HISTO CNS MCQ

1. Which of the following structures is absent in the axon?
A) Mitochondria
B) Neurofibrils
C) Microtubules
D) Nissl granules
E) Axon hillock
Correct answer: D) Nissl granules

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2. Which of the following inclusions in the neuron increases in old age?
A) Melanin pigments
B) Glycogen granules
C) Fat droplets
D) Lipofuscin pigments
E) Neurofibrils
Correct answer: D) Lipofuscin pigments

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3. What is the function of Nissl granules?
A) Conduct impulses
B) Form myelin
C) Synthesize proteins for nerve cells
D) Regulate calcium levels
E) Repair damaged axons
Correct answer: C) Synthesize proteins for nerve cells

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4. What is the function of neurofibrils?
A) Store glycogen
B) Transmit nerve impulses and maintain neuron shape
C) Regulate gene expression
D) Myelinate axons
E) Absorb neurotransmitters
Correct answer: B) Transmit nerve impulses and maintain neuron shape

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5. Which of the following correctly describes the axon?
A) Multiple per neuron, thick and short
B) Contains Nissl granules and transmits impulses to the cell body
C) Single, thin and long, constant diameter
D) Ends in dendritic spines
E) Gradually tapering in diameter
Correct answer: C) Single, thin and long, constant diameter

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6. What type of conduction is carried out by dendrites?
A) Axonal conduction
B) Saltatory conduction
C) Retrograde conduction
D) Centrifugal conduction
E) Centripetal conduction
Correct answer: E) Centripetal conduction

1. Which of the following neurons is found in the spinal ganglia?
A) Unipolar
B) Bipolar
C) Pyramidal
D) Pseudounipolar
E) Multipolar
Correct answer: D) Pseudounipolar

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2. Which neuron type is found in the retina of the eye?
A) Unipolar
B) Pseudounipolar
C) Bipolar
D) Multipolar
E) Stellate
Correct answer: C) Bipolar

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3. Which of the following is a feature of multipolar nerve cells?
A) One dendrite and no axon
B) One dendrite and one axon

C) Many axons and one dendrite
D) Many dendrites and one axon
E) No processes
Correct answer: D) Many dendrites and one axon

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4. The axoplasm contains all of the following except:
A) Neurotubules
B) Mitochondria
C) Neurofilaments
D) Nissl granules
E) Axolemma
Correct answer: D) Nissl granules

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5. Nodes of Ranvier refer to:
A) Gaps between adjacent neurons
B) Nuclei in the CNS
C) Internodal segments of glial cells
D) Constrictions between myelin segments
E) Synaptic vesicles
Correct answer: D) Constrictions between myelin segments

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6. In the CNS, the myelin sheath is formed by:
A) Astrocytes
B) Schwann cells
C) Satellite cells
D) Microglia
E) Oligodendroglia
Correct answer: E) Oligodendroglia

1. What is the main function of the myelin sheath?
A) Generate neurotransmitters
B) Digest cellular debris
C) Insulate nerve impulses
D) Produce cerebrospinal fluid

E) Maintain ionic balance
Correct answer: C) Insulate nerve impulses

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2. The neurolemmal sheath (Schwann cells) plays an important role in:
A) Forming synapses
B) Transmitting hormones
C) Regenerating peripheral nerves after injury
D) Activating microglia
E) Absorbing calcium
Correct answer: C) Regenerating peripheral nerves after injury

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3. Which of the following is considered a "naked fiber"?
A) Optic nerve fibers
B) Peripheral nerves with myelin
C) Sympathetic nerve fibers
D) Fibers in the gray matter
E) Spinal cord tracts
Correct answer: D) Fibers in the gray matter

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4. Nerve fibers in the white matter and optic nerve are:
A) Non-myelinated with neurolemma
B) Naked
C) Myelinated without neurolemma
D) Unipolar
E) Pseudounipolar
Correct answer: C) Myelinated without neurolemma

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5. In osmium acid–stained sections, the myelin sheath appears as:
A) Empty spaces
B) Red granules
C) Black circles
D) Pink rings
E) Blue lines
Correct answer: C) Black circles

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6. Which connective tissue layer surrounds individual nerve fibers?
A) Epineurium
B) Perineurium
C) Endoneurium (Henle's sheath)
D) Mesoneurium
E) Neurolemma
Correct answer: C) Endoneurium (Henle's sheath)

1. The type of nerve cell found in the spinal (dorsal root) ganglion is:
A) Bipolar
B) Multipolar
C) Unipolar
D) Pseudounipolar
E) Apolar
Correct answer: D) Pseudounipolar

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2. Which statement about sympathetic ganglion nerve cells is correct?
A) They are pseudounipolar
B) They have large pale cells with fine Nissl granules
C) They are arranged in rows
D) They are multipolar and uniformly small
E) They have central nuclei
Correct answer: D) They are multipolar and uniformly small

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3. Satellite cells in the spinal ganglion:
A) Are absent
B) Are scattered randomly
C) Form an incomplete capsule
D) Are few in number
E) Are numerous and form a complete capsule
Correct answer: E) Are numerous and form a complete capsule

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4. The nerve fibers in the sympathetic ganglion are typically:
A) Thick and myelinated
B) Parallel and large

C) Unmyelinated and irregularly distributed
D) Absent
E) Arranged in bundles
Correct answer: C) Unmyelinated and irregularly distributed

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5. Which type of neuroglia forms the cerebrospinal fluid (CSF)?
A) Astrocytes
B) Schwann cells
C) Satellite cells
D) Ependymal cells
E) Microglia
Correct answer: D) Ependymal cells

