One such difference is that the articulating surfaces of the TMJ are
- a. bone
 - b. elastic cartilage
 - c. vascular
 - d. fibrous tissue
 - e. hyaline cartilage

22. In which of the following regions of the temporomandibular joint would you most expect to find phagocytes?
- synovial membrane
 - central region of meniscus
 - joint capsule
 - articular tissue
 - synovial cavity
23. The periodontal ligament is composed chiefly of
- reticular fibers
 - microfibrils
 - collagen(ic) fibers
 - oxytalan fibers
 - elastic fibers
24. All of the following are associated with cartilage tissue except
- appositional growth
 - perichondrium
 - lamellae
 - chondroitin sulfate
 - interstitial growth
25. Chondrocytes receive their nutrition via
- capillaries in matrix
 - Haversian canals
 - diffusion through matrix
 - periosteal buds
 - canaliculi
26. The most common cell in connective tissue proper is the
- mast cell
 - lymphocyte
 - macrophage
 - fibroblast
 - fat cell
27. The most common amino acid of collagen(ic) fibers is
- proline
 - hydroxyproline
 - glycine
 - lysine
 - alanine

28. The presence of which one of the following characteristics is of least value in distinguishing bone from hyaline cartilage?

- a. lamellae
- b. cell nests
- c. Haversian canals
- d. lacunae
- e. canaliculi

29. Which one of the following cells would be best for the study of lysosomes?

- a. fibroblasts
- b. macrophages
- c. mast cells
- d. mesenchymal cells
- e. fat cells

30. Heparin is produced by

- a. mast cells
- b. macrophages
- c. lymphocytes
- d. plasma cells
- e. hepatocytes

31. All of the following have ribosomes attached to them except

- a. nuclear envelope
- b. tRNA
- c. endoplasmic reticulum
- d. each other
- e. phagosomes

32. Which one of the following parts of a cell lacks a bounding memberane?

- a. nucleolus
- b. endoplasmic reticulum
- c. lysosomes
- d. Golgi complex
- e. nucleus

33. The electron dense layers of cell membranes are biochemically identified as

- a. carbohydrate
- b. glycolipid
- c. sialic acid
- d. phospholipid-protein complex
- e. interphase between lipid layers

34. Intracellular digestion is a chief function of the
- Golgi apparatus
 - endoplasmic reticulum
 - lysosomes
 - residual bodies
 - mitochondria
35. Which one of the following structures is visible in the light microscope?
- mitochondrion
 - ribosomes
 - tight junction
 - smooth endoplasmic reticulum
 - plasma membrane
36. The basal body of a cilium has a tubular filament arrangement which is identical to the pattern found in
- microvilli
 - centrioles
 - spindle fibers
 - stereocilia
 - microtubules
37. Which one of the following junctions is characterized by the fusion of the outer leaflets of the cell membranes of adjacent cells?
- zonula adherens
 - desmosomes
 - macula adherens
 - gap junctions
 - tight junctions (zonula occludens)
38. Cytoplasmic basophilia is characteristic of cells that
- are actively producing steroid hormones
 - have abundant DNA in the cytoplasm
 - are in the S stage
 - are synthesizing large amounts of protein
 - exhibit a conspicuous Golgi complex

39. The exocrine cells secrete all of the following except
- amylase
 - gastrin
 - prochymotrypsin
 - lipase
 - protrypsin
40. Bile is formed by
- sinusoidal endothelium
 - stromal cells
 - lymphocytes
 - (von) Kupffer cells
 - hepatic cells (hepatocytes)
41. The esophagus is subdivided into three portions along its course on the basis of a transition in the composition of the
- submucosa
 - mucosal layer
 - adventitia
 - muscularis externa
 - none of the above
42. Plicae circularis (valves of Kerkring) are present in
- stomach
 - ileum
 - duodenum
 - jejunum
 - all but the stomach
43. The epithelium of the gallbladder is composed of
- simple columnar epithelium
 - psuedostratified epithelium
 - ciliated columnar epithelium
 - stratified squamous epithelium
 - simple squamous epithelium
44. Which of the following lacks goblet cells?
- nasal cavity
 - ileum
 - trachea
 - esophagus
 - vermiform appendix

