

# NBDE Practice Questions

## Microbiology-Pathology

**Question:** Which of the following is the most common causative agent of dental caries?

**Answer:** Streptococcus mutans

**Question:** What is the mechanism by which penicillin operates?

**Answer:** Inhibits cell wall synthesis

**Question:** Which of the following viruses is responsible for the majority of cases of viral hepatitis?

**Answer:** Hepatitis B virus (HBV)

**Question:** Oral candidiasis is caused by which of the following organisms?

**Answer:** Candida albicans

**Question:** Which of the following is a characteristic of necrotizing ulcerative gingivitis (NUG)?

**Answer:** Presence of Fusobacterium and Spirochaetes

**Question:** What is the most likely pathogen in a patient with a rapidly progressing periodontal disease?

**Answer:** All of the above

**Question:** Tuberculosis is primarily caused by which organism?

**Answer:** Mycobacterium tuberculosis

**Question:** Which type of hypersensitivity reaction is involved in the pathogenesis of rheumatic fever?

**Answer:** Type III (Immune complex-mediated)

**Question:** Which of the following pathogens is most closely associated with the development of periodontal disease?

**Answer:** Porphyromonas gingivalis

**Question:** Acute osteomyelitis of the jaw most commonly results from an infection with which organism?

**Answer:** Staphylococcus aureus

**Question:** Which bacterial structure is the primary target of penicillin?

**Answer:** Cell wall

**Question:** What is the most common cause of bacterial meningitis in adults?

**Answer:** Streptococcus pneumoniae

**Question:** Which of the following is NOT a characteristic of viruses?

**Answer:** Contain both DNA and RNA

**Question:** Which of the following is a gram-positive bacterium?

**Answer:** Staphylococcus aureus

**Question:** What is the primary mode of action for the antifungal drug amphotericin B?

**Answer:** Disruption of fungal cell membrane

**Question:** Candida albicans is most commonly associated with which of the following infections?

**Answer:** Oral and genital infections

**Question:** Which of the following pathogens is a primary cause of periodontal disease?

**Answer:** Porphyromonas gingivalis

**Question:** What type of immunity is most effective in defending against virus-infected cells?

**Answer:** Cell-mediated immunity

**Question:** Which of the following is NOT a typical characteristic of autoimmune diseases?

**Answer:** Suppression of the immune system

**Question:** Which of the following microorganisms is the most common cause of dental caries?

**Answer:** Streptococcus mutans

**Question:** Which type of hepatitis is most likely to be transmitted through contaminated food?

**Answer:** Hepatitis A

**Question:** What is the mechanism of action of tetracycline antibiotics?

**Answer:** Inhibition of protein synthesis

**Question:** Which of the following pathogens is the most common cause of osteomyelitis?

**Answer:** Staphylococcus aureus

**Question:** Acute necrotizing ulcerative gingivitis (ANUG) is primarily associated with which bacteria?

**Answer:** Treponema denticola

**Question:** Which of the following is NOT a characteristic of neoplasia?

**Answer:** Controlled growth

**Question:** Candidiasis is caused by a:

**Answer:** Fungus

**Question:** Which of the following viral infections is known to cause oral hairy leukoplakia?

**Answer:** Epstein-Barr virus (EBV)

**Question:** Regarding the pathogenesis of periodontal disease, which factor is considered a major constituent of dental plaque that contributes to periodontal tissue destruction?

**Answer:** Endotoxins

**Question:** Lymphadenopathy in the context of an oral infection usually indicates:

**Answer:** Localized reaction to microbial invasion

**Question:** Which of the following bacteria is most likely to be responsible for dental caries?

**Answer:** Streptococcus mutans

**Question:** What type of hypersensitivity reaction is involved in the pathogenesis of rheumatic fever following a Streptococcus pyogenes throat infection?

**Answer:** Type II

**Question:** Which of the following is the most common cause of osteomyelitis?

**Answer:** Staphylococcus aureus

**Question:** For which of the following conditions is the presence of Howell-Jolly bodies on a blood smear indicative?

**Answer:** Sickle cell anemia

**Question:** What is the mechanism of action for penicillin antibiotics?

**Answer:** Inhibition of cell wall synthesis

**Question:** Which of the following organisms is a common cause of pneumonia in patients with cystic fibrosis?

**Answer:** Pseudomonas aeruginosa

**Question:** Which of the following is the most appropriate antibiotic prophylaxis for infective endocarditis prior to dental procedures in penicillin-allergic individuals?

**Answer:** Clindamycin

**Question:** What is the main carcinogenic mechanism of Epstein-Barr virus?

**Answer:** Insertion of viral oncogenes into the host DNA

**Question:** Which of the following is a characteristic feature of necrotizing ulcerative gingivitis?

**Answer:** Gray pseudomembrane over the gingiva

**Question:** Which herpes simplex virus type is primarily associated with herpetic gingivostomatitis?

**Answer:** HSV-1

**Question:** Which of the following is a distinguishing feature of Gram-positive bacteria?

**Answer:** Presence of a thick peptidoglycan layer

**Question:** What is the role of superantigens in pathogenesis?

**Answer:** They induce an intense immune response

**Question:** Which of the following is NOT associated with bacterial resistance to antibiotics?

**Answer:** Increasing the dose of antibiotic used

**Question:** A patient presents with a sore throat and a 'strawberry tongue', which organism is most likely responsible?

**Answer:** Streptococcus pyogenes

**Question:** Which of the following is a characteristic of necrosis?

**Answer:** Affected cells swell and burst

**Question:** Which of the following best describes Type IV hypersensitivity?

**Answer:** Cell-mediated hypersensitivity

**Question:** Kaposi's sarcoma is strongly associated with infection by which organism?

**Answer:** Human Herpesvirus 8 (HHV-8)

**Question:** In the context of microbial pathogenicity, what is the function of adhesins?

**Answer:** They facilitate the attachment of pathogens to host cells

**Question:** Candidiasis is most commonly caused by which species?

**Answer:** Candida albicans

**Question:** What mechanism does Mycobacterium tuberculosis use to evade the host's immune response?

**Answer:** It survives inside host macrophages

**Question:** Which of the following bacteria is most likely to be found in a dental abscess?

**Answer:** *Prevotella intermedia*

**Question:** What is the role of superantigens in the pathogenesis of disease?

**Answer:** They stimulate a strong immune response by binding to the MHC II and T-cell receptor.

**Question:** Which of the following is a characteristic feature of necrosis?

**Answer:** Rupture of the cell membrane

**Question:** A patient with a periodontal disease is most likely to show increased levels of which microorganism?

**Answer:** *Porphyromonas gingivalis*

**Question:** Which of the following cytokines is primarily involved in the fever response?

**Answer:** Interleukin-6 (IL-6)

**Question:** In the development of dental caries, which factor is considered primarily responsible for the demineralization of enamel?

**Answer:** Acid production by bacterial fermentation of dietary carbohydrates

**Question:** Which of the following is an important virulence factor for *Streptococcus mutans* in the development of dental caries?

**Answer:** Its ability to produce lactic acid

**Question:** Which type of hypersensitivity reaction is involved in the pathogenesis of contact dermatitis?

**Answer:** Type IV

**Question:** What is the most common cause of osteomyelitis following a fractured bone?

**Answer:** *Staphylococcus aureus*

**Question:** The presence of Reed-Sternberg cells is a diagnostic marker for which of the following diseases?

**Answer:** Hodgkin's lymphoma

**Question:** Which bacterium is primarily responsible for dental caries?

**Answer:** *Streptococcus mutans*

**Question:** What is the structure that allows bacteria to adhere to surfaces and form biofilms?

**Answer:** Fimbriae

**Question:** Which of the following pathogens is the most common cause of periodontal disease?

**Answer:** Porphyromonas gingivalis

**Question:** What type of hypersensitivity reaction is involved in the pathogenesis of aphthous ulcers?

**Answer:** Type IV (delayed-type hypersensitivity)

**Question:** Which of the following is NOT a mechanism of action by which antibiotics kill bacteria?

**Answer:** Activation of bacteriophage replication

**Question:** What is the causative agent of acute necrotizing ulcerative gingivitis (ANUG)?

**Answer:** Fusobacterium species

**Question:** Which viral infection is associated with Burkitt's lymphoma?

**Answer:** Epstein-Barr virus (EBV)

**Question:** Which cytokine is most important in the formation of osteoclasts and bone resorption in periodontal disease?

**Answer:** Interleukin-1 (IL-1)

**Question:** The presence of what substance differentiates impetigo caused by Streptococcus pyogenes and Staphylococcus aureus?