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6. Which neuroglial cell type surrounds neurons of the hypothalamus?
A) Schwann cells
B) Oligodendroglia
C) Microglia
D) Ependymal cells
E) Tanycyte cells
Correct answer: E) Tanycyte cells

1. How many segments is the spinal cord divided into?
A) 28
B) 30
C) 31
D) 33
E) 35
Correct answer: C) 31

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2. The dorsal (posterior) root of a spinal nerve contains:
A) Motor neurons
B) Blood vessels
C) Interneurons
D) Sensory neurons
E) Autonomic neurons
Correct answer: D) Sensory neurons

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3. Which of the following contains only ascending tracts?
A) Ventral white column
B) Lateral white column
C) Dorsal white column
D) Gray matter
E) Spinal nerve
Correct answer: C) Dorsal white column

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4. The ventral (anterior) horn of the spinal cord gray matter contains:
A) Sensory neurons
B) Interneurons
C) Autonomic neurons
D) Lower motor neurons
E) Glial cells
Correct answer: D) Lower motor neurons

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5. Which part of the spinal cord gray matter is found only in thoracic and upper lumbar segments (T1–L2/L3)?
A) Dorsal horn
B) Anterior horn
C) Lateral horn
D) Gray commissure
E) Central canal
Correct answer: C) Lateral horn

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6. Histologically, white matter of the spinal cord is mainly composed of:
A) Motor neurons and glial cells
B) Interneurons and astrocytes
C) Neuroglia only
D) Ascending and descending nerve fibers forming tracts
E) Satellite cells and microglia
Correct answer: D) Ascending and descending nerve fibers forming tracts

1. Which of the following is not one of the dorsal horn nuclei?
A) Substantia gelatinosa of Rolando

B) Clarke's nucleus
C) Sympathetic nucleus
D) Marginal nucleus
E) Main sensory nucleus
Correct answer: C) Sympathetic nucleus

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2. The lateral horn contains which of the following nuclei?
A) Clarke's nucleus
B) Marginal nucleus
C) Parasympathetic nucleus
D) Substantia gelatinosa
E) Central nucleus
Correct answer: C) Parasympathetic nucleus

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3. Which tract carries pain and temperature sensation?
A) Spinocerebellar tract
B) Gracile tract
C) Lissauer's tract
D) Cuneate tract
E) Gamma-shaped tract
Correct answer: C) Lissauer's tract

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4. The ventral horn nuclei are divided into:
A) Posterior and anterior
B) Superior and inferior
C) Sensory and motor
D) Medial, lateral, and central
E) Dorsal, ventral, and intermediate
Correct answer: D) Medial, lateral, and central

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5. Which of the following ascending tracts carry sensations that are felt (reach the sensory cortex)?
A) Spinoolivary tract
B) Spinotectal tract
C) Lateral spinothalamic tract
D) Ventral spinocerebellar tract

E) Spinocerebellar tract
Correct answer: C) Lateral spinothalamic tract

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6. Which of the following tracts carry sensations that are not felt (do not reach cerebral cortex)?
A) Cuneate tract
B) Ventral spinothalamic tract
C) Gracile tract
D) Dorsal spinocerebellar tract
E) Lateral spinothalamic tract
Correct answer: D) Dorsal spinocerebellar tract

1. Which tract carries pain and temperature sensation from the opposite side of the body below the head?
A) Gracile tract
B) Spinotectal tract
C) Lateral spinothalamic tract
D) Ventral spinocerebellar tract
E) Cuneate tract
Correct answer: C) Lateral spinothalamic tract

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2. The Gracile tract carries which of the following?
A) Crude touch from the upper limb
B) Pain and temperature from the lower limb
C) Proprioception, fine touch, and vibration from the lower half of the body
D) Visual reflexes
E) Reflexes from the spinal cord
Correct answer: C) Proprioception, fine touch, and vibration from the lower half of the body

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3. Which tract is part of the spino-olivo-cerebellar pathway?
A) Ventral spinothalamic tract
B) Spinotectal tract
C) Spinoolivary tract
D) Gracile tract
E) Pyramidal tract
Correct answer: C) Spinoolivary tract

4. Conscious proprioception from the upper half of the body is carried by the:
A) Ventral spinocerebellar tract
B) Cuneate tract
C) Dorsal spinocerebellar tract
D) Spinoolivary tract
E) Lateral spinothalamic tract
Correct answer: B) Cuneate tract

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5. The pyramidal tract originates from the cerebral cortex and:
A) Ends in the cerebellum
B) Passes through the midbrain only
C) Occupies the pyramid of the medulla
D) Travels to the sensory cortex
E) Terminates at the dorsal horn
Correct answer: C) Occupies the pyramid of the medulla

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6. Which of the following is part of the extrapyramidal system?
A) Lateral spinothalamic tract
B) Pyramidal tract
C) Spinotectal tract
D) Tracts that descend outside the pyramid of the medulla
E) Tracts in the dorsal horn
Correct answer: D) Tracts that descend outside the pyramid of the medulla

1. Which of the following cell types is found in the molecular layer of the cerebral cortex?
A) Large pyramidal cells
B) Stellate cells
C) Fusiform cells
D) Horizontal cells of Cajal
E) Basket cells
Correct answer: D) Horizontal cells of Cajal

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2. Which layer of the cerebral cortex contains predominantly medium-sized pyramidal cells?
A) Outer granular layer
B) Inner granular layer
C) Outer pyramidal layer
D) Inner pyramidal layer
E) Multiform layer
Correct answer: C) Outer pyramidal layer