45. Which one of the following has skeletal muscle in the muscularis externa?
- a. colon
 - b. appendix
 - c. stomach
 - d. esophagus
 - e. small intestine
46. The submucosal plexus (Meissner's plexus) contains cell bodies of
- a. preganglionic parasympathetic neurons
 - b. postganglionic sympathetic neurons
 - c. postganglionic parasympathetic neurons
 - d. preganglionic sympathetic neurons
 - e. none of the above
47. Goblet cells are most numerous in the walls of the
- a. villi
 - b. gastric glands
 - c. crypts of Lieberkuhn (intestinal glands) in the ileum
 - d. crypts of Lieberkuhn (intestinal glands) in the duodenum
 - e. crypts of Lieberkuhn (intestinal glands) in the colon
48. In humans, the lining epithelium of the esophagus is
- a. transitional
 - b. simple columnar
 - c. stratified squamous, keratinized
 - d. stratified squamous, non-keratinized
 - e. stratified cuboidal
49. Pancreatic alpha cells secrete
- a. glucagon
 - b. insulin
 - c. somatostatin
 - d. gastrin
 - e. pancreatic digestive enzymes
50. Endothelium and mesothelium form cellular membranes which have the same histologic structure as
- a. stratified cuboidal epithelium
 - b. simple columnar epithelium
 - c. simple cuboidal epithelium
 - d. stratified squamous epithelium
 - e. simple squamous epithelium

51. Which one of the following epithelia is least common?
- transitional
 - pseudostratified columnar (ciliated)
 - simple columnar
 - stratified columnar
 - simple squamous
52. The broadest basis for classifying epithelium into subgroups is
- keratinized or not keratinized
 - squamous, cuboidal or columnar
 - simple or stratified
 - absorptive or secretory
 - lining or glandular
53. Regarding simple columnar epithelium which statement is least descriptive?
- may be keratinized
 - may exhibit a microvillous border
 - the height of each cell is typically greater than its width
 - may have motile cilia
 - may contain goblet cells
54. Which of the following features is NOT characteristic of epithelium?
- is usually supported by a basement membrane
 - little intercellular space
 - high cellularity
 - highly vascular
 - b, c, and d are all incorrect
55. Glands are classified based on
- their secretory product
 - mode of secretion
 - branching pattern of the ducts
 - b and c are correct
 - a, b, and c are correct
56. The human dermis lacks which of the following?
- reticular layer
 - sweat glands
 - melanin
 - hair follicles
 - sensory corpuscles

57. Keratohyalin is found in the

- a. hyaline cartilage
- b. stratum granulosum
- c. stratum lucidum
- d. stratum corneum
- e. stratum reticularis

58. Thin skin lacks which of the following?

- a. stratum corneum
- b. stratum reticularis
- c. nerve receptors
- d. sweat glands
- e. hair

59. Cords of Billroth are found in the

- a. white pulp
- b. spleen
- c. lymph nodes
- d. tonsils
- e. thymus

60. A subcapsular sinus is typically present in this structure

- a. thymus
- b. synovial joint
- c. spleen
- d. liver
- e. lymph node

61. Diffuse (loose) type of lymphatic tissue is characteristically found

- a. in mesenteries
- b. in the axilla and groin
- c. in lymph nodes
- d. along major lymphatic vessels
- e. underlying mucous membranes

62. B-cells (lymphocytes) can

- a. not be mobilized by vigorous exercise
- b. give rise to plasma cells
- c. secrete interferon
- d. kill other cells
- e. suppress T-cells

63. The most prominent component of a skeletal muscle cell is
- a. mitochondria
 - b. Golgi complex
 - c. myoglobin
 - d. myofilaments
 - e. glycogen
64. Caveolae in smooth muscle cells are thought to be analogous to
- a. lysosomes
 - b. secretory vesicles
 - c. T-tubules
 - d. pinocytotic vesicles
 - e. phagosomes
65. The thick filaments of skeletal muscle fibers
- a. consist of both actin and myosin
 - b. are present in the A band
 - c. consist of actin
 - d. are crossed by the Z line
 - e. are present in the I bands
66. The contractile element (component) of skeletal muscle is in the
- a. myofibrils
 - b. sarcoplasmic reticulum
 - c. sarcolemma
 - d. endomysium
 - e. sarcoplasm
67. The connective tissue investment seen with the light microscope around an individual muscle fiber of skeletal muscle is
- a. endomysium
 - b. epimysium
 - c. sarcolemma
 - d. perimysium
 - e. basal lamina
68. A node of Ranvier is
- a. the point of near-contact between the processes of two neurons
 - b. characteristic of unmyelinated fibers
 - c. a constriction of the axon
 - d. a nerve receptor
 - e. a junction between two Schwann cells