**Answer:** Coagulase

**Question:** Which organism causes Vincent's angina, also known as acute necrotizing ulcerative gingivitis?

**Answer:** Fusobacterium nucleatum

**Question:** What type of bacteria are primarily involved in dental caries?

**Answer:** S. mutans and Lactobacilli

**Question:** Which of the following is a hallmark sign of inflammation?

**Answer:** Rubor (redness)

**Question:** A patient presents with painful swollen lymph nodes, fever, and a spreading ulcerative lesion at the site of a recent tooth extraction. What is the most likely cause?

**Answer:** Actinomycosis

**Question:** Which of the following best describes the term 'opportunistic infection'?

**Answer:** An infection by a microorganism that normally does not cause disease in healthy individuals, but can in immunocompromised individuals

**Question:** The presence of what substance is most indicative of an active infection by Mycobacterium tuberculosis?

**Answer:** Cord factor

**Question:** Which of the following pathogens is most commonly associated with acute osteomyelitis of the jaw?

**Answer:** Staphylococcus aureus

**Question:** Koplik spots are a diagnostic feature of which of the following diseases?

**Answer:** Measles (Rubeola)

**Question:** Which of the following best defines a granulomatous inflammation?

**Answer:** A type of chronic inflammation characterized by the formation of granulomas

**Question:** What mechanism do antifungal drugs primarily utilize to kill or inhibit fungal pathogens?

**Answer:** Inhibition of ergosterol synthesis in the fungal cell membrane

**Question:** Which of the following organisms is a common cause of acute bacterial endocarditis following dental procedures?

**Answer:** Streptococcus sanguinis

**Question:** Chronic granulomatous disease occurs due to a defect in which of the following?

**Answer:** Oxidative burst in phagocytes

**Question:** Which of the following is a characteristic feature of apoptosis?

**Answer:** Cell membrane blebbing

**Question:** The presence of Reed-Sternberg cells is a definitive diagnostic feature of which of the following diseases?

**Answer:** Hodgkin's lymphoma

**Question:** Which of the following mechanisms of action is primarily associated with penicillin antibiotics?

**Answer:** Inhibition of cell wall synthesis

**Question:** What is the primary virulence factor of Streptococcus pyogenes responsible for scarlet fever?

**Answer:** Erythrogenic toxin

**Question:** In the context of microbial pathogenesis, quorum sensing is critical for which of the following?

**Answer:** Regulating gene expression in response to cell density

**Question:** Cytokine storm syndrome, often associated with severe infections, is primarily characterized by:

**Answer:** Massive release of proinflammatory cytokines

**Question:** Which fungal pathogen is most commonly associated with bird droppings and can cause severe respiratory infections?

**Answer:** Histoplasma capsulatum

**Question:** Which organism is most closely associated with dental caries?

**Answer:** Streptococcus mutans

**Question:** What is the mechanism of action of tetracyclines?

**Answer:** Inhibition of protein synthesis

**Question:** Which of the following is a characteristic of necrosis?

**Answer:** Cell swelling and rupture

**Question:** Which hepatitis virus is most commonly transmitted through fecal-oral route?

**Answer:** Hepatitis A

**Question:** What type of hypersensitivity reaction is responsible for allergic contact dermatitis?

**Answer:** Type IV

**Question:** Which organism causes thrush?

**Answer:** Candida albicans

**Question:** Which is the main cellular target for the cytotoxic effects of ionizing radiation?

**Answer:** Cell nucleus

**Question:** What is the hallmark of chronic inflammation?

**Answer:** Granuloma formation

**Question:** What type of bacteria are primarily involved in the initial stages of dental plaque formation?

**Answer:** Gram-positive cocci

**Question:** What is the most common cause of infective endocarditis following dental procedures?

**Answer:** Streptococcus sanguinis

**Question:** Which of the following organisms is most likely to be responsible for dental caries?

**Answer:** Streptococcus mutans

**Question:** A patient presents with a painful, swollen jaw and a fever. Radiographs reveal a radiolucent area at the apex of an abscessed tooth. Which type of bacteria are most likely involved?



**Answer:** Viridans streptococci

**Question:** Actinomyces israelii is primarily associated with which of the following conditions?

**Answer:** Actinomycosis

**Question:** Which of the following is the most common pathogen found in periodontal disease?

**Answer:** Porphyromonas gingivalis

**Question:** Regarding tuberculosis, which of the following statements is true?

**Answer:** Mycobacterium tuberculosis is the causative agent.

**Question:** Candida albicans is most commonly associated with which of the following conditions?

**Answer:** Oral thrush

**Question:** Which of the following conditions is NOT caused by a bacteria?

**Answer:** Hepatitis

**Question:** The primary mode of transmission for Hepatitis B in the dental office is through:

**Answer:** Contact with blood

**Question:** Which antibiotic class is primarily effective against Gram-positive bacteria?

**Answer:** Penicillins

**Question:** Which of the following microorganisms is an obligate intracellular parasite?

**Answer:** Rickettsia rickettsii

**Question:** What is the mechanism of action for tetracyclines?

**Answer:** Inhibition of protein synthesis by binding to the 30S ribosomal subunit

**Question:** Which term describes the spread of cancer from one organ to another non-adjacent organ?

**Answer:** Metastasis

**Question:** What type of hypersensitivity reaction is a Transfusion reaction?

**Answer:** Type II

**Question:** Which of the following pathogens is the most common cause of bacterial pneumonia?

**Answer:** Streptococcus pneumoniae

**Question:** What is the primary virulence factor of *Streptococcus mutans* in the development of dental caries?

**Answer:** Formation of biofilm

**Question:** Granulomatous inflammation is characterized by the accumulation of which type of cells?

**Answer:** Macrophages

**Question:** Which hepatitis virus is known for its high risk of chronic infection leading to liver cirrhosis and liver cancer?

**Answer:** Hepatitis C virus

**Question:** What is the main cause of peptic ulcers?

**Answer:** *Helicobacter pylori* infection

**Question:** Which type of necrosis is typically associated with tuberculosis?

**Answer:** Caseous necrosis

**Question:** Which of the following microorganisms is a common cause of dental caries?

**Answer:** *Streptococcus mutans*

**Question:** Which of the following is NOT a characteristic of necrosis?

**Answer:** Chromatin condensation

**Question:** What type of hypersensitivity reaction is involved in allergic contact dermatitis?

**Answer:** Type IV

**Question:** Which bacterium is most commonly associated with aggressive periodontitis?

**Answer:** *Aggregatibacter actinomycetemcomitans*

**Question:** *Candida albicans*, a common oral fungus, can cause which of the following conditions?

**Answer:** Oral candidiasis

**Question:** In which of the following conditions is the bacterium *Porphyromonas gingivalis* a key pathogenic agent?

**Answer:** Chronic periodontitis

**Question:** Which type of bacteria are primarily responsible for the production of lactic acid from the fermentation of dietary carbohydrates, thus contributing to dental caries?

**Answer:** Gram-positive cocci

**Question:** Which one of the following pathogens is a common cause of acute dentoalveolar abscess?

**Answer:** Porphyromonas gingivalis

**Question:** Autoclaving sterilizes materials by using:

**Answer:** Steam under pressure

**Question:** Which bacterium is most commonly associated with dental caries?

**Answer:** Streptococcus mutans

**Question:** What is the mechanism of action of tetracyclines?

**Answer:** Inhibition of protein synthesis

**Question:** Which of the following is NOT a characteristic of necrosis?

**Answer:** Energy-dependent

**Question:** The presence of which antibody class is typically used to confirm a recent infection?

**Answer:** IgM

**Question:** Candida albicans is a common causative agent of which of the following?

**Answer:** Oral thrush

**Question:** Which of the following is a hallmark of acute inflammation?

**Answer:** Edema

**Question:** Mycobacterium tuberculosis primarily affects which organ?

**Answer:** Lung

**Question:** Hepatitis B virus transmission is most likely to occur through which of the following?

**Answer:** Blood and body fluids

**Question:** Which of the following is true regarding anaerobic bacteria?

**Answer:** They cause infections that are typically odorous.

**Question:** Which of the following bacteria is most commonly associated with dental caries?

**Answer:** Streptococcus mutans

**Question:** What is the mechanism of action of tetracycline antibiotics?

**Answer:** Inhibition of protein synthesis

**Question:** Which of the following pathogens is the most common cause of necrotizing ulcerative gingivitis (NUG)?

**Answer:** Porphyromonas gingivalis

**Question:** Candida albicans infections in the oral cavity are most likely to occur in individuals:

**Answer:** Undergoing antibiotic therapy

**Question:** The presence of Koplik spots is most closely associated with which of the following diseases?

**Answer:** Rubeola (Measles)

**Question:** The leading causative agent of periodontal disease is:

**Answer:** Porphyromonas gingivalis

**Question:** Which of the following is not a hallmark sign of inflammation?

**Answer:** Hypoxia (lack of oxygen)

**Question:** A 'bull's eye' rash is characteristic of which disease?

**Answer:** Lyme disease

**Question:** Which of the following bacteria is most commonly associated with dental caries?

**Answer:** Streptococcus mutans

**Question:** Which of the following organisms is a common cause of necrotizing ulcerative gingivitis (NUG)?

**Answer:** Fusobacterium nucleatum

**Question:** What is the mechanism of action of tetracyclines?

**Answer:** Inhibition of protein synthesis

**Question:** What type of hypersensitivity reaction is involved in acute poststreptococcal glomerulonephritis?

**Answer:** Type III

**Question:** Which of the following is NOT a characteristic of malignant tumors?

**Answer:** Encapsulated

**Question:** An anaerobic gram-negative rod involved in periodontal disease is:

**Answer:** Porphyromonas gingivalis

**Question:** Which of the following is the principle mode of transmission for Hepatitis B virus in the healthcare setting?