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3. What is the main cell type in the inner pyramidal (ganglionic) layer of the cerebral cortex?
A) Small pyramidal cells
B) Stellate cells
C) Medium pyramidal cells
D) Fusiform cells
E) Large pyramidal cells
Correct answer: E) Large pyramidal cells

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4. The pleomorphic (multiform) layer of the cerebral cortex contains:
A) Only basket cells
B) Only Purkinje cells
C) Fusiform and stellate (granular) cells
D) Large pyramidal cells
E) Only glial cells
Correct answer: C) Fusiform and stellate (granular) cells

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5. In the cerebellar cortex, which layer contains only Purkinje cells?
A) Molecular layer
B) Granular layer
C) Purkinje cell layer
D) Multiform layer
E) Ganglionic layer
Correct answer: C) Purkinje cell layer

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6. Which cells are found in the granular (nuclear) layer of the cerebellum?
A) Purkinje and basket cells

B) Golgi II cells and granular cells
C) Stellate and horizontal cells
D) Basket and fusiform cells
E) Axons of Purkinje cells
Correct answer: B) Golgi II cells and granular cells

1. What is the shape and arrangement of Purkinje (Golgi I) cells?
A) Small and star-shaped, scattered randomly
B) Large, pyriform, arranged in one row
C) Triangular and closely packed
D) Oval and in clusters
E) Round and layered
Correct answer: B) Large, pyriform, arranged in one row

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2. The dendrites of Purkinje cells fan out in the molecular layer and synapse with:
A) Mossy fibers only
B) Climbing fibers and axons of molecular and granular cells
C) Granular cell axons only
D) Basket cells
E) Golgi II cell axons
Correct answer: B) Climbing fibers and axons of molecular and granular cells

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3. What is the function of the dendrites of granular cells?
A) Send output to the spinal cord
B) Form cerebellar glomeruli with mossy fibers
C) Enter the white matter
D) Stimulate Purkinje axons
E) Wrap around basket cells
Correct answer: B) Form cerebellar glomeruli with mossy fibers

4. Which of the following describes the axon of Golgi II cells?
A) Enters the white matter

B) Forms cerebellar nuclei
C) Passes to the pyramidal tract
D) Short, branched, synapses with dendrites of granular cells
E) Connects to the vestibular nuclei
Correct answer: D) Short, branched, synapses with dendrites of granular cells

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5. What is the correct medial-to-lateral order of cerebellar nuclei?
A) Dentate → Fastigial → Embiliform → Globose
B) Fastigial → Globose → Embiliform → Dentate
C) Globose → Dentate → Embiliform → Fastigial
D) Embiliform → Fastigial → Dentate → Globose
E) Fastigial → Embiliform → Dentate → Globose
Correct answer: B) Fastigial → Globose → Embiliform → Dentate

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6. The axon of Purkinje cells terminates in:
A) Molecular layer
B) Golgi II cell dendrites
C) Deep cerebellar nuclei and vestibular nuclei
D) Cerebral cortex
E) Substantia nigra
Correct answer: C) Deep cerebellar nuclei and vestibular nuclei

Eye

1. Which of the following is the correct outermost to innermost order of corneal layers?
A) Epithelium → Substantia propria → Descemet's membrane → Bowman's membrane → Endothelium
B) Bowman's membrane → Epithelium → Substantia propria → Descemet's endothelium → Descemet's membrane
C) Epithelium → Bowman's membrane → Substantia propria → Descemet's membrane → Descemet's endothelium
D) Epithelium → Substantia propria → Descemet's membrane → Endothelium → Retina
E) Sclera → Bowman's membrane → Epithelium → Endothelium → Retina
Correct answer: C) Epithelium → Bowman's membrane → Substantia propria → Descemet's membrane → Descemet's endothelium

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2. Which corneal layer accounts for approximately 90% of its thickness?
A) Epithelium
B) Descemet's endothelium
C) Descemet's membrane
D) Substantia propria
E) Bowman's membrane
Correct answer: D) Substantia propria

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3. What is the main function of Bowman's membrane?
A) Produces aqueous humor
B) Supports the retina
C) Acts as a protective barrier against trauma and bacterial invasion
D) Regenerates corneal nerves
E) Produces tears
Correct answer: C) Acts as a protective barrier against trauma and bacterial invasion

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4. Descemet's endothelium is composed of:
A) Fibrocartilage
B) Cuboidal epithelium
C) Simple squamous epithelium
D) Pseudostratified columnar epithelium
E) Stratified squamous epithelium
Correct answer: C) Simple squamous epithelium

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5. Which of the following is NOT a cause of corneal transparency?
A) Absence of blood vessels
B) Continuous evaporation of water from its surface
C) Presence of pigmented epithelial cells
D) Same refractive index of matrix and cells
E) Regular arrangement of fibers in substantia propria
Correct answer: C) Presence of pigmented epithelial cells

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6. What happens when Bowman's membrane is destroyed?
A) It regenerates completely
B) It heals without scarring
C) It causes corneal opacity due to imperfect healing from underlying connective tissue

D) It is replaced by Descemet's membrane
E) It thickens and restores epithelium
Correct answer: C) It causes corneal opacity due to imperfect healing from underlying connective tissue

1. What is the main reason for the opacity of the sclera?
A) Presence of elastic fibers
B) Dense vascularization
C) Regular arrangement of collagen fibers
D) Great amount of water and irregular fiber arrangement
E) Lack of epithelial covering
Correct answer: D) Great amount of water and irregular fiber arrangement