69. Most of the nuclei seen in a cross section of a peripheral nerve belong to
- microglia
 - neurons
 - Schwann cells
 - fibroblasts
 - satellite cells
70. Pacinian corpuscles usually are considered to be most responsive to
- light touch
 - pressure
 - pain
 - heat
 - cold
71. The cells that are responsible for forming myelin in the central nervous system are the
- Schwann cells
 - satellite cells
 - microglia
 - astroglia
 - oligodendroglia
72. Nissl substance in nerve cell bodies is associated with
- spread of stimulus
 - synaptic junctions
 - axons
 - protein synthesis
 - myelin formation
73. A myelinated nerve has how many Schwann cells between two adjacent nodes of Ranvier?
- one
 - two
 - three
 - four
 - more than four
74. The walls of bronchioles lack
- elastic tissue
 - columnar epithelium
 - smooth muscle
 - hyaline cartilage
 - ciliated cells

75. The probable source of surface active material (surfactant) coating the alveolar surface is
- goblet cells
 - small alveolar cells (type I or A pneumocytes)
 - great alveolar cells (type II or B pneumocytes)
 - Clara cells
 - septal cells
76. The structural/functional unit of the respiratory system is
- a terminal bronchiole and its branches
 - an alveolus
 - a bronchopulmonary segment
 - an alveolar duct and its branches
 - a respiratory bronchiole and its branches
77. Smooth endoplasmic reticulum would be expected to be most abundant in
- steroid secreting cells
 - fibroblasts
 - mucous secreting cells
 - serous secreting cells
 - rubriblasts
78. A uriniferous tubule (nephron) includes all of the following except
- glomerulus
 - Bowman's capsule
 - juxtaglomerular apparatus
 - basal lamina (basement membrane)
 - podocytes
79. Juxtaglomerular cells are modified
- distal tubule cells
 - proximal tubule cells
 - efferent arteriole cells
 - macula densa cells
 - afferent arteriole cells
80. The macula densa of the kidney is formed by cells of the
- afferent arteriole
 - distal convoluted tubule
 - descending thick part of Henle's loop
 - proximal convoluted tubule
 - thin portion of Henle's loop

81. The majority of water resorption in the kidney occurs in the
- connecting tubules
 - Thin loop of Henle
 - distal convoluted tubules
 - proximal convoluted tubules
 - collecting tubules
82. All of the following regarding podocytes is correct except
- line part of the capsular space
 - produce basal lamina
 - possess pedicles
 - form part of the blood-urinary barrier
 - are joined to one another by tight junctions
83. Pericytes are commonly found in association with
- sinusoids
 - lymphatic capillaries
 - discontinuous capillaries
 - fenestrated capillaries
 - continuous capillaries
84. Which of the following components of blood vessels is most consistently present?
- endothelium
 - tunica media
 - tunica adventitia
 - elastic tissue
 - smooth muscle fibers
85. Which one of the following vessels exhibits the greatest permeability?
- continuous type of capillaries
 - lymph capillaries
 - fenestrated capillaries
 - postcapillary venules
 - fenestrated sinusoids
86. This cell is associated with osteoid secretion
- bone lining cell
 - osteoblast
 - osteoclast
 - monocyte
 - fibroblast

87. This cell is responsible for the majority of bone resorption/remodeling
- bone lining cell
 - osteoblast
 - osteoclast
 - monocyte
 - fibroblast
88. This portion of the hypophysis (pituitary gland) releases no known hormones
- pars distalis
 - pars intermedia
 - pars nervosa
 - pars tuberalis
 - they all secrete hormones
89. Pituicytes are glial-like cells of the
- pars distalis
 - pars intermedia
 - pars nervosa
 - pars tuberalis
 - pineal gland
90. Oxytocin is a hormone secreted by cells of the
- pars distalis
 - pars intermedia
 - pars nervosa
 - pars tuberalis
 - uterus
91. Calcitonin is secreted by these specific cells
- chromophils
 - interstitial cells (of Leydig)
 - basophils
 - principal cells of the thyroid
 - parafollicular cells of the thyroid
92. Colloid is a substance associated with which of the following endocrine organs?
- suprarenal (adrenal) glands
 - thyroid gland
 - testis
 - ovary
 - pineal gland