**Answer:** Bloodborne transmission

**Question:** What cellular change is commonly seen in leukoplakia?

**Answer:** Keratosis

**Question:** Which of the following cytokines is primarily involved in the fever response?

**Answer:** Interleukin-1 (IL-1)

## **Anatomic Sciences**

**Question:** Which of the following muscles is primarily responsible for elevating the rib cage during inspiration?

**Answer:** External intercostals

**Question:** What cranial nerve innervates the muscles of mastication?

**Answer:** Trigeminal nerve (CN V)

**Question:** The primary blood supply to the head of the femur is through the:

**Answer:** Medial circumflex femoral artery

**Question:** Which structure passes through the carpal tunnel?

**Answer:** Median nerve

**Question:** What part of the brain is primarily responsible for coordinating voluntary movements?

**Answer:** Cerebellum

**Question:** Which of the following bones is part of the axial skeleton?

**Answer:** Sternum

**Question:** The Haversian system is associated with which type of human tissue?

**Answer:** Bone tissue

**Question:** What is the smallest structural and functional unit of the nervous system?

**Answer:** Neuron

**Question:** Which of the following vessels supplies oxygenated blood to the liver?

**Answer:** Hepatic artery

**Question:** Which of the following nerves is responsible for sensation to the lower teeth?

**Answer:** Inferior alveolar nerve

**Question:** What is the insertion point of the Masseter muscle?

**Answer:** Coronoid process of the mandible

**Question:** The primary center of ossification in long bones is known as the:

**Answer:** Diaphysis

**Question:** Which of the following cranial nerves is NOT directly involved in eye movement?

**Answer:** Trigeminal nerve (CN V)

**Question:** The heart valve located between the left atrium and left ventricle is the:

**Answer:** Mitral valve

**Question:** Cerebrospinal fluid is produced by which of the following structures?

**Answer:** Choroid plexus

**Question:** The Haversian system is a feature of which type of tissue?

**Answer:** Bone tissue

**Question:** In which region would you find the hyoid bone?

**Answer:** Cervical region

**Question:** Which of the following bones forms the posterior part of the hard palate?

**Answer:** Palatine

**Question:** The carotid sheath contains all of the following structures except:

**Answer:** External carotid artery

**Question:** Which cranial nerve is responsible for innervating the muscles of mastication?

**Answer:** Trigeminal nerve (CN V)

**Question:** Which of the following muscles is NOT considered a muscle of facial expression?

**Answer:** Masseter

**Question:** The lingual artery is a branch of which of the following?

**Answer:** External carotid artery

**Question:** Which of the following nerves does NOT innervate the tongue?

**Answer:** Phrenic nerve

**Question:** What structure directly articulates with the glenoid fossa of the temporal bone?

**Answer:** Mandibular condyle

**Question:** The primary center of ossification for long bones is located in the:

**Answer:** Diaphysis

**Question:** Which of the following structures passes through the foramen ovale?

**Answer:** Mandibular nerve (V3)

**Question:** Which of the following muscles elevates the ribcage during inspiration?

**Answer:** External intercostal

**Question:** Which cranial nerve is responsible for innervating the sternocleidomastoid and trapezius muscles?

**Answer:** Cranial nerve XI (Accessory)

**Question:** What is the primary arterial supply to the mandible?

**Answer:** Inferior alveolar artery

**Question:** Which of the following passes through the foramen ovale?

**Answer:** Mandibular nerve

**Question:** What type of joint is the temporomandibular joint (TMJ)?

**Answer:** Saddle

**Question:** The lingual nerve is a branch of which cranial nerve?

**Answer:** Cranial nerve V3 (Mandibular)

**Question:** What structure does the sphenopalatine artery supply?

**Answer:** The nasal septum

**Question:** Which of the following is not a branch of the external carotid artery?

**Answer:** Vertebral artery

**Question:** The inferior orbital fissure lies between the:

**Answer:** Sphenoid and the maxilla

**Question:** Where is the pterygopalatine ganglion located?

**Answer:** Within the pterygopalatine fossa

**Question:** What is the primary cartilage type found in the growth plate?

**Answer:** Hyaline cartilage

**Question:** Which cranial nerve is responsible for innervating the muscles of mastication?

**Answer:** Cranial nerve V

**Question:** What is the anatomical structure that separates the thoracic cavity from the abdominal cavity?

**Answer:** Diaphragm

**Question:** Which of the following arteries supplies blood to the maxillary teeth?

**Answer:** Superior alveolar artery

**Question:** What type of epithelial tissue lines the oral cavity?

**Answer:** Stratified squamous epithelium

**Question:** The lingual nerve is a branch of which of the following?

**Answer:** Mandibular division of Cranial nerve V

**Question:** Which of the following muscles is primarily responsible for elevating the ribs during inspiration?

**Answer:** External intercostals

**Question:** In the kidney, where does filtration occur?

**Answer:** Glomerulus

**Question:** Which part of the tooth is responsible for the sensation of pain?

**Answer:** Pulp

**Question:** Which of the following cranial nerves is responsible for taste sensation from the anterior two-thirds of the tongue?

**Answer:** Cranial Nerve VII

**Question:** The primary cortical area responsible for processing auditory information is located in which lobe of the brain?

**Answer:** Temporal lobe

**Question:** Which of the following muscles is NOT involved in mastication?

**Answer:** Sternocleidomastoid

**Question:** What is the blood supply to the maxillary teeth?

**Answer:** Superior alveolar artery

**Question:** What structure marks the boundary between the superior and middle nasal meatus?

**Answer:** Middle nasal concha

**Question:** Which gland is responsible for the production of saliva that is rich in amylase?

**Answer:** Submandibular gland

**Question:** The Circle of Willis is primarily involved in providing an arterial supply to which area of the body?

**Answer:** The brain

**Question:** Which of the following structures does NOT pass through the superior orbital fissure?

**Answer:** Optic nerve



**Question:** Which of the following muscles is responsible for elevating the mandible?

**Answer:** Masseter

**Question:** The primary center of ossification for long bones is located in the:

**Answer:** Diaphysis

**Question:** Which of the following cranial nerves is not directly involved in eye movement?

**Answer:** Trigeminal nerve (CN V)

**Question:** What is the cell type found in the parathyroid gland that is responsible for detecting blood calcium levels?