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2. The white opaque posterior 5/6 of the eye is formed by the:
A) Cornea
B) Choroid
C) Retina
D) Sclera
E) Ciliary body
Correct answer: D) Sclera

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3. Which layer of the choroid is in contact with the retina and limits the access of macromolecules?
A) Suprachorioid layer
B) Bruch's membrane
C) Choriocapillaries
D) Lamina fusca
E) Pigmented epithelium
Correct answer: B) Bruch's membrane

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4. The epichoroid (suprachoroid) layer consists of:
A) A single layer of pigment cells only
B) Collagen and optic nerve endings
C) Loose connective tissue with melanocytes and ganglion cells
D) Stratified squamous epithelium
E) Only smooth muscle fibers
Correct answer: C) Loose connective tissue with melanocytes and ganglion cells

5. What is the function of the ciliary body?
A) Forms aqueous humor and provides retina support
B) Attaches the lens to the retina
C) Anchors the sclera to the cornea
D) Acts as a thickened ring in the anterior choroid and holds smooth muscle
E) Focuses sound in the middle ear
Correct answer: D) Acts as a thickened ring in the anterior choroid and holds smooth muscle

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6. The choriocapillaries layer is formed of:
A) Stratified cuboidal cells
B) Dense fibrous tissue
C) Fenestrated blood capillaries
D) Retinal pigmented cells
E) Unfenestrated sinusoids
Correct answer: C) Fenestrated blood capillaries

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1. What is the role of the ciliary body in vision?
A) Changes pupil shape only
B) Produces melanin for eye color
C) Responsible for accommodation of the lens to near and far objects
D) Connects iris to cornea
E) Regulates aqueous outflow only
Correct answer: C) Responsible for accommodation of the lens to near and far objects

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2. Contraction of ciliary muscle fibers causes the lens to:
A) Flatten and lose focus
B) Become convex and focus on near objects
C) Move backward to the retina
D) Rotate and dilate the pupil
E) Shrink and become transparent
Correct answer: B) Become convex and focus on near objects

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3. Which part of the eye contains a central adjustable aperture called the pupil?
A) Retina
B) Cornea
C) Lens
D) Iris
E) Ciliary body
Correct answer: D) Iris

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4. What is the main function of the constrictor pupillae muscle?
A) Produce aqueous humor
B) Dilate the pupil
C) Close the optic canal
D) Restrict the pupil size at the margin
E) Focus on far objects
Correct answer: D) Restrict the pupil size at the margin

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5. The posterior surface of the iris is covered by:
A) Fibrous capsule
B) One layer of retinal photoreceptors
C) Two layers of pigmented cuboidal epithelial cells
D) Non-pigmented squamous cells
E) Elastic lamina
Correct answer: C) Two layers of pigmented cuboidal epithelial cells

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6. Which muscle in the iris is made of myoepithelial cells and arranged radially?
A) Sphincter pupillae
B) Ciliary muscle
C) Constrictor pupillae
D) Dilator pupillae
E) Levator palpebrae
Correct answer: D) Dilator pupillae

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1. Which of the following conditions is associated with aging and the inability of the lens to change curvature?
A) Glaucoma

B) Cataract
C) Presbyopia
D) Astigmatism
E) Retinopathy
Correct answer: C) Presbyopia

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2. What type of epithelium covers the lens?
A) Stratified squamous epithelium
B) Cuboidal epithelium
C) Transitional epithelium
D) Columnar epithelium only
E) Pseudostratified epithelium
Correct answer: B) Cuboidal epithelium

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3. Which photoreceptor is absent at the fovea centralis?
A) Cone
B) Bipolar cell
C) Rod
D) Ganglion cell
E) Amacrine cell
Correct answer: C) Rod

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4. The outer nuclear layer of the retina contains:
A) Photopigments
B) Ganglion cells
C) Müller cells
D) Cell bodies of rod and cone cells
E) Synaptic end plates
Correct answer: D) Cell bodies of rod and cone cells

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5. The only photoreceptors found in the fovea centralis are:
A) Rods
B) Bipolar cells
C) Amacrine cells
D) Müller cells

E) Cones
Correct answer: E) Cones

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6. Which of the following cells are found in the inner nuclear layer of the retina?
A) Rods and cones
B) Ganglion cells
C) Müller cells and bipolar cells
D) Retinal pigment epithelial cells
E) Horizontal fibers
Correct answer: C) Müller cells and bipolar cells

1. The inner nuclear layer of the retina contains all of the following cell types EXCEPT:
A) Bipolar cells
B) Ganglion cells
C) Horizontal cells
D) Amacrine cells
E) Müller cells
Correct answer: B) Ganglion cells

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2. The ganglion cell layer of the retina is also known as the:
A) 1st order neuron layer
B) 2nd order neuron layer
C) 3rd order neuron layer
D) Outer limiting membrane
E) Pigment epithelium
Correct answer: C) 3rd order neuron layer

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3. The fornix of conjunctiva is located at the junction of:
A) Cornea and iris
B) Bulbar and palpebral conjunctiva
C) Cornea and sclera
D) Palpebral conjunctiva and tarsus
E) Iris and lens
Correct answer: B) Bulbar and palpebral conjunctiva

4. What type of epithelium lines the fornix of the conjunctiva?
A) Stratified squamous without goblet cells
B) Simple cuboidal
C) Stratified columnar with goblet cells
D) Pseudostratified ciliated
E) Transitional epithelium
Correct answer: C) Stratified columnar with goblet cells