93. Melanin is released by which of the following cells?
- chief cells of the parathyroid
 - interstitial cells (of Leydig)
 - cells of the zona reticularis of the suprarenal gland
 - pinealocytes
 - parafollicular cells of the thyroid gland
94. High blood calcium levels cause calcitonin release from which of the following cells?
- chief cells of the parathyroid
 - interstitial cells (of Leydig)
 - cells of the zona reticularis of the suprarenal gland
 - pinealocytes
 - parafollicular cells of the thyroid gland
95. Which of the following cells manufacture and release mineralocorticoids?
- cells of the zona glomerulosa
 - cells of the zona reticularis
 - cells of the zona fasciculata
 - chromaffin cells
 - sympathetic ganglion cells of the medulla
96. These cells are responsible for secreting testosterone
- cells of the zona glomerulosa
 - chromaffin cells
 - Chief cells of the parathyroid
 - interstitial cells (of Leydig)
 - Sertoli cells
97. Which of the following is found within a lobule of the testis?
- efferent ductules
 - rete testis
 - ductus deferens
 - epididymis
 - seminiferous tubules
98. Which of the following is an intratesticular genital duct?
- efferent ductules
 - tubuli recti
 - ductus deferens
 - ductus epididymis
 - prostatic urethra

99. These are 10 to 20 short tubules that drain spermatozoa from the rete testis

- a. efferent ductules
- b. tubuli recti
- c. ductus deferens
- d. ductus epididymis
- e. prostatic urethra

100. Which of the following secretes a fructose-rich fluid into the ejaculate?

- a. prostate
- b. seminal vesicles
- c. ductus deferens
- d. bulbourethral (Cowper's) glands
- e. glands of Litre

101. A mucoid secretion from this gland lubricates the spongy/penile urethral lumen

- a. prostate
- b. seminal vesicles
- c. ductus deferens
- d. bulbourethral (Cowper's) glands
- e. glands of Litre

102. Secretion of this material identifies a secondary (antral) follicle of the ovary

- a. colloid
- b. liquor folliculi
- c. estrogen
- d. progesterone
- e. cumulus oophorus

103. The following structure results when pregnancy does not follow ovulation

- a. corpus luteum of menstruation
- b. cumulus oophorus
- c. theca externa
- d. theca lutein
- e. corpus albicans

104. This layer of the uterus is shed monthly in menstruating females

- a. myometrium
- b. functionalis layer of endometrium
- c. basalis layer of endometrium
- d. cervical epithelium
- e. epimetrium

105. The vagina is lined by this specific type of epithelium
- transitional
 - stratified squamous keratinizing
 - stratified squamous non-keratinizing
 - pseudostratified columnar
 - stratified cuboidal
106. When a tooth first erupts into the oral cavity, the attached epithelial cuff is composed of epithelium derived from
- lamina propria
 - epithelial rests (of Malassez)
 - (Hertwig's) epithelial root sheath
 - oral mucosa
 - reduced enamel epithelium
107. Tritiated thymidine is a radioisotope that is incorporated into DNA during the s-stage. Consequently, tritiated thymidine may be used to identify dividing cells. Which cells of the dental organ would you expect would incorporate tritiated thymidine? Cells whose function is
- organizing
 - maturation
 - morphogenic
 - protection
 - secretory
108. Which one of the following is a part of the tooth germ (dental/enamel organ)?
- inner dental epithelium
 - dental sac
 - dental papilla
 - stellate reticulum
 - dental lamina
109. Avitaminosis (scurvey) results in a loosening of the teeth in the sockets chiefly because ascorbic acid (vitamin C) is needed by
- osteoblasts to form bone
 - cells to produce collagen
 - odontoblasts to form dentin
 - cells to fight viruses
 - cementoblasts to form cementum

110. Ameloblast differentiation starts at the
- incisal region of the tooth germ
 - cervical region of the tooth germ
 - junction of IDE and ODE (cervical loop)
 - lateral regions of the tooth germ
 - junction of stratum intermedium and stellate reticulum
111. Which one of the following dental (enamel) organs is usually the first to develop?
- 1st permanent molar
 - 2nd deciduous molar
 - permanent central incisor
 - deciduous central incisor
 - deciduous canine
112. Most principal fibers of the periodontal ligament insert into
- attached gingiva
 - bone
 - dentin
 - free gingiva
 - cementum
113. Collagen fibers produced by cementoblasts generally lie in the matrix of cementum
- parallel to Sharpey's fibers
 - parallel to the surface of the cementum
 - perpendicular to the dentino-cemental junction
 - randomly
 - either b or d
114. The gingival area where nonkeratinized epithelium most frequently occurs and which, therefore, may be considered most vulnerable to inflammation is the
- sulcular surface of the free gingiva
 - palatal gingiva
 - unattached gingiva
 - buccal gingiva
 - attached gingiva
115. Enamel undergoes a marked physical and chemical transition during the
- desmolytic stage
 - morphogenic stage
 - maturation stage
 - secretory stage
 - protective stage

