The following 40 test items are representative of the four disciplines in the National Board Part I Dental Examinations: Anatomic Sciences, Biochemistry-Physiology, Microbiology-Pathology and Dental Anatomy and Occlusion. There is only one correct or best response for a test item. During testing, it is best to guess than leave an answer blank; there is no penalty for guessing wrong.

ANATOMIC SCIENCES

1. Which of the following blood elements is a fragment of megakaryocytic cytoplasm?
   A. Platelet
   B. Normoblast
   C. Erythrocyte
   D. Promyelocyte
   E. Proerythroblast

5. The muscularis externa contains some striated muscle in the
   A. ileum.
   B. stomach.
   C. appendix.
   D. esophagus.
   E. urinary bladder.

2. Which of the following cells is MOST likely to contain an abundant amount of rough-surfaced endoplasmic reticulum?
   A. Pericyte
   B. Macrophage
   C. Osteoblast
   D. Endothelial cell
   E. Lymphocyte

6. Vessels supplying blood to the walls of large arteries are collectively known as
   A. arterioles.
   B. capillaries.
   C. vasa vasorum.
   D. metarterioles.
   E. glomus.

3. Which of the following is the prime muscle in retracting and elevating the mandible?
   A. Masseter
   B. Digastric
   C. Mylohyoid
   D. Temporalis
   E. Lateral pterygoid

7. The one calcified structure of a tooth incapable of continued growth after eruption is the
   A. enamel.
   B. dentin.
   C. cementum.
   D. true dentine.

4. A patient has a profound disturbance in equilibrium, alterations of gait (ataxia), and intention tremor. This patient MOST likely has a massive lesion that involves which of the following?
   A. Amygdala
   B. Cerebellum
   C. Cerebral cortex
   D. Caudate nucleus
   E. Lenticular nucleus

8. Which of the following is the first formed portion of the dentin?
   A. Circumpulpal
   B. Intertubular
   C. Transparent
   D. Reparative
   E. Mantle
9. Which of the following represents the posterior boundary of the oral cavity and the anterior boundary of the fauces?

- A. Tonsil
- B. Soft palate
- C. Dorsum of the tongue
- D. Palatopharyngeal arch
- E. Palatoglossal arch

10. Each of the following PDL fiber groups is found in association with a central incisor EXCEPT one. Which one is this EXCEPTION?

- A. Apical
- B. Oblique
- C. Horizontal
- D. Alveolar crest
- E. Interradicular

**BIOCHEMISTRY-PHYSIOLOGY**

1. Hypoglycemia results from the excessive secretion of

- A. glucose.
- B. insulin.
- C. glucagon.
- D. cyclic-AMP.
- E. epinephrine.

2. The fluoride concentration in body fluids is regulated principally by which of the following?

- A. Hormonal action
- B. Bone resorption and kidney tubular secretion
- C. Simple skeletal exchange and resorption of bone
- D. Skeletal uptake and soft tissue deposition
- E. Skeletal uptake and renal excretion

3. Which of the following amino acids is a precursor for epinephrine?

- A. Valine
- B. Leucine
- C. Tyrosine
- D. Cysteine
- E. Tryptophan

4. Which of the following vitamins is MOST likely to be involved with bone loss in the elderly?

- A. Vitamin A
- B. Niacin
- C. Thiamine
- D. Vitamin D
- E. Vitamin E

5. Gout is a disease of purine overproduction. In this disease, joints develop crystals of

- A. urea.
- B. adenine.
- C. guanine.
- D. hypoxanthine.
- E. sodium urate.

6. The MOST susceptible sites in the nervous system for the effects of acute ischemic anoxia are the

- A. motor end-plates.
- B. sensory receptors.
- C. synapses in autonomic ganglia.
- D. synapses in the central nervous system.
7. An enzyme increases the rate of a biochemical reaction by
   A. decreasing substrate concentration.
   B. decreasing activation energy.
   C. increasing Km.
   D. increasing Keq.
   E. increasing released free energy.

9. Anemia is frequently associated with a deficiency of
   A. vitamins A and D.
   B. vitamins C and D.
   C. vitamins E and K.
   D. vitamin B₁₂ and folic acid.
   E. thiamine, riboflavin, and niacin.

8. Excluding the effect of drugs, apnea occurring after hyperventilation of an anesthetized patient results from
   A. decreased demand for oxygen.
   B. increased cerebral blood flow.
   C. decreased carbon dioxide tension.
   D. increased hydrogen ion concentration.
   E. decreased oxygenation of carotid bodies.