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5. A stye is caused by infection of:
A) Conjunctival blood vessels
B) Lacrimal gland
C) Goblet cells
D) Gland of Moll or Zeis
E) Meibomian gland only
Correct answer: D) Gland of Moll or Zeis

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6. Which structure is NOT part of the histological layers of the eyelid from front to back?
A) Skin
B) Sclera
C) Skeletal muscle (orbicularis oculi)
D) Tarsus
E) Palpebral conjunctiva
Correct answer: B) Sclera

Ear

1. What is the function of the auricle?
A) Produces cerumen
B) Transmits vibrations to the cochlea
C) Filters dust from the air
D) Collects sound waves and directs them to the external auditory meatus
E) Equalizes pressure between ears
Correct answer: D) Collects sound waves and directs them to the external auditory meatus

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2. What type of cartilage forms the auricle?
A) Hyaline cartilage
B) Fibrocartilage
C) Elastic fibro-cartilage (yellow)
D) Reticular cartilage
E) Spongy bone
Correct answer: C) Elastic fibro-cartilage (yellow)

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3. What are the two fiber layers of the tympanic membrane?
A) Longitudinal and transverse
B) Circular and diagonal
C) Outer radial and inner circular
D) Horizontal and vertical
E) Elastic and collagenous
Correct answer: C) Outer radial and inner circular

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4. What lines the internal surface of the tympanic membrane?
A) Stratified squamous epithelium
B) Transitional epithelium
C) Simple cuboidal epithelium
D) Simple columnar epithelium
E) Simple cubical epithelium
Correct answer: E) Simple cubical epithelium

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5. Which ossicle is directly connected to the tympanic membrane?
A) Incus
B) Stapes

C) Malleus
D) Cochlea
E) Tensor tympani
Correct answer: C) Malleus

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6. What is the function of the Eustachian tube?
A) Transmit sound from the middle ear to the brain
B) Transport fluid between ear and throat
C) Equalize air pressure between middle ear and nasopharynx
D) Support the ossicles
E) Transfer vibrations to the cochlea
Correct answer: C) Equalize air pressure between middle ear and nasopharynx

1. What type of fluid fills the membranous labyrinth?
A) Perilymph
B) Cerebrospinal fluid
C) Synovial fluid
D) Endolymph
E) Plasma
Correct answer: D) Endolymph

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2. The crista ampullaris is found in which part of the inner ear?
A) Cochlea
B) Utricle
C) Saccule
D) Semicircular canals
E) Vestibular duct
Correct answer: D) Semicircular canals

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3. What is the function of the crista ampullaris?
A) Detect changes in sound frequency
B) Maintain intraocular pressure
C) Regulate eye blinking
D) Detect head movements and regulate body position
E) Transmit sound to cochlea
Correct answer: D) Detect head movements and regulate body position

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4. The bony labyrinth is filled with:
A) Endolymph
B) Mucus
C) Blood
D) Perilymph
E) Electrolytes only
Correct answer: D) Perilymph

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5. What are the two membranous structures found in the vestibule?
A) Cochlea and utricle
B) Semicircular canals and cochlea
C) Crista ampullaris and ampulla
D) Utricle and saccule
E) Oval and round windows
Correct answer: D) Utricle and saccule

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6. The macula sacculi is found in which structure?
A) Semicircular canal
B) Cochlear duct
C) Utricle
D) Saccule
E) Ampulla
Correct answer: D) Saccule

1. The cochlear duct (scala media) contains:
A) Perilymph and vestibular nerve endings
B) Endolymph and Organ of Corti
C) Crista ampullaris and otoliths
D) Spiral ganglia and cerumen
E) Air and ossicles
Correct answer: B) Endolymph and Organ of Corti

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2. Which structure divides the cochlea into three compartments?
A) Semicircular canals
B) Vestibular nerve

C) Vestibular and basilar membranes
D) Tympanic membrane
E) Spiral ligament and Modiolus
Correct answer: C) Vestibular and basilar membranes

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3. The triangular space formed between pillar cells and the basilar membrane is called:
A) Cochlear window
B) Spiral ligament
C) Tunnel of Corti
D) Scala tympani
E) Modiolus
Correct answer: C) Tunnel of Corti

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4. The outer hair cells in the Organ of Corti:
A) Are found in the spiral ganglion
B) Are arranged in a single row
C) Have motile flagella
D) Are arranged in 3–5 rows and possess stereocilia
E) Synapse directly with the facial nerve
Correct answer: D) Are arranged in 3–5 rows and possess stereocilia

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5. The basal part of outer hair cells is surrounded by:
A) Perilymph fluid
B) Cochlear nuclei
C) Spiral ligament
D) Ends of bipolar nerve cells of spiral ganglia
E) Inner phalangeal cells
Correct answer: D) Ends of bipolar nerve cells of spiral ganglia

6. Which of the following is NOT a supporting cell in the Organ of Corti?
A) Inner and outer pillar cells
B) Inner and outer phalangeal cells
C) Cells of Claudius
D) Hair cells

E) Border cells
Correct answer: D) Hair cells

1. Which of the following receptors detects pain (nociception)?
A) Meissner's corpuscles
B) Merkel's disks
C) Free nerve endings
D) Pacinian corpuscles
E) Krause end bulbs
Correct answer: C) Free nerve endings

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2. Merkel's complex is primarily responsible for sensing:
A) Heat
B) Cold
C) Pain
D) Touch in the epidermis
E) Pressure in the hypodermis
Correct answer: D) Touch in the epidermis