116. Gingival massage through tooth brushing increases the circulation of blood in gingival vessels in the
- submucosa
 - lamina propria
 - keratinized epithelium
 - dental pulp
 - nonkeratinized epithelium
117. In order for bleeding of the gingiva to occur blood must pass from the lumen of blood vessels across which of the following sequences of layers?
- endothelium, submucosa, lamina propria, epithelium
 - tunica intima, muscularis mucosae, adventitia, stratum germinativum
 - endothelium, lamina propria, basal lamina, stratum basale
 - simple squamous epithelium, dense connective tissue, basal lamina, stratified squamous epithelium
 - endoderm, mesoderm, ectoderm
118. The major inorganic constituent of enamel by weight is
- collagen
 - sodium
 - phosphate
 - calcium
 - carbonate
119. All of the following characterize palatine tonsils except
- stratified squamous epithelium
 - ducts of mucous glands open into crypts
 - primary crypts
 - lymphatic nodules
 - secondary crypts
120. Bacteria that attack the odontoblastic processes in coronal dentin move along in the dentinal tubules toward the pulp along a
- s-shaped with minor spiraling passageway
 - spiral passageway
 - straight with minor spiraling passageway
 - s-shaped passageway
 - straight passageway

121. Ectodermal derivatives at the cap stage include outer dental epithelium, inner dental epithelium, and
- ameloblasts
 - odontoblasts
 - stratum intermedium
 - dental papilla
 - stellate reticulum
122. Which one of the following least accurately describes the difference between mantle and circumpulpal dentin? Mantle dentin
- contains ground substance formed by cells other than odontoblasts
 - contains collagen that is less closely packed and interwoven
 - mineralization is not dependent on matrix vesicles
 - is formed before circumpulpal dentin
 - contains collagen that is less closely packed and interwoven
123. All of the following structures may be found in oral mucous membrane except
- lamina propria
 - basal lamina
 - keratohyaline granules
 - muscularis mucosae
 - stratified squamous epithelium
124. In humans, which one of the following is correct?
- the parotid gland is chiefly a mixed gland
 - the submandibular gland is chiefly a mucous gland
 - the sublingual is chiefly a serous gland
 - the parotid is chiefly a mucous gland
 - the submandibular gland is chiefly a serous gland
125. At which functional stage would cells of, or arising from, the inner dental epithelium contain the highest concentration of ribosomes?
- protective
 - formative (secretory)
 - morphogenic
 - maturation
 - organizing

126. A caries lesion that extends into the dentin may stimulate the formation of which of the following?
- a. sclerotic dentin formation
 - b. secondary cementum formation
 - c. secondary dentin formation
 - d. dead tract formation
 - e. peritubular dentin formation
127. Which one of the following is a "pure" serous gland?
- a. parotid gland (adult)
 - b. palatine gland
 - c. submandibular gland
 - d. labial gland
 - e. sublingual gland
128. Hypomineralized structures which extend from the dentino-enamel junction to the surface of the enamel and are aligned with the longitudinal axis of the tooth are called
- a. enamel lamellae
 - b. Hunter-Schreger bands
 - c. enamel spindles
 - d. incremental lines of Retzius
 - e. enamel rods
129. Cementoblasts first produce
- a. secondary cementum
 - b. Sharpey's fibers
 - c. cementoid
 - d. primary cementum
 - e. cementocytes
130. Mucoperiosteum may be found in which one of the following regions?
- a. soft palate
 - b. hard palate
 - c. lip
 - d. cheek
 - e. tongue