**Answer:** Chief cells

**Question:** Which of the following structures conducts sperm from the epididymis to the ejaculatory duct?

**Answer:** Vas deferens

**Question:** The middle nasal concha is a part of which bone?

**Answer:** Ethmoid

**Question:** Blood from the brain is drained into the internal jugular vein via the:

**Answer:** Sigmoid sinus

**Question:** Which of the following arteries supplies blood to the maxillary and mandibular teeth?

**Answer:** Maxillary artery

**Question:** The primary lymphoid organ responsible for the maturation of T lymphocytes is the:

**Answer:** Thymus

**Question:** Which of the following bones forms the posterior part of the hard palate?

**Answer:** Palatine

**Question:** Which cranial nerve is responsible for sensation to the anterior 2/3 of the tongue?

**Answer:** Trigeminal nerve (V)

**Question:** What is the primary muscle responsible for elevating the mandible?

**Answer:** Masseter

**Question:** Which salivary gland is primarily responsible for producing mucous saliva?

**Answer:** Sublingual gland

**Question:** The optic canal is found in which bone?

**Answer:** Sphenoid

**Question:** Which of the following is not a branch of the facial artery?

**Answer:** Lingual artery

**Question:** Which area of the brain is primarily responsible for coordinating voluntary movements?

**Answer:** Cerebellum

**Question:** What is the function of the lateral pterygoid muscle?

**Answer:** Protracts the mandible

**Question:** Which of the following muscles is NOT considered a muscle of mastication?

**Answer:** Mylohyoid

**Question:** The primary center of ossification for long bones is located in the:

**Answer:** Diaphysis

**Question:** Which cranial nerve is responsible for taste sensation from the anterior two-thirds of the tongue?

**Answer:** Facial nerve (VII)

**Question:** The nutrient foramen of long bones transmits which of the following?

**Answer:** Arteries

**Question:** In tooth development, the hard tissue that forms first is:

**Answer:** Dentin

**Question:** Which artery supplies the maxillary teeth?

**Answer:** Superior alveolar artery

**Question:** The temporomandibular joint is an example of a:

**Answer:** Saddle joint

**Question:** The optic nerve is considered to be which cranial nerve?

**Answer:** II

**Question:** What is the function of the periodontal ligament?

**Answer:** All of the above

**Question:** Which of the following nerves is purely sensory in function?

**Answer:** Trigeminal nerve (V)

**Question:** The primary center of ossification in long bones is located in the:

**Answer:** Diaphysis

**Question:** Which of the following muscles is responsible for depression of the mandible?

**Answer:** Lateral pterygoid

**Question:** In the TMJ, the articular disc is composed of:

**Answer:** Fibrocartilage

**Question:** Which artery is the first major branch of the aortic arch?

**Answer:** Brachiocephalic trunk

**Question:** The inferior alveolar nerve is a branch of which of the following?

**Answer:** Mandibular division of Trigeminal nerve

**Question:** Which cranial nerve innervates the muscles of facial expression?

**Answer:** Facial nerve (VII)

**Question:** What is the primary function of the lymphatic system?

**Answer:** Removing excess fluid from tissues

**Question:** Which of the following structures does not directly participate in the formation of the temporomandibular joint (TMJ)?

**Answer:** Coronoid process of the mandible

**Question:** Which of the following bones form the orbit?

**Answer:** Frontal, sphenoid, ethmoid, lacrimal, maxillary, zygomatic, and palatine bones

**Question:** Which of the following cranial nerves is not directly involved in eye movement?

**Answer:** Optic nerve (II)

**Question:** What type of joint is the temporomandibular joint (TMJ)?

**Answer:** Saddle joint

**Question:** Which of the following structures is located in the posterior cranial fossa?

**Answer:** Cerebellum

**Question:** The wing of the nose is formed by which of the following cartilages?

**Answer:** Alar cartilage

**Question:** Which cranial nerve carries taste sensations from the anterior two-thirds of the tongue?

**Answer:** Facial nerve (VII)

**Question:** The Adam's apple corresponds to which of the following structures?

**Answer:** Thyroid cartilage

**Question:** Which gland is responsible for regulating metabolism through the secretion of thyroxine?

**Answer:** Thyroid gland

**Question:** The descending colon is part of which of the following systems?

**Answer:** Digestive system

**Question:** Which of the following muscles is responsible for elevating the mandible?

**Answer:** Masseter

**Question:** In which of the following bone is the mental foramen located?

**Answer:** Mandible

**Question:** Which of the following cranial nerves is primarily responsible for motor innervation to the muscles of mastication?

**Answer:** Trigeminal (V)

**Question:** What type of cartilage comprises the articular surfaces of the temporomandibular joint?

**Answer:** Fibrocartilage

**Question:** Which of the following nerves does NOT innervate the tongue?

**Answer:** Vagus nerve

**Question:** The inferior alveolar nerve is a branch of which of the following nerves?

**Answer:** Mandibular nerve

**Question:** Which cranial nerve innervates the muscles of facial expression?

**Answer:** Facial (VII)

**Question:** The optic canal is located in which bone?

**Answer:** Sphenoid

**Question:** Which muscle is primarily responsible for elevating the upper lip and flaring the nostrils?

**Answer:** Levator labii superioris alaeque nasi

**Question:** The primary blood supply to the maxillary teeth is provided by which of the following arteries?

**Answer:** Superior alveolar artery

**Question:** What is the insertion point of the temporalis muscle?

**Answer:** Coronoid process of the mandible

**Question:** Which cranial nerve is responsible for the sense of taste in the anterior two-thirds of the tongue?

**Answer:** Facial nerve (VII)

**Question:** Where is the sella turcica located?

**Answer:** Sphenoid bone

**Question:** Which ligament limits the movement of the mandible from excessive retraction?

**Answer:** Temporomandibular ligament

**Question:** Which of the following salivary glands produces a secretion that is primarily serous?

**Answer:** Parotid gland

**Question:** What structure does the inferior alveolar nerve travel through to enter the mandible?

**Answer:** Mandibular foramen

**Question:** Which of the following structures is located immediately posterior to the most distal molar in the upper jaw?

**Answer:** Tuberosity of the maxilla

**Question:** The epithelium of the oral mucosa is mostly composed of which type of cells?

**Answer:** Stratified squamous epithelium

**Question:** The inferior alveolar nerve is a branch of which cranial nerve?

**Answer:** Trigeminal nerve (V)

**Question:** Which gland is NOT considered a major salivary gland?

**Answer:** Buccal gland

**Question:** Which of the following muscles is responsible for protruding the mandible?

**Answer:** Lateral pterygoid

**Question:** Which of the following is the primary artery supplying the maxillary anterior teeth?

**Answer:** Anterior superior alveolar artery

**Question:** Which nerve innervates the muscles of facial expression?

**Answer:** Facial nerve (VII)

**Question:** Blood supply to the pulpal tissue of the lower teeth is primarily provided by the:

**Answer:** Inferior alveolar artery

**Question:** The human permanent dentition consists of how many teeth?

**Answer:** 32

**Question:** Which of the following bones forms the primary posterior support for the nasal septum?

**Answer:** Vomer

**Question:** The inferior alveolar nerve is a branch of which of the following?

**Answer:** Mandibular nerve (V3)

**Question:** During swallowing, the elevation of the larynx and folding of the epiglottis primarily prevent food from entering the:

**Answer:** Trachea

**Question:** The maxillary artery is a direct branch of which of the following?

**Answer:** External carotid artery

**Question:** What is the primary muscle involved in the opening (depression) of the mandible?

**Answer:** Lateral pterygoid

**Question:** Which of the following cranial nerves is responsible for taste sensation from the anterior two-thirds of the tongue?

**Answer:** Facial nerve (VII)

**Question:** Which of the following is the arterial supply to the parotid gland?

**Answer:** External carotid artery

**Question:** The lingual nerve provides sensory innervation to which of the following?

**Answer:** Tongue

**Question:** In which bone is the infraorbital foramen located?

**Answer:** Maxilla

**Question:** Which of the following structures is directly anterior to the esophagus?

**Answer:** Trachea

**Question:** Which cranial nerve is responsible for taste sensation from the anterior two-thirds of the tongue?

**Answer:** Facial nerve

**Question:** The primary center of ossification in long bones is located in the:

**Answer:** Diaphysis

**Question:** Which muscle is directly involved in the elevation of the rib cage during inspiration?

**Answer:** External intercostal

**Question:** The maxillary artery is a branch of which major artery?

**Answer:** External carotid artery

**Question:** Which structure forms the primary cartilaginous joint of the mandible?

**Answer:** Condylar process

**Question:** What is the main function of the temporomandibular joint?

**Answer:** To assist in mastication and speech

**Question:** The middle meningeal artery is usually a branch of which artery?

**Answer:** Maxillary artery

**Question:** Which of the following glands is responsible for the regulation of calcium levels in the blood?

**Answer:** Parathyroid gland

**Question:** Which of the following cranial nerves is NOT directly involved in eye movement?

**Answer:** Trigeminal nerve (V)

**Question:** The primary center for coordination of eye movements and balance is the:

**Answer:** Cerebellum

**Question:** Which of the following structures is NOT part of the axial skeleton?

**Answer:** Femur

**Question:** What type of tissue composes the outer layer of the skin?

**Answer:** Epithelial tissue

**Question:** During inhalation, which of the following muscles contracts to expand the thoracic cavity?

**Answer:** Diaphragm

**Question:** Which part of the tooth is primarily composed of enamel?

**Answer:** Crown

**Question:** The ulnar nerve is an extension of which of the following?

**Answer:** Brachial plexus

**Question:** The process by which blood cells are formed is known as:

**Answer:** Hematopoiesis

**Question:** Which gland is responsible for regulating metabolism?

**Answer:** Thyroid gland

## **Biochemistry-Physiology.**

**Question:** Which of the following enzymes is directly involved in the conversion of glucose to glucose-6-phosphate?

**Answer:** Hexokinase

**Question:** During muscle activity, the oxygen debt created is due to accumulation of which substance?

**Answer:** Lactic acid

**Question:** Which of the following processes describes the synthesis of glycogen from glucose?

**Answer:** Glycogenesis

**Question:** The majority of carbon dioxide is transported in the blood as:

**Answer:** Bicarbonate

**Question:** Which of the following molecules acts as a second messenger in many hormone action mechanisms?

**Answer:** Cyclic AMP

**Question:** What is the primary function of the enzyme aldolase in glycolysis?

**Answer:** Conversion of fructose 1,6-bisphosphate to two three-carbon molecules

**Question:** Which vitamin is necessary for the synthesis of the coenzyme NAD<sup>+</sup>?

**Answer:** Vitamin B3

**Question:** In the context of renal physiology, where does the majority of sodium reabsorption occur?

**Answer:** Proximal convoluted tubule

**Question:** Which of the following processes occurs when blood calcium levels are low?

**Answer:** Both A and B

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the synthesis of cholesterol?