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3. Which of the following is located in the reticular layer of the dermis?
A) Meissner's corpuscles
B) Merkel's disks
C) Pacinian and Ruffini corpuscles
D) Free nerve endings
E) Taste buds
Correct answer: C) Pacinian and Ruffini corpuscles

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4. The Pacinian corpuscle is most numerous in which of the following regions?
A) Eyelids and scalp
B) Lips and nose
C) Fingers and external genitalia
D) Retina and cochlea
E) Sclera and conjunctiva
Correct answer: C) Fingers and external genitalia

5. What is the distinctive histological appearance of the Pacinian corpuscle?
A) Honeycomb pattern
B) Star-shaped cell bodies
C) Onion-like concentric layers
D) Spindle-shaped neurons
E) Linear collagen bundles
Correct answer: C) Onion-like concentric layers

---

6. What is the function of the muscle spindle (neuro-muscular spindle)?
A) Pain reception
B) Auditory transduction
C) Receptor for kinesthesia (sense of movement and position)
D) Pressure detection in the dermis
E) Photoreceptor activity
Correct answer: C) Receptor for kinesthesia (sense of movement and position)

1. What is the primary function of the muscle spindle?
A) Heat regulation in skeletal muscles
B) Contraction of tendons
C) Receptor for kinesthesia and reflex control of muscle tone
D) Enhancing blood supply to muscles
E) Production of neurotransmitters
Correct answer: C) Receptor for kinesthesia and reflex control of muscle tone

---

2. Where are muscle spindles most commonly found?
A) In the smooth muscles of the gut
B) Between striated muscle fibers near their insertion
C) Inside tendons only
D) In the dermal layer of skin
E) Along bone marrow cavities
Correct answer: B) Between striated muscle fibers near their insertion

---

3. The capsule of the muscle spindle is made of:
A) Skeletal muscle
B) Cartilage
C) Reticular tissue

D) Stretchable connective tissue
E) Smooth muscle
Correct answer: D) Stretchable connective tissue

---

4. Which of the following describes nuclear bag fibers?
A) Thinner and shorter, with a chain of nuclei
B) Thicker and longer, with an expanded central part containing a bag of nuclei
C) Abundant and contractile throughout
D) Contain striated muscle myofibrils only
E) Same size as chain fibers but lack nuclei
Correct answer: B) Thicker and longer, with an expanded central part containing a bag of nuclei

---

5. What is the difference between nuclear chain fibers and bag fibers?
A) Chain fibers are thicker and longer
B) Bag fibers are fewer and have a chain of nuclei
C) Chain fibers have an expanded central part
D) Chain fibers are more numerous and have a non-expanded central part with a chain of nuclei
E) Bag fibers do not contain nuclei
Correct answer: D) Chain fibers are more numerous and have a non-expanded central part with a chain of nuclei

---

6. The shape of a muscle spindle is:
A) Spherical
B) Cylindrical
C) Fusiform
D) Triangular
E) Oval
Correct answer: C) Fusiform

Micro CNS MNU

1. Which of the following is a common cause of epidemic meningitis?
A) Haemophilus influenzae type b

B) Streptococcus pneumoniae
C) Listeria monocytogenes
D) Neisseria meningitidis
E) Escherichia coli
Correct answer: D) Neisseria meningitidis

---

2. Chronic meningitis is typically caused by:
A) Encapsulated bacteria only
B) Viruses only
C) Mycobacteria or fungi
D) Food-borne pathogens
E) Droplet-transmitted pathogens
Correct answer: C) Mycobacteria or fungi

---

3. Which organism is commonly associated with acute purulent meningitis in neonates?
A) Neisseria gonorrhoeae
B) Mycobacterium tuberculosis
C) Group B Streptococci
D) Neisseria meningitidis
E) Cryptococcus neoformans
Correct answer: C) Group B Streptococci

---

4. All Neisseria species share which of the following features?
A) Spore forming, motile, glucose fermenters
B) Non-spore forming, oxidase negative
C) Oxidase positive, glucose and maltose fermenters
D) Oxidase positive, lactose fermenters
E) Spore forming and urease positive
Correct answer: C) Oxidase positive, glucose and maltose fermenters

---

5. Which bacteria is most likely to cause meningitis in both infants and older adults?
A) Vibrio cholerae
B) Escherichia coli
C) Streptococcus pneumoniae
D) Mycoplasma pneumoniae

E) Corynebacterium diphtheriae
Correct answer: C) Streptococcus pneumoniae

---

6. What is the shape and staining characteristic of Neisseria meningitidis?
A) Gram-positive cocci in clusters
B) Gram-negative rods
C) Gram-negative diplococci, kidney-shaped
D) Acid-fast bacilli
E) Gram-positive diplococci
Correct answer: C) Gram-negative diplococci, kidney-shaped

1. Neisseria meningitidis grows best on which of the following media?
A) Blood agar
B) MacConkey agar
C) Nutrient agar
D) Chocolate agar
E) Sabouraud's dextrose agar
Correct answer: D) Chocolate agar

---

2. Which virulence factor of Neisseria meningitidis is most important for resisting phagocytosis?
A) IgA protease
B) Endotoxin
C) Pili
D) Outer membrane protein
E) Polysaccharide capsule
Correct answer: E) Polysaccharide capsule

---

3. Which serogroups of Neisseria meningitidis are most associated with disease?
A) A, D, E, H, J
B) B, C, F, G, H
C) A, B, C, W-135, Y
D) A, E, K, M, Z