131. The cells that form cementum arise from the
- epithelial diaphragm
 - dental papilla
 - outer enamel epithelium
 - fibroblasts
 - dental sac
132. Which one of the following is NOT ectodermal in origin?
- reduced enamel epithelium
 - dental lamina
 - epithelial (Hertwig's) root sheath
 - enamel spindle
 - enamel
133. Cementocytes arise when
- primary cementum is deposited
 - cementoblasts become entrapped by cementum
 - permanent molars begin to erupt
 - cementoid is converted to cementum
 - permanent anterior teeth begin to erupt
134. Pain originates in the pulp due to
- free nerve endings in the cell rich layer of the pulp
 - free nerve endings in the vicinity of the odontoblastic cells
 - free nerve endings primarily located in the center of the pulp
 - free nerve endings in the cell free zone (of Weil)
 - myelinated nerve fibers in the adjacent part of the dentin
135. Which of the following correctly describes the mucosa of the sublingual floor of the mouth?
- contains foliate papillae covered by non-keratinized epithelium
 - overlies serous salivary glands
 - has non-keratinized epithelium with no glands in the lamina propria
 - has non-keratinized epithelium with high connective tissue papillae
 - has keratinized epithelium with glands in the lamina propria

136. A structure in the oral cavity that is covered for the most part by stratified squamous keratinized epithelium is the
- a. hard palate
 - b. soft palate
 - c. cheek
 - d. tooth
 - e. circumvallate papilla
137. The major organic component of dentin is
- a. collagen
 - b. lactate
 - c. hydroxyapatite
 - d. lipid
 - e. desmosine
138. Which one of the following is NOT present during the bell stage of tooth development?
- a. primary dental (enamel) organ
 - b. outer dental epithelium
 - c. epithelial (Serre's) pearls
 - d. ameloblasts
 - e. stratum intermedium
139. All the following structures except one is seen during the cap stage of tooth development
- a. inner dental (enamel) epithelium
 - b. stratum intermedium
 - c. dental papilla
 - d. dental follicle (sac)
 - e. stellate reticulum
140. Which one of the following correctly describes the structure of the major salivary glands?
- a. compound tubular gland
 - b. simple tubuloalveolar gland
 - c. compound alveolar gland
 - d. compound tubuloalveolar gland
 - e. simple tubular gland

141. All of the following are associated with the bell stage of tooth development except
- tooth "germ" first appears
 - capillaries invade dental papilla
 - primordium of successional tooth develops
 - dental lamina disintegrates
 - nervous plexus develops in dental papilla
142. Which one of the following is the most accurate in respect to dental pain?
- dentin is more sensitive when the pulp is inflamed
 - agents that cause pain when applied to skin cause pain when applied to dentin
 - synaptic nerve endings have been demonstrated between pulpal nerves and odontoblasts
 - dentin is uniformly sensitive
 - a local anesthetic applied to exposed dentin eliminates dentin sensitivity
143. Pick the correct series that lists the parts of the mature tooth in the order of increasing inorganic content.
- enamel, dentin, cementum, pulp
 - cementum, dentin, enamel, pulp
 - cementum, pulp, dentin, enamel
 - pulp, cementum, dentin, enamel
 - pulp dentin, cementum, enamel
144. Sharpey's fibers are formed principally by
- osteoblasts
 - fibroblasts
 - odontoblasts
 - epithelial cells in the rests of Malassez
 - cementoblasts
145. Which feature of cellular cementum best differentiates it from acellular cementum?
- position on tooth
 - lacunae
 - separate and distinct functions
 - embedded Sharpey's fibers
 - an incremental growth pattern

146. In the keyhole concept for the shape of the cross-section of enamel rods
- the crystallites in the head lie parallel to the surface of the enamel
 - the tails are directed mesially
 - the heads are directed mesially
 - the tails are directed incisally
 - the heads are directed incisally
147. The epithelial (Hertwig's) root sheath is involved in the formation of
- enamel
 - crown
 - root
 - coronal pulp chamber
 - epithelial pearls
148. Mucous secreting cells are least appropriately described as having
- lighter stained cytoplasm than serous cells
 - flattened nuclei
 - relatively vacant appearing cytoplasm
 - distinct cell boundaries
 - the ability to form demilunes
149. Which one of the following glands would possess numerous demilunes?
- parotid
 - palatine
 - posterior lingual
 - von Ebner
 - sublingual
150. Sharpey's fibers are generally oriented in cementum
- parallel to collagenic fibers produced by cementoblasts
 - randomly
 - parallel to the surface of cementum
 - perpendicular to the dentinocemental junction
 - either b or c