10. Each of the following is an important function of saliva EXCEPT one. Which one is this EXCEPTION?
    A. Provides buffering action
    B. Facilitates deglutition
    C. Initiates protein digestion
    D. Prevents demineralization
    E. Enhances flavor

MICROBIOLOGY-PATHOLOGY

1. What are the "sulfur granules" found in actinomycotic lesions?
   A. Uric acid crystals
   B. Coagulated pus cells
   C. Calcified necrotic tissue
   D. Colonies of the infecting organism
   E. Agglutinated platelets and lymphocytes

2. Which organ is the MOST susceptible to infarction due to systemic arterial thromboembolism?
   A. Brain
   B. Heart
   C. Liver
   D. Colon
   E. Lung

3. The aerosol produced during operative dental procedures is likely to contain a predominance of which of the following?
   A. Yeasts and spirochetes
   B. Spirochetes and rod forms
   C. Spirochetes and rickettsiae
   D. Gram-positive rods and cocci
   E. Gram-negative rod forms and spirochetes

4. Ten days after being hospitalized for a large, incapacitating myocardial infarct, a 50-year-old man suddenly develops a paralysis of the right side of his body. Which of the following BEST explains the damage to his brain?
   A. Rupture of a congenital aneurysm of the circle of Willis
   B. Brain abscess from necrosis of myocardium
   C. Formation of a bacterial embolus from the pulmonic valve
   D. Embolization of a mural thrombus from the right ventricle
   E. Detachment of a mural thrombus from the left ventricle
MICROBIOLOGY-PATHOLOGY (continued)

5. Which of the following conditions represents an intoxication rather than an infection?
   A. Anthrax  
   B. Botulism  
   C. Chancroid  
   D. Bacteroidosis  
   E. Salmonellosis septicemia

8. Fluoride affects the metabolism of oral bacteria by inhibiting an enzyme in which of the following pathways?
   A. Glycolytic  
   B. Folic acid  
   C. Citric acid  
   D. Aspartate biosynthetic  
   E. Extracellular polysaccharide

6. Which of the following organs possesses the greatest capacity for regeneration?
   A. Lung  
   B. Liver  
   C. Heart  
   D. Brain  
   E. Kidney

9. Which component of the HIV virus is inhibited by AZT treatment?
   A. gP120  
   B. ss RNA genome  
   C. ds DNA genome  
   D. Viral receptor  
   E. Reverse transcriptase

7. In contrast to an exudate, a transudate has a
   A. cloudy appearance.  
   B. higher specific gravity.  
   C. lower protein concentration.  
   D. larger number of erythrocytes.  
   E. characteristic cellular component.

10. Which of the following represents the virus MOST likely to pass the placenta and produce congenital defects in the fetus?
    A. Mumps  
    B. Rubella  
    C. Rubeola  
    D. Varola  
    E. Varicella

DENTAL ANATOMY AND OCCLUSION

1. Which of the following newly erupted teeth is MOST likely to exhibit only one pulp horn?
   A. #31  
   B. #28  
   C. #19  
   D. #15  
   E. #5

2. Which of the following maxillary anterior teeth has a mesiodistal crown width that is greater than the incisocervical height?
   A. Primary central incisor  
   B. Primary lateral incisor  
   C. Central incisor  
   D. Lateral incisor  
   E. Canine
DENTAL ANATOMY AND OCCLUSION (continued)

3. How many pulp horns are usually present in a typical primary mandibular first molar?
   A. 1
   B. 2
   C. 3
   D. 4
   E. 5

4. Considering root morphology, which of the following teeth MOST readily lend themselves to rotation during extraction?
   A. Maxillary central incisor
   B. Mandibular central incisor
   C. Mandibular lateral incisor
   D. Maxillary first premolar
   E. Mandibular canine

5. Which of the following are the tissues immediately adjacent to the periodontal ligament?
   A. Dentin and lamina dura
   B. Cementum and alveolar bone
   C. Gingiva and alveolar plate
   D. Bundle bone and intermediate plexus
   E. Junctional epithelium and cortical bone

6. Which of the following offers the greatest degree of protection for lips, cheeks, and tongue?
   A. Saliva
   B. Adjacent contact of teeth
   C. Horizontal overlap (overjet)
   D. Deflecting function of ridges
   E. Sensory function of the periodontal ligament

7. The anatomy of the mesial surface of which of the following teeth is MOST likely to cause difficulty in restorative dentistry?
   A. Maxillary central incisor
   B. Maxillary first premolar
   C. Maxillary second premolar
   D. Mandibular first molar

8. Which of the following describes the anatomic progression from mandibular first to third molars?
   A. The roots become more divergent.
   B. The crowns and roots become longer.
   C. The crowns and roots become shorter.
   D. The crowns become longer, but the roots get shorter.
   E. The crowns become shorter, but the roots get longer.

9. A female child's primary first molars and primary incisors have erupted, but the primary canines and primary second molars remain unerupted. What is the child's approximate age in months?
   A. 7
   B. 10
   C. 13
   D. 16
   E. 20

10. Which of the following devices accurately locates the hinge axis position of the mandible?
    A. Kinematic face bow
    B. Arbitrary face bow
    C. Wax recording device
    D. Average value face bow
    E. Arcon articulator recorder
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