E) B, C, X, Y, Z
Correct answer: C) A, B, C, W-135, Y

---

4. What is the main antigenic difference in group B Neisseria meningitidis that makes vaccine development challenging?
A) It lacks pili
B) It has no outer membrane proteins
C) It mimics human brain antigens due to its sialic acid polymer
D) It produces no toxins
E) It resists growth on all media
Correct answer: C) It mimics human brain antigens due to its sialic acid polymer

---

5. Which of the following is NOT a typical CSF finding in acute bacterial meningitis?
A) Turbid appearance
B) Low glucose
C) High protein
D) Presence of polymorphonuclear cells
E) High glucose
Correct answer: E) High glucose

---

6. Which of the following is an appropriate sample for diagnosing meningococcal meningitis?
A) CSF only
B) Blood only
C) Nasal swab only
D) CSF, blood, skin lesions, and nasopharynx
E) Sputum
Correct answer: D) CSF, blood, skin lesions, and nasopharynx

1. Which of the following is a diagnostic microscopic finding in meningococcal meningitis using a direct smear?
A) Intracellular gram-positive cocci
B) Gram-negative rods in chains
C) Bean-shaped gram-negative diplococci inside and outside PMNs

D) Acid-fast bacilli
E) Spiral-shaped bacteria with terminal flagella
Correct answer: C) Bean-shaped gram-negative diplococci inside and outside PMNs

---

2. Neisseria meningitidis grows best in which environmental conditions?
A) Anaerobic, 25°C, dry air
B) 37°C, with 10% CO_2 and moist atmosphere
C) 42°C, in ambient air
D) Room temperature and high salt concentration
E) Cold enrichment at 4°C
Correct answer: B) 37°C, with 10% CO_2 and moist atmosphere

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3. Thayer-Martin media is used to isolate Neisseria meningitidis because it contains antibiotics that inhibit:
A) Only fungi
B) Only gram-positive cocci
C) Gram-positive, gram-negative, and fungal contaminants
D) Only gram-negative bacteria
E) Only viruses
Correct answer: C) Gram-positive, gram-negative, and fungal contaminants

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4. Which of the following sugar fermentation results confirms the presence of N. meningitidis?
A) Glucose only
B) Maltose only
C) Glucose and sucrose
D) Glucose and maltose
E) Lactose and glucose
Correct answer: D) Glucose and maltose

---

5. What is the purpose of latex agglutination in meningococcal meningitis diagnosis?
A) Detect bacterial toxins
B) Identify antibody levels
C) Detect N. meningitidis antigens in CSF
D) Confirm capsule morphology

E) Quantify bacterial load
Correct answer: C) Detect N. meningitidis antigens in CSF

---

6. Which drug is recommended for chemoprophylaxis in close contacts of meningococcal meningitis cases?
A) Amoxicillin
B) Metronidazole
C) Rifampicin
D) Erythromycin
E) Vancomycin
Correct answer: C) Rifampicin

1. What is the natural habitat of Listeria monocytogenes?
A. Only human respiratory tract
B. Only soil and water
C. Found in humans, animals, birds, fish, oysters & ticks
D. Only food products
E. Exclusive to hospital environments
Answer: C. Found in humans, animals, birds, fish, oysters & ticks

---

2. How is Listeria monocytogenes typically arranged under the microscope?
A. Diplococci
B. Spiral-shaped rods
C. Chains of Gram-negative rods
D. Short chains of small Gram-positive rods
E. Clusters of Gram-positive cocci
Answer: D. Short chains of small Gram-positive rods

---

3. Which of the following best describes the motility of Listeria monocytogenes?
A. Motile at 37°C with peritrichate flagella
B. Non-motile at any temperature
C. Motile at 22–25°C, but non-motile at 37°C
D. Motile only in the presence of oxygen

E. Motile in acidic medium only
Answer: C. Motile at 22–25°C, but non-motile at 37°C

---

4. On which medium does Listeria monocytogenes produce β-hemolysis?
A. Chocolate agar
B. MacConkey agar
C. Blood agar
D. Nutrient agar
E. Thayer-Martin medium
Answer: C. Blood agar

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5. What is the optimal growth temperature for Listeria monocytogenes?
A. 22–25°C
B. 28–30°C
C. 30–35°C
D. 37–39°C
E. Above 40°C
Answer: C. 30–35°C

---

6. What is significant about the growth of Listeria monocytogenes in terms of food safety?
A. Cannot grow at temperatures below 10°C
B. Only grows in dry conditions
C. Can grow slowly even at temperatures as low as 1°C
D. Requires sunlight for growth
E. Cannot survive refrigeration
Answer: C. Can grow slowly even at temperatures as low as 1°C

Q1. Which of the following tests is the most direct diagnostic method for Neisseria meningitidis in CSF?
a. Culture on ordinary media
b. Detection of antigen by ELISA
c. Detection of Gram-negative diplococci
d. Oxidase negative test

e. PCR for CSF
Answer: c. Detection of Gram-negative diplococci

Q2. Listeria monocytogenes is best identified on blood agar by:
a. Alpha hemolysis
b. Gamma hemolysis
c. No hemolysis
d. β-hemolysis
e. Double-zone hemolysis
Answer: d. β-hemolysis

Q3. Which statement about the morphology of Listeria monocytogenes is true?
a. Gram-negative rods with peritrichate flagella at 37°C
b. Gram-positive cocci with capsule
c. Gram-positive rods motile at room temperature
d. Gram-negative rods with bipolar staining
e. Acid-fast rods with spores
Answer: c. Gram-positive rods motile at room temperature