151. Acid-etching of surface enamel to create a surface for better binding with dental materials most commonly
- a. preferentially removes centers of rods
 - b. dissolves hydroxyapatite crystals more readily in a direction perpendicular to their long axis
 - c. shows little correlation with key-hole-shaped rods
 - d. bears no resemblance to rod structure
 - e. preferentially removes peripheries of rods
152. Ameloblasts are derived from
- a. dental papilla
 - b. outer dental epithelium
 - c. inner dental epithelium
 - d. dental sac
 - e. ectomesenchymal cells
153. Which one of the following activities of the dental organ continues for the longest time with the development of any tooth?
- a. morphogenic
 - b. organizing
 - c. formative
 - d. maturational
 - e. protective
154. The formation of cementum results when the dental organ
- a. adheres to dentin
 - b. becomes discontinuous over dentin
 - c. is in its secretory stage
 - d. is in its protective stage
 - e. forms an epithelial diaphragm
155. The periodontal ligament develops from
- a. pulpal tissue
 - b. dental papilla
 - c. dental sac
 - d. outer dental epithelium
 - e. inner dental epithelium

156. Serous secretory cells characteristically
- have a nucleus flattened basally
 - have distinct lateral cell boundaries
 - have relatively vacant apical cytoplasm
 - may form demilunes
 - lack intercellular canaliculi
157. Saliva produced during stimulation by eating or by mechanical manipulations during dental procedures arises principally from the
- minor salivary glands
 - parotid glands
 - submandibular, sublingual and minor salivary glands
 - submandibular glands
 - sublingual glands
158. All of the following become part of the reduced enamel epithelium except
- outer dental epithelium
 - stratum intermedium
 - ameloblast cells
 - epithelial diaphragm
 - stellate reticulum
159. Secondary (cellular) cementum differs from alveolar bone in that it
- lacks lacunae
 - lacks hydroxyapatite crystallites
 - resorbs less readily than bone
 - has Sharpey's fibers
 - may exhibit resting lines
160. Lines of von Ebner represent
- cyclic metabolic changes in ameloblasts
 - cyclic metabolic changes in odontoblast activity
 - interglobular dentin
 - increment lines in enamel
 - configuration of secondary curvatures of dentinal tubules
161. Developing teeth and dental arches are separated from the developing cheeks by the
- primary epithelial band
 - inner dental epithelium
 - dental lamina
 - vestibular bond or furrow
 - outer dental epithelium

162. The density of enamel is greatest
- at the surface near the cervical margin of a permanent tooth
 - between the cusp and cervical regions of a permanent tooth
 - at the surface of a cusp of a permanent tooth
 - toward D-E junction of the cusp of a permanent tooth
 - toward D-E junction in the cervical margin of a permanent tooth
163. All of the following groups of principal fibers of the periodontal ligament are present in all permanent teeth except
- cervical
 - alveolar crest
 - transeptal
 - interradicular
 - apical
164. High connective tissue papillae in the oral cavity mucosa are associated with
- areas subjected to mechanical stress
 - swallowing action
 - tissues not supported by bone
 - nonkeratinized epithelium
 - a submucosa
165. The most highly mineralized region of dentin is the
- intertubular dentin
 - globular dentin
 - peritubular dentin
 - interglobular dentin
 - Tomes' granular layer
166. Dentin becomes harder with age because of a general increase in
- interglobular dentin
 - secondary dentin
 - denticles
 - peritubular dentin
 - intertubular dentin

167. Preparing a tooth for a restoration may stimulate all of the following actions except
- an increase in the number of dentinal tubules
 - death of odontoblasts
 - sclerotic dentin formation
 - dead tract formation
 - irregular dentin formation
168. Odontoblastic processes extend into
- enamel lamellae
 - enamel tufts
 - enamel spindles
 - reduced enamel epithelium
 - perikymata
169. Which one of the following is incorrectly matched?
- epithelial (Hertwig's) root sheath - epithelial rests (of Malassez)
 - ameloblasts - enamel pearl
 - dental lamina - epithelial (Serre's) pearl
 - cementoblasts - pulp stones
 - odontoblasts - enamel spindles
170. In considering the process of eruption, the prefunctional eruptive stage of a tooth begins when the
- cap stage begins
 - bell stage begins
 - dental lamina begins forming
 - bud stage begins
 - none of the above
171. Enamel tufts are
- hypomineralized areas of dentin
 - hypermineralized areas in dentin
 - hypomineralized areas in enamel
 - similar to enamel spindles
 - hypermineralized areas in enamel
172. All of the following cell types may produce collagen fibers except?
- odontoblasts
 - ameloblasts
 - cementoblasts
 - osteoblasts
 - chondroblasts