**Answer:** HMG-CoA reductase

**Question:** In which part of the cell does glycolysis take place?

**Answer:** Cytosol

**Question:** Which hormone promotes the formation of glucose from non-carbohydrate sources?

**Answer:** Glucagon

**Question:** What is the primary function of the sodium-potassium pump?

**Answer:** Transport Na<sup>+</sup> out of the cell and K<sup>+</sup> into the cell

**Question:** Acetyl-CoA enters the citric acid cycle by reacting with which of the following compounds?

**Answer:** Oxaloacetate

**Question:** Which hormone primarily regulates the basal metabolic rate?

**Answer:** Thyroxine

**Question:** In the context of muscle contraction, calcium ions bind to which protein to initiate the contraction process?

**Answer:** Troponin

**Question:** Which of the following processes generates the most ATP per molecule of glucose oxidized?

**Answer:** Electron transport chain

**Question:** What is the effect of high levels of ADP on cellular respiration?

**Answer:** Stimulates glycolysis

**Question:** Which of the following enzymes catalyzes the rate-limiting step of glycolysis?

**Answer:** Phosphofructokinase-1

**Question:** What is the primary function of the urea cycle?

**Answer:** To convert ammonia into less toxic substances

**Question:** In which part of the cell does the Krebs cycle take place?

**Answer:** Mitochondrial matrix

**Question:** What is the main role of oxygen in cellular respiration?

**Answer:** It acts as the final electron acceptor in the electron transport chain

**Question:** Which organ is primarily responsible for gluconeogenesis?

**Answer:** Liver

**Question:** What is the effect of aldosterone on blood pressure?

**Answer:** It increases blood pressure by increasing sodium reabsorption.

**Question:** Which of the following molecules serves as the long-term storage form of energy in muscle cells?

**Answer:** Glycogen

**Question:** What is the role of carbonic anhydrase in erythrocytes?

**Answer:** It catalyzes the conversion of CO<sub>2</sub> to bicarbonate

**Question:** Which of the following enzymes catalyzes the rate-limiting step of glycolysis?

**Answer:** Phosphofructokinase-1

**Question:** In the context of physiological pH, which amino acid is considered neutral but has a polar side chain?

**Answer:** Serine

**Question:** What is the primary function of the urea cycle?

**Answer:** To convert ammonia into urea

**Question:** Which hormone is primarily involved in the regulation of plasma calcium levels?

**Answer:** Parathyroid hormone

**Question:** What is the main product of the reaction catalyzed by succinate dehydrogenase in the citric acid cycle?

**Answer:** Fumarate

**Question:** Which of the following is NOT a function of the liver?

**Answer:** Insulin production

**Question:** The Na<sup>+</sup>/K<sup>+</sup> ATPase pump is classified under which type of transport?

**Answer:** Active transport

**Question:** Which enzyme is responsible for the conversion of pyruvate to acetyl-CoA?

**Answer:** Pyruvate dehydrogenase

**Question:** Which hormone increases blood glucose levels by promoting gluconeogenesis and glycogenolysis?

**Answer:** Glucagon

**Question:** What is the role of myoglobin?

**Answer:** Stores oxygen in muscle cells

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the synthesis of cholesterol?

**Answer:** HMG-CoA reductase

**Question:** What is the primary role of cyclic AMP (cAMP) in hormone action?

**Answer:** Acts as a second messenger

**Question:** Which of the following is NOT a product of glycolysis?

**Answer:** FADH<sub>2</sub>

**Question:** In which part of the cell does the Krebs cycle occur?

**Answer:** Mitochondrial matrix

**Question:** Which hormone primarily regulates blood calcium levels?

**Answer:** Parathyroid hormone

**Question:** What is the function of myoglobin?

**Answer:** Oxygen storage in muscle cells

**Question:** In the context of enzymatic action, what is the 'induced fit' model?

**Answer:** Both the enzyme and the substrate alter their shapes to fit each other

**Question:** Which of the following molecules is a disaccharide?

**Answer:** Sucrose

**Question:** Which enzymatic activity is involved in unwinding the DNA helix during DNA replication?

**Answer:** Helicase

**Question:** Which of the following is the primary role of the enzyme carbonic anhydrase in red blood cells?

**Answer:** Catalyzing the formation of bicarbonate from carbon dioxide and water

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the citric acid cycle?

**Answer:** Isocitrate dehydrogenase

**Question:** During muscle contraction, which ion binds to troponin to initiate the process?

**Answer:** Ca<sup>2+</sup>

**Question:** Which of the following is a product of the pentose phosphate pathway?

**Answer:** NADPH

**Question:** In which part of the cell does glycolysis occur?

**Answer:** Cytoplasm

**Question:** Which hormone is primarily involved in the regulation of metabolic rate and protein synthesis?

**Answer:** Thyroxine

**Question:** The process by which fatty acids are broken down in the mitochondria to generate acetyl-CoA is known as:

**Answer:**  $\beta$ -oxidation

**Question:** Which of the following molecules is considered the 'universal energy currency' of the cell?

**Answer:** ATP

**Question:** What is the effect of insulin on potassium levels in the blood?

**Answer:** Decreases blood potassium by increasing cellular uptake

**Question:** Renin, an enzyme involved in blood pressure regulation, is secreted by which of the following?

**Answer:** Kidneys

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the de novo synthesis of purine nucleotides?

**Answer:** Glutamine-PRPP amidotransferase

**Question:** During muscle contraction, which ion is released from the sarcoplasmic reticulum to initiate the contraction?

**Answer:** Ca<sup>2+</sup>

**Question:** Which of the following pathways is the primary source of energy for the brain under normal conditions?

**Answer:** Glycolysis

**Question:** Which enzyme is responsible for converting fructose-6-phosphate to fructose 1,6-bisphosphate in glycolysis?

**Answer:** Phosphofructokinase-1

**Question:** The enzyme deficiency in Type 1 Glycogen Storage Disease (Von Gierke disease) is:

**Answer:** Glucose-6-phosphatase

**Question:** Which hormone increases the permeability of the distal tubule and collecting ducts to water in the kidney?

**Answer:** Antidiuretic hormone (ADH)

**Question:** What is the primary function of the enzyme telomerase?

**Answer:** To add DNA sequences to the ends of chromosomes

**Question:** Which of the following molecules acts as a second messenger in many signal transduction pathways?

**Answer:** Cyclic AMP (cAMP)

**Question:** What is the most immediate source of energy for ATP synthesis in muscle cells during the first few seconds of intense exercise?

**Answer:** Creatine phosphate

**Question:** Which part of the nephron is primarily responsible for the reabsorption of water, Na<sup>+</sup>, and Cl<sup>-</sup>?