Q4. Which of the following enhances the growth of Neisseria meningitidis?
a. Anaerobic conditions
b. Temperature below 20°C
c. 10% carbon dioxide
d. Ordinary nutrient agar
e. Minimal moisture
Answer: c. 10% carbon dioxide

Q5. Which medium is selective for pathogenic Neisseria species?
a. MacConkey agar
b. Chocolate agar
c. Blood agar
d. Thayer-Martin medium
e. CLED agar
Answer: d. Thayer-Martin medium

Q6. Which of the following virulence factors is responsible for intracellular survival of Listeria monocytogenes?
a. Internalin
b. Listeriolysin O
c. Pili
d. Capsule
e. Endotoxin
Answer: b. Listeriolysin O

1. Which of the following is a characteristic virulence factor of Listeria monocytogenes that enables escape from the phagosome?
a. Listeriolysin O
b. Lipooligosaccharide
c. Beta-lactamase
d. Endotoxin A
e. Neuraminidase
Correct answer: a. Listeriolysin O

---

2. What is the most likely source of Listeria monocytogenes infection in elderly or immunocompromised individuals?
a. Contaminated water
b. Inhalation of spores
c. Refrigerated dairy or meat products
d. Mosquito bites
e. Soil dust
Correct answer: c. Refrigerated dairy or meat products

3. Which of the following statements about Listeria monocytogenes is FALSE?
a. It is a Gram-positive rod.
b. It can grow at 1°C in the refrigerator.
c. It produces alpha-hemolysis on blood agar.
d. It is motile at 22–25°C.
e. It is non-motile at 37°C.
Correct answer: c. It produces alpha-hemolysis on blood agar.
(Correct: It produces beta-hemolysis)

4. What is a key diagnostic feature of Neisseria meningitidis on Gram stain?
a. Gram-positive cocci in chains
b. Bean-shaped Gram-negative diplococci
c. Gram-positive rods in clusters
d. Gram-negative rods with terminal spores
e. Acid-fast bacilli
Correct answer: b. Bean-shaped Gram-negative diplococci

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5. Which medium is used to selectively isolate Neisseria meningitidis from clinical samples?
a. MacConkey agar
b. Blood agar
c. Chocolate agar
d. Thayer-Martin medium
e. Sabouraud's agar
Correct answer: d. Thayer-Martin medium

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6. Which test is used to rapidly diagnose Neisseria meningitidis in CSF, especially after starting antibiotics?
a. Ziehl-Neelsen stain
b. Oxidase test
c. Antigen detection via latex agglutination
d. Culture on nutrient agar
e. Urease test
Correct answer: c. Antigen detection via latex agglutination

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7. Which virus is NOT typically a cause of viral meningitis?
a. Echovirus
b. Coxsackievirus
c. HIV
d. Hepatitis B virus
e. HSV-2
Correct answer: d. Hepatitis B virus

---

8. Which of the following symptoms is more typical of viral meningitis compared to bacterial meningitis?
a. Rapid deterioration with coma
b. Persistent high fever with neck rigidity
c. Photophobia and muscle aches with milder symptoms
d. Petechial rash and hypotension
e. Cyanosis and respiratory failure
Correct answer: c. Photophobia and muscle aches with milder symptoms

Q1. Which of the following is the most common latency site for Herpes Simplex Virus type 1 (HSV-1)?
a. Sacral ganglia
b. Trigeminal ganglia
c. Dorsal root ganglia
d. Cranial nerve nuclei
e. Cervical ganglia
Correct answer: b. Trigeminal ganglia

Q2. Neonatal infection by HSV-2 is primarily acquired through:
a. Transplacental hematogenous spread
b. Breastfeeding
c. Contact with vesicular lesions in the birth canal
d. Inhalation of respiratory droplets
e. Sharing contaminated toys
Correct answer: c. Contact with vesicular lesions in the birth canal

Q3. Which of the following best describes the type of skin lesions associated with chickenpox?
a. Ulcerative lesions in dermatomal pattern
b. Maculopapular rash localized to extremities
c. Vesicular rash appearing in successive waves
d. Bullous lesions restricted to the trunk
e. Petechial rash with systemic toxicity
Correct answer: c. Vesicular rash appearing in successive waves

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Q4. Which of the following drugs is used for systemic Varicella-Zoster infection in immunocompromised patients?
a. Oseltamivir
b. Ganciclovir
c. Acyclovir
d. Amantadine
e. Zidovudine
Correct answer: c. Acyclovir

Q5. Which of the following statements about Varicella-Zoster vaccine is **correct**?
a. It prevents both varicella and zoster by eliminating latency
b. It is a killed vaccine given routinely to adults
c. It prevents varicella but not shingles due to latent virus
d. It should not be used in children under 12 years
e. It is used to treat acute chickenpox infection
Correct answer: c. It prevents varicella but not shingles due to latent virus

---

Q6. Post-herpetic neuralgia is a complication of which condition?
a. Primary varicella infection
b. Herpetic whitlow
c. Herpes labialis
d. Zoster (shingles)
e. Neonatal HSV infection
Correct answer: d. Zoster (shingles)

1. Which of the following is a common route of cytomegalovirus (CMV) transmission later in life?
a. Transplacental
b. Breast milk
c. Saliva
d. Amniotic fluid
e. Fecal-oral route
Answer: c. Saliva

---

2. What is the most common intrauterine viral