173. Mitochondria in association with basal infoldings of the plasmalemma are characteristically found in
- excretory duct cells
 - serous cells
 - intercalated duct cells
 - mucous cells
 - striated (secretory) duct cells
174. The epithelial rests (of Malassez) arise from
- dental follicle
 - outer dental epithelium
 - epithelial root sheath
 - dental organ
 - inner dental epithelium
175. In general, the deeper a cavity preparation is made into the dentin the
- less concentrated the dentinal tubules
 - less permeable the dentin structurally
 - weaker the remaining dentin (or stronger etc.)
 - greater the amount of peritubular dentin(& lesser)
 - fewer odontoblasts are affected
176. When an oral surgeon extracts a mandibular first molar, all of the principal fibers of the periodontal ligament are torn from their attachment to alveolar bone except for the
- transeptal fibers
 - oblique fiber
 - interradicular fibers
 - dentoperiosteal fibers
 - alveolar crest fibers
177. All of the following are part of or arise from the dental organ except the
- rests of Malassez
 - reduced enamel epithelium
 - epithelial root sheath
 - cervical loop
 - dental sac

178. All of the following may be observed in demineralized sections of mature teeth except
- intertubular dentin
 - interglobular dentin
 - peritubular dentin
 - reparative dentin
 - globular dentin
179. The major inorganic component of dentin is
- collagen
 - lactate
 - hydroxyapatite
 - lipid
 - desmosine
180. The presence of Tomes' processes is associated with the
- formation of peritubular dentin
 - morphogenic function of dental organ
 - secretory function of dental organ
 - hypomineralized root dentin
 - intratubular nerve endings
181. All of the deciduous dentition has been initiated in utero by the
- 6th wk
 - 7th wk
 - 8th wk
 - 10th wk
 - 16th wk
182. All of the tooth germs of the primary dentition are usually completed in utero by the
- 4th mo
 - 6th mo
 - 7th mo
 - 8th mo
 - none of the above
183. The formation of the 1st tooth of the permanent dentition is initiated in utero by the
- 4th mo
 - 5th mo
 - 6th mo
 - 7th mo
 - 8th mo

184. More principal fibers of the periodontal ligament start or end in
- a. dentin than bone
 - b. cementum than bone
 - c. dentin than cementum
 - d. bone than cementum
 - e. gingiva than cementum

Answers for Board Review Questions:

1 - e	47 - e	93 - d	139 - b
2 - e	48 - d	94 - e	140 - d
3 - a	49 - b	95 - a	141 - a
4 - b	50 - e	96 - d	142 - a
5 - c	51 - a	97 - e	143 - d
6 - c	52 - e	98 - b	144 - b
7 - d	53 - a	99 - a	145 - b
8 - a	54 - d	100 - b	146 - e
9 - b	55 - e	101 - d	147 - c
10 - e	56 - c	102 - b	148 - e
11 - d	57 - b	103 - a	149 - e
12 - e	58 - a	104 - b	150 - d
13 - a	59 - b	105 - c	151 - a
14 - d	60 - e	106 - e	152 - c
15 - e	61 - e	107 - c	153 - b
16 - c	62 - b	108 - e	154 - b
17 - d	63 - d	109 - b	155 - c
18 - d	64 - c	110 - a	156 - d
19 - b	65 - b	111 - d	157 - b
20 - d	66 - a	112 - e	158 - d
21 - d	67 - a	113 - e	159 - c
22 - a	68 - e	114 - a	160 - b
23 - c	69 - c	115 - c	161 - d
24 - c	70 - b	116 - b	162 - c
25 - c	71 - e	117 - d	163 - d
26 - d	72 - d	118 - c	164 - a
27 - c	73 - a	119 - b	165 - c
28 - d	74 - d	120 - a	166 - d
29 - b	75 - c	121 - e	167 - a
30 - a	76 - b	122 - c	168 - c
31 - e	77 - a	123 - d	169 - d
32 - a	78 - c	124 - e	170 - e
33 - d	79 - e	125 - b	171 - c
34 - c	80 - b	126 - b	172 - b
35 - e	81 - b	127 - a	173 - e
36 - b	82 - e	128 - a	174 - d
37 - e	83 - e	129 - c	175 - c
38 - d	84 - a	130 - b	176 - a
39 - b	85 - b	131 - e	177 - c
40 - e	86 - b	132 - d	178 - c
41 - d	87 - c	133 - b	179 - c
42 - e	88 - d	134 - b	180 - c
43 - a	89 - c	135 - c	181 - d
44 - d	90 - c	136 - a	182 - d
45 - d	91 - e	137 - a	183 - a
46 - c	92 - b	138 - a	184 - b