**Answer:** Proximal convoluted tubule

**Question:** Which enzyme is primarily responsible for the synthesis of prostaglandins and thromboxanes?

**Answer:** Cyclooxygenase

**Question:** What is the role of calcium ions in muscle contraction?

**Answer:** Bind to troponin, causing a conformational change that exposes binding sites on actin

**Question:** Which of the following hormones primarily acts to stimulate glycogenolysis in the liver?

**Answer:** Glucagon

**Question:** During which phase of the cell cycle does DNA replication occur?

**Answer:** S phase

**Question:** What is the main energy currency of the cell?

**Answer:** Adenosine triphosphate (ATP)

**Question:** Which type of cholesterol is considered 'good' cholesterol?

**Answer:** High-density lipoprotein (HDL)

**Question:** What role does carbonic anhydrase play in the body?

**Answer:** It catalyzes the formation of bicarbonate from carbon dioxide and water

**Question:** Which of the following is not a function of the liver?

**Answer:** Insulin production

**Question:** Where in the cell does oxidative phosphorylation take place?

**Answer:** Mitochondrial inner membrane

**Question:** Which enzyme is responsible for converting glucose to glucose-6-phosphate?

**Answer:** Hexokinase

**Question:** In the Cori cycle, lactate produced in muscle is converted back to glucose in the:

**Answer:** Liver

**Question:** Which of the following hormones primarily signals the fed state?

**Answer:** Insulin

**Question:** The sodium-potassium pump (Na<sup>+</sup>/K<sup>+</sup> ATPase) functions by:

**Answer:** Pumping Na<sup>+</sup> out of and K<sup>+</sup> into the cell with ATP consumption

**Question:** Which of the following is NOT a function of the smooth endoplasmic reticulum?

**Answer:** Protein synthesis

**Question:** The primary structure of a protein is determined by:

**Answer:** The sequence of amino acids

**Question:** Which enzyme catalyzes the rate-limiting step of the citric acid cycle?

**Answer:** Isocitrate dehydrogenase

**Question:** Which molecule serves as the final electron acceptor in the electron transport chain?

**Answer:** Oxygen

**Question:** Which of the following processes does NOT require oxygen?

**Answer:** Glycolysis

**Question:** Which enzyme is responsible for the synthesis of cAMP from ATP?

**Answer:** Adenylyl cyclase

**Question:** In gluconeogenesis, which enzyme converts fructose-1,6-bisphosphate to fructose-6-phosphate?

**Answer:** Fructose-1,6-bisphosphatase

**Question:** What is the role of acetyl-CoA in the citric acid cycle?

**Answer:** It combines with oxaloacetate to form citrate

**Question:** Which of the following hormones primarily acts to raise blood glucose concentrations?

**Answer:** Glucagon

**Question:** Which process describes the movement of water across a semipermeable membrane from an area of low solute concentration to an area of high solute concentration?

**Answer:** Osmosis

**Question:** What is the primary function of the sodium-potassium pump?

**Answer:** To transport Na<sup>+</sup> out of the cell and K<sup>+</sup> into the cell

**Question:** Which molecule acts as a second messenger in the mechanism of action of many hormones?

**Answer:** cAMP

**Question:** Which of the following is NOT a product of the urea cycle?

**Answer:** Arginine

**Question:** In the context of enzyme catalysis, what is the transition state?

**Answer:** The state corresponding to the highest energy along the reaction pathway

**Question:** Which hormone is primarily involved in the regulation of serum calcium levels?

**Answer:** Parathyroid hormone

**Question:** What is the main function of aldosterone?

**Answer:** Increase sodium reabsorption in the kidneys

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the synthesis of cholesterol?

**Answer:** HMG-CoA reductase

**Question:** In the fed state, which of the following pathways is most active in the liver?

**Answer:** Glycogenesis

**Question:** The electron transport chain is located in which part of the mitochondrion?

**Answer:** Inner membrane

**Question:** Which of the following processes directly produces the most ATP per molecule of glucose?

**Answer:** Oxidative phosphorylation

**Question:** Where does beta-oxidation of fatty acids occur?

**Answer:** Mitochondrial matrix

**Question:** Insulin has which of the following effects on carbohydrate metabolism?

**Answer:** Increases glucose uptake by cells

**Question:** Which of the following does NOT describe the action of insulin?

**Answer:** Enhances fat breakdown in adipose tissue

**Question:** What is the primary role of the enzyme aldolase in glycolysis?

**Answer:** It splits fructose 1,6-bisphosphate into two three-carbon molecules

**Question:** Which hormone is primarily responsible for the regulation of plasma calcium levels?

**Answer:** Parathyroid hormone (PTH)

**Question:** Which organelle is most involved in the detoxification of drugs in liver cells?

**Answer:** Smooth Endoplasmic Reticulum (SER)

**Question:** What is the immediate energy source for muscle contraction?

**Answer:** Adenosine triphosphate (ATP)

**Question:** Which mechanism best describes the action of steroid hormones?

**Answer:** Directly enter the cell and bind to intracellular receptors affecting gene expression

**Question:** What is the result of lactate dehydrogenase converting pyruvate to lactate?

**Answer:** Regeneration of NAD<sup>+</sup> for glycolysis to continue under anaerobic conditions

**Question:** Which of the following is NOT a feature of apoptosis?

**Answer:** Inflammation

**Question:** Which type of RNA is responsible for bringing amino acids to the ribosome during protein synthesis?

**Answer:** Transfer RNA (tRNA)

**Question:** Which of the following enzymes catalyzes the rate-limiting step in the citric acid cycle?

**Answer:** Isocitrate dehydrogenase

**Question:** What is the primary function of the sodium-potassium ATPase pump?

**Answer:** Transport Na<sup>+</sup> out of the cell and K<sup>+</sup> into the cell

**Question:** Which enzyme deficiency is associated with McArdle's disease?

**Answer:** Myophosphorylase

**Question:** What is the primary source of energy for the brain under normal conditions?

**Answer:** Glucose



**Question:** What is the end product of glycolysis under anaerobic conditions in skeletal muscle?

**Answer:** Lactate

**Question:** Which of the following components of the electron transport chain directly pumps protons to generate a proton gradient?

**Answer:** NADH dehydrogenase

**Question:** Which ion is primarily responsible for the resting membrane potential of most cells?

**Answer:** Potassium (K<sup>+</sup>)

**Question:** In the context of acid-base balance, what is the primary role of the bicarbonate (HCO<sub>3</sub><sup>-</sup>) buffer system?

**Answer:** To stabilize blood pH by neutralizing acids

**Question:** The action of aldosterone primarily affects which organ system to regulate blood pressure?

**Answer:** Kidneys

**Question:** Which enzyme is responsible for converting glucose-6-phosphate to fructose-6-phosphate in the glycolytic pathway?

**Answer:** Phosphoglucose isomerase

**Question:** In the Cori cycle, lactate produced in muscles is converted back to glucose in which organ?

**Answer:** Liver

**Question:** What is the primary role of the enzyme acetyl-CoA carboxylase in fatty acid metabolism?

**Answer:** Conversion of acetyl-CoA to malonyl-CoA

**Question:** Which of the following components of the electron transport chain is involved in the direct synthesis of ATP?

**Answer:** ATP synthase

**Question:** What is the primary function of urea in the human body?

**Answer:** To eliminate waste nitrogen

**Question:** Which of the following molecules acts as the final electron acceptor in the electron transport chain?

**Answer:** Oxygen

**Question:** How does insulin primarily lower blood glucose levels?

**Answer:** By increasing glucose uptake by cells

**Question:** What is the rate-limiting enzyme in the glycolysis pathway?

**Answer:** Phosphofructokinase-1

**Question:** Which hormone is primarily involved in the regulation of plasma calcium levels?

**Answer:** Parathyroid hormone

**Question:** Which of the following enzymes catalyzes the first step in glycolysis?

**Answer:** Hexokinase

**Question:** ATP synthesis in mitochondria is directly driven by:

**Answer:** The proton gradient across the inner mitochondrial membrane

**Question:** Which of the following hormones primarily acts to increase blood glucose concentration?

**Answer:** Glucagon

**Question:** Which vitamin is required as a coenzyme in the carboxylation reactions?

**Answer:** Vitamin K

**Question:** In the electron transport chain, which complex does NOT pump protons?

**Answer:** Complex II

**Question:** What is the principal catabolic byproduct of protein metabolism that is excreted in the urine?

**Answer:** Urea

**Question:** Which of the following statements about enzyme kinetics is TRUE?

**Answer:** The presence of a competitive inhibitor will increase the apparent  $K_m$ .

**Question:** The  $Na^+/K^+$  ATPase pump is categorized under which type of transport?

**Answer:** Active transport

**Question:** What is the primary role of the hormone aldosterone?

**Answer:** It increases blood volume and pressure by promoting sodium reabsorption.

**Question:** Which of the following components is not involved in the replication of DNA?

**Answer:** Ribosome

**Question:** What is the primary function of the enzyme phosphofructokinase-1 in glycolysis?

**Answer:** It catalyzes the conversion of fructose 6-phosphate to fructose 1,6-bisphosphate

**Question:** Which of the following hormones primarily stimulates glycogenolysis in the liver?

**Answer:** Glucagon

**Question:** In the muscle, the binding of which ion to troponin triggers the sliding filament mechanism of contraction?

**Answer:** Calcium

**Question:** How does the sodium-potassium pump (Na<sup>+</sup>/K<sup>+</sup> ATPase) maintain cellular homeostasis?

**Answer:** It moves sodium ions out of and potassium ions into the cell against their concentration gradients using ATP.

**Question:** What is the rate-limiting enzyme in the cholesterol biosynthesis pathway?

**Answer:** HMG-CoA reductase

**Question:** Which of the following processes describes the synthesis of mRNA from DNA?

**Answer:** Transcription

**Question:** What is the role of mitochondria in apoptosis?

**Answer:** Release of cytochrome c into the cytoplasm to activate caspases

**Question:** Which type of cell junctions are primarily responsible for preventing the passage of substances between cells?

