

# NATIONAL BOARD PART I SAMPLE TEST ITEMS

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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

- Which of the following blood elements is a fragment of megakaryocytic cytoplasm?
  - Platelet
  - Normoblast
  - Erythrocyte
  - Promyelocyte
  - Proerythroblast
- Which of the following cells is *MOST* likely to contain an abundant amount of rough-surfaced endoplasmic reticulum?
  - Pericyte
  - Macrophage
  - Osteoblast
  - Endothelial cell
  - Lymphocyte
- Which of the following is the prime muscle in retracting and elevating the mandible?
  - Masseter
  - Digastric
  - Mylohyoid
  - Temporalis
  - Lateral pterygoid
- 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?
  - Amygdala
  - Cerebellum
  - Cerebral cortex
  - Caudate nucleus
  - Lenticular nucleus
- The muscularis externa contains some striated muscle in the
  - ileum.
  - stomach.
  - appendix.
  - esophagus.
  - urinary bladder.
- Vessels supplying blood to the walls of large arteries are collectively known as
  - arterioles.
  - capillaries.
  - vasa vasorum.
  - metarterioles.
  - glomus.
- The one calcified structure of a tooth incapable of continued growth after eruption is the
  - enamel.
  - dentin.
  - cementum.
  - true denticle.
- Which of the following is the first formed portion of the dentin?
  - Circumpulpal
  - Intertubular
  - Transparent
  - Reparative
  - Mantle

9. Which of the following represents the posterior boundary of the oral cavity and the anterior boundary of the fauces?
- Tonsil
  - Soft palate
  - Dorsum of the tongue
  - Palatopharyngeal arch
  - 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*?
- Apical
  - Oblique
  - Horizontal
  - Alveolar crest
  - Interradicular

### BIOCHEMISTRY-PHYSIOLOGY

1. Hypoglycemia results from the excessive secretion of
- glucose.
  - insulin.
  - glucagon.
  - cyclic-AMP.
  - epinephrine.
2. The fluoride concentration in body fluids is regulated principally by which of the following?
- Hormonal action
  - Bone resorption and kidney tubular secretion
  - Simple skeletal exchange and resorption of bone
  - Skeletal uptake and soft tissue deposition
  - Skeletal uptake and renal excretion
3. Which of the following amino acids is a precursor for epinephrine?
- Valine
  - Leucine
  - Tyrosine
  - Cysteine
  - Tryptophan
4. Which of the following vitamins is *MOST* likely to be involved with bone loss in the elderly?
- Vitamin A
  - Niacin
  - Thiamine
  - Vitamin D
  - Vitamin E
5. Gout is a disease of purine overproduction. In this disease, joints develop crystals of
- urea.
  - adenine.
  - guanine.
  - hypoxanthine.
  - sodium urate.
6. The *MOST* susceptible sites in the nervous system for the effects of acute ischemic anoxia are the
- motor end-plates.
  - sensory receptors.
  - synapses in autonomic ganglia.
  - synapses in the central nervous system.

### BIOCHEMISTRY-PHYSIOLOGY (continued)

7. An enzyme increases the rate of a biochemical reaction by
- A. decreasing substrate concentration.
  - B. decreasing activation energy.
  - C. increasing  $K_m$ .
  - D. increasing  $K_{eq}$ .
  - E. increasing released free energy.
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.
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  $B_{12}$  and folic acid.
  - E. thiamine, riboflavin, and niacin.
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
6. Which of the following organs possesses the *greatest* capacity for regeneration?
- A. Lung
  - B. Liver
  - C. Heart
  - D. Brain
  - E. Kidney
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.
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
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
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. Variola
  - 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

**National Board Dental Examination Part I**  
**Sample Test Items**  
**Answer Key**

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**Anatomic Sciences**

1. A
2. C
3. D
4. B
5. D
6. C
7. A
8. E
9. E
10. E

**Microbiology-Pathology**

1. D
2. A
3. D
4. E
5. B
6. B
7. C
8. A
9. E
10. B

**Biochemistry-Physiology**

1. B
2. E
3. C
4. D
5. E
6. D
7. B
8. C
9. D
10. C

**Dental Anatomy and Occlusion**

1. B
2. A
3. D
4. A
5. B
6. C
7. B
8. C
9. C
10. A