**Answer:** Tight junctions

**Question:** Which of the following enzymes is directly responsible for the synthesis of ATP from ADP and inorganic phosphate?

**Answer:** ATP synthase

**Question:** What is the primary function of the urea cycle?

**Answer:** To synthesize urea from carbon dioxide and ammonia

**Question:** Which hormone is primarily responsible for the regulation of blood glucose levels?

**Answer:** Insulin

**Question:** Which of the following molecules is a product of the citric acid cycle?

**Answer:** NADH

**Question:** Oxygen binding to hemoglobin is best described by which of the following?

**Answer:** Sigmoidal kinetics

**Question:** The sodium-potassium pump functions to:

**Answer:** Transport Na<sup>+</sup> out of and K<sup>+</sup> into the cell against their concentration gradients

**Question:** Which of the following is NOT a function of calcium ions in muscle contraction?

**Answer:** Directly causing the power stroke

**Question:** Which of the following tissues has a high rate of gluconeogenesis?

**Answer:** Liver

**Question:** In the context of metabolic acidosis, which organ plays a key role in compensating for pH imbalances?

**Answer:** Lungs

## **Dental Anatomy and Occlusion**

**Question:** What is the normal adult dental formula?

**Answer:** 2-1-2-3

**Question:** At what age does the first primary tooth usually erupt?

**Answer:** 6 months

**Question:** Mamelons are found on the incisal edges of which teeth?

**Answer:** Permanent incisors

**Question:** Which cusp is the largest and most important cusp on the maxillary first molar?

**Answer:** The mesiobuccal cusp

**Question:** In the Universal Numbering System, which tooth is designated as tooth number 3?

**Answer:** Maxillary right first molar

**Question:** What feature distinguishes mandibular first premolars from mandibular second premolars?

**Answer:** The presence of a mesial pit

**Question:** Which of the following tooth surfaces is the chewing or biting surface?

**Answer:** Occlusal

**Question:** The point angle that is formed by the junction of the occlusal, buccal, and mesial surfaces is called what?

**Answer:** Mesiobuccal

**Question:** Interproximal spacing found in the primary dentition is known as which of the following?

**Answer:** Primate spaces

**Question:** Which of the following permanent teeth usually has two roots?

**Answer:** Maxillary first premolar

**Question:** The cusp of Carabelli is found on which tooth?

**Answer:** Maxillary first molar

**Question:** Which of the following landmarks is a depression on the occlusal surface of molars?

**Answer:** Central fossa

**Question:** In which of the following situations would a BULL (Buccal Upper, Lingual Lower) rule for the version movements be applied?

**Answer:** During lateral movements

**Question:** The primary center of calcification for the maxillary first molar is at what prenatal age?

**Answer:** 4 months in utero

**Question:** Which tooth is the most likely to have three canals?

**Answer:** Mandibular second premolar

**Question:** What is the normal Overjet in millimeters?

**Answer:** 2-4mm

**Question:** Which of the following teeth usually has two roots?

**Answer:** Maxillary first premolar

**Question:** The mesiobuccal cusp of the maxillary first molar occludes with which structure?

**Answer:** The buccal groove of the mandibular first molar

**Question:** At what age does the mandibular central incisor typically erupt?

**Answer:** 6-7 months

**Question:** What is the characteristic feature of the mandibular first premolar?

**Answer:** It has a prominent mesial ridge

**Question:** Which of the following is an anterior tooth?

**Answer:** Maxillary lateral incisor

**Question:** What is the function of the canine teeth?

**Answer:** Tearing

**Question:** Which tooth has a cingulum?

**Answer:** All of the above

**Question:** What is the primary morphology feature of the occlusal surface of mandibular molars?

**Answer:** Two transverse ridges

**Question:** The incisal edge of which tooth/teeth is/are straight mesiodistally when viewed from the incisal?

**Answer:** Maxillary central incisors only

**Question:** Which of the following is the correct sequence of eruption for permanent teeth?

**Answer:** First molars, canines, first premolars, second premolars, second molars

**Question:** What is the primary antagonist of the maxillary first molar?

**Answer:** Mandibular first molar

**Question:** In permanent dentition, which tooth has the longest root?

**Answer:** Maxillary canine

**Question:** Which cusp is the tallest on the maxillary first premolar?

**Answer:** Mesiofacial

**Question:** What is the usual number of canals in a mandibular second premolar?

**Answer:** Two

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** Centric relation refers to which of the following?

**Answer:** The most retruded physiologic relation of the mandible to the maxillae

**Question:** What feature distinguishes a mandibular molar from a maxillary molar?

**Answer:** The number of roots

**Question:** Which of the following describes the Curve of Spee?

**Answer:** It is the anteroposterior curvature, following the occlusal surfaces of the teeth

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** The cusp of Carabelli is most commonly found on which tooth?

**Answer:** Maxillary first molar

**Question:** Which tooth has a lingual pit?

**Answer:** Maxillary lateral incisor

**Question:** What is the occlusal relationship termed when the lower molar mesiobuccal cusp is positioned in the buccal groove of the upper molar?

**Answer:** Class I occlusion

**Question:** Which of the following premolars often has a bifurcated root system?

**Answer:** Maxillary first premolar

**Question:** The distal contact area of a maxillary lateral incisor is typically located at which of the following positions?

**Answer:** At the junction of the incisal and middle third

**Question:** In which of the following teeth is a transverse ridge formed by the union of a buccal and a lingual cusp?

**Answer:** Mandibular first premolar

**Question:** What is the term for the occlusal scheme where each tooth in the arch contacts two opposing teeth with the exception of the molars?

**Answer:** Mutually protected occlusion

**Question:** The mesiolingual cusp of the maxillary first molar occludes with which of the following structures?

**Answer:** Groove between mandibular first and second molars

**Question:** Which of the following characteristics is typical of mandibular second molars?

**Answer:** Four cusps

**Question:** Which of the following permanent teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** The primary molar that most resembles a permanent molar in form is the:

**Answer:** Mandibular second primary molar

**Question:** Which cusp is the largest and most well-developed on the mandibular first molar?

**Answer:** Mesiofacial

**Question:** In which quadrant and on which tooth is the cusp of Carabelli found?

**Answer:** Maxillary first molar

**Question:** Which of the following best describes the occlusal surface of maxillary first premolars?

**Answer:** Has a mesial and a distal pit

**Question:** What is the characteristic number of pulp canals in a mandibular second premolar?

**Answer:** It varies significantly

**Question:** The occlusal pattern of which tooth is described as having a cross shape with a central pit?

**Answer:** Permanent mandibular first molar

**Question:** Which of the following teeth is most likely to have a lingual groove?

**Answer:** Maxillary canine

**Question:** The term 'Leeway space' refers to:

**Answer:** The difference in combined width between primary canines and molars versus permanent canines and premolars

**Question:** What is the primary distinguishing feature of mandibular first premolars when seen from the occlusal view?

**Answer:** Mesial marginal ridge is more cervical than the distal

**Question:** Which of the following teeth has a root that is most commonly bifurcated?

**Answer:** Maxillary first premolar

**Question:** Which tooth is considered to be succedaneous?

**Answer:** Mandibular second premolar

**Question:** The cusp of Carabelli is most commonly found on which tooth?

**Answer:** Maxillary first molar

**Question:** In terms of occlusion, what is the term used to describe the maximum contact between the occluding surfaces of the maxillary and mandibular teeth?

**Answer:** Centric occlusion

**Question:** What is the unique feature of the mandibular central incisor when viewed incisally?

**Answer:** Symmetrical crown

**Question:** Which tooth has a mesial drift?

**Answer:** Mandibular molars

**Question:** How many roots do most maxillary molars have?

**Answer:** Three



**Question:** Which of the following characteristics is most likely found on a maxillary central incisor?

**Answer:** A pronounced lingual fossa

**Question:** Which of the following permanent teeth typically has a single root and a single canal?

**Answer:** Mandibular first premolar

**Question:** The mesiobuccal cusp of the maxillary first molar occludes with which of the following structures?

**Answer:** The mesiobuccal groove of the mandibular first molar

**Question:** Which tooth is considered the cornerstone of the dental arch due to its morphology and position?

**Answer:** Mandibular first molar

**Question:** The cingulum of which tooth is displaced toward the distal?

**Answer:** Maxillary lateral incisor

**Question:** Which of the following teeth has a root that is commonly bifurcated?

**Answer:** Maxillary second premolar

**Question:** In which direction does the mandibular lateral movement occur during lateral excursive movement?

**Answer:** Toward the non-working (balancing) side

**Question:** A distinguishing feature of a mandibular second molar from a mandibular first molar is:

**Answer:** Four cusps

**Question:** Anterior guidance is characterized by which of the following?

**Answer:** Disclusion of posterior teeth in a protrusive movement

**Question:** Which of the following permanent teeth usually has two roots?

**Answer:** Maxillary first premolar

**Question:** The cusp of Carabelli is typically found on which tooth?

**Answer:** Maxillary first molar

**Question:** Which of the following teeth usually has a single root?

**Answer:** Mandibular canine

**Question:** Mesiobuccal cusp of the maxillary first molar occludes with which groove of the mandibular first molar?

**Answer:** Mesial groove

**Question:** Which of the following landmarks is a guide for the occlusal plane of posterior teeth during denture fabrication?

**Answer:** Retromolar pad

**Question:** In centric occlusion, the lingual cusp of the maxillary first premolar occludes with which of the following?

**Answer:** Distal fossa of the mandibular first premolar

**Question:** What is the primary antagonist tooth to the maxillary central incisor during lateral movements?

**Answer:** Mandibular canine

**Question:** What feature is most unique to primary dentition compared to permanent dentition?

**Answer:** Prominent buccal and lingual pulp horns

**Question:** The maxillary lateral incisors are articulated such that their distal contacts are more cervical than their mesial contacts. This characteristic:

**Answer:** Facilitates self-cleaning of the teeth

**Question:** Which of the following permanent teeth usually has two roots and two canals?

**Answer:** Maxillary first premolar

**Question:** The primary center of ossification for the mandible is located in which area?

**Answer:** Mandibular symphysis

**Question:** Which cusps of the mandibular first molar are the largest and longest?

**Answer:** Mesio-buccal and distobuccal

**Question:** In permanent dentition, which tooth is the first to erupt?

**Answer:** Mandibular central incisor

**Question:** The occlusal surface of the maxillary first premolar typically features which of the following?

**Answer:** Two cusps

**Question:** Which of the following teeth generally has a single root?

**Answer:** Mandibular second premolar

**Question:** The Hertwig's epithelial root sheath is instrumental in the development of what aspect of the tooth?

**Answer:** Cementum

**Question:** Which of the following teeth typically exhibits a cusp of Carabelli?

**Answer:** Maxillary first molar

**Question:** What is the usual sequence of eruption for the permanent mandibular teeth on one side?

**Answer:** Central incisor, lateral incisor, first molar, canine, first premolar, second premolar, second molar

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** The cusp of Carabelli is found on which tooth?

**Answer:** Maxillary first molar

**Question:** Which of the following is the primary antagonist tooth of the maxillary right first molar?

**Answer:** Mandibular left first molar

**Question:** The mesiolingual cusp of the maxillary first molar occludes with the:

**Answer:** Mesial fossa of the mandibular first molar.

**Question:** In Angle's classification, class II division 2 malocclusion is characterized by:

**Answer:** Distocclusion of the molar teeth with retroclined upper incisors.

**Question:** Which of the following permanent teeth normally erupts first?

**Answer:** Mandibular first molar

**Question:** What is the function of the oblique ridge found in upper molars?

**Answer:** Connects the mesiolingual to the distobuccal cusps

**Question:** The predominant movement during mastication in the mandible is:

**Answer:** Rotational on a longitudinal axis

**Question:** Which of the following teeth has a non-succedaneous predecessor?

**Answer:** Maxillary first molar

**Question:** Which of the following is typically the first primary tooth to erupt?

**Answer:** Mandibular central incisor

**Question:** Which cusp is the largest on the mandibular first molar?

**Answer:** Mesiofacial

**Question:** In permanent dentition, which tooth has a non-functional lingual cusp?

**Answer:** Mandibular first premolar

**Question:** The point angle that is formed by the junction of the mesial, occlusal, and buccal surfaces is known as:

**Answer:** Mesio-occluso-buccal angle

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** Which tooth usually has a mesial drift?

**Answer:** Mandibular central incisor

**Question:** The primary function of the incisors is:

**Answer:** Cutting

**Question:** Which of the following is a key feature of occlusal harmony?

**Answer:** All teeth contact simultaneously in centric occlusion

**Question:** The curve of Spee is:

**Answer:** An anteroposterior curvature viewed from the buccal aspect

**Question:** Which tooth has a nonfunctional lingual cusp?

**Answer:** Mandibular first premolar

**Question:** The primary maxillary second molar resembles which permanent tooth?

**Answer:** Permanent maxillary first molar

**Question:** Which of the following is the correct sequence of eruption for permanent teeth?

**Answer:** Incisors, premolars, canines, molars

**Question:** In which of the following teeth is a cingulum most prominent?

**Answer:** Maxillary canine

**Question:** Which tooth is most likely to have a bifurcated root?

**Answer:** Maxillary first premolar

**Question:** Which of the following teeth typically has two roots?

**Answer:** Mandibular first molar

**Question:** The distoincisor angle of which tooth is more rounded than the mesioincisor angle?

**Answer:** Maxillary central incisor

**Question:** Which molar is most likely to have a fifth cusp?

**Answer:** Maxillary first molar

**Question:** What is the primary occlusal characteristic of primary dentition?

**Answer:** Flush terminal plane

**Question:** Which permanent teeth replace the primary second molars?

**Answer:** First molars

**Question:** In the universal numbering system, which tooth is designated as tooth number 3?

**Answer:** Maxillary right first molar

**Question:** What cusp of the maxillary first molar occludes with the developmental groove of the mandibular first molar?

**Answer:** Mesiolingual

**Question:** Which of the following teeth typically have two roots?

**Answer:** Mandibular first premolars

**Question:** The occlusal surface of permanent molars exhibits how many developmental grooves?

**Answer:** Four or more primary grooves

**Question:** Which of the following is NOT a characteristic of the mandibular central incisor?

**Answer:** It has a mesial and distal pit

**Question:** The primary function of the canines is:

**Answer:** Grasping

**Question:** Which tooth has a prominent cusp of Carabelli?

**Answer:** Maxillary first molar

**Question:** Interproximal wear facets are most commonly found between:

**Answer:** Maxillary lateral incisors and canines

**Question:** The mesial step, straight plane, and distal step refer to which aspect of dental development?

**Answer:** Molar relationship in primary dentition

**Question:** Which of the following teeth has a mesial surface that is concave?

**Answer:** Maxillary first premolar

**Question:** The primary center of calcification for the mandibular first molar appears at what age?

**Answer:** 6 months

**Question:** Which cusp of the mandibular first molar is the largest and longest?

**Answer:** Mesiofacial

**Question:** In the Universal Numbering System, which tooth is designated as number 3?

**Answer:** Maxillary right first molar

**Question:** Which of the following characterizes the occlusal morphology of a mandibular second premolar with 3 cusps?

**Answer:** One buccal and two lingual cusps

**Question:** The contact area located most cervical (towards the root) on the maxillary lateral incisor is on the:

**Answer:** Distal surface

**Question:** Which tooth typically has a root with two canals distally?

**Answer:** Mandibular second molar

**Question:** What is the occlusal pattern of the permanent maxillary first molar?

**Answer:** Rhomboidal

**Question:** Which tooth is the largest anterior tooth?

**Answer:** Maxillary central incisor

**Question:** At what age does the first permanent molar usually erupt?

**Answer:** 6 years

**Question:** The occlusal surface of mandibular first molars usually has how many cusps?

**Answer:** 5

**Question:** Which tooth has a cusp of Carabelli?

**Answer:** Maxillary first molar

**Question:** In which direction does the mandibular lateral incisor's incisal edge slope?

**Answer:** Mesially

**Question:** The distoincisor angle of which tooth is more rounded?

**Answer:** Mandibular lateral incisor

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** In permanent dentition, which teeth are succedaneous?

**Answer:** Canines and incisors

**Question:** What is the characteristic feature of the occlusal anatomy of maxillary first premolars?

**Answer:** Mesial and distal transverse ridges

**Question:** Which of the following teeth typically has two roots?

**Answer:** Maxillary first premolar

**Question:** The occlusal surface of which tooth has a prominent mesial marginal ridge?

**Answer:** Maxillary first molar

**Question:** What cusp of the mandibular first molar is the largest and longest?

**Answer:** Mesiofacial

**Question:** In permanent dentition, which tooth is the first to erupt?

**Answer:** Mandibular central incisor

**Question:** The transverse ridge in a maxillary molar is formed by the union of which two ridges?

**Answer:** Anterior triangular ridge and posterior triangular ridge

**Question:** Which of the following teeth usually has a bifurcated root system?

**Answer:** Maxillary first premolar

**Question:** The angle formed by the junction of the crown and the root is known as which of the following?

**Answer:** Cemento-enamel junction (CEJ)

**Question:** The cusp of Carabelli is most commonly found on which tooth?

**Answer:** Maxillary first molar

**Question:** What feature distinguishes the anterior teeth from the posterior?

**Answer:** All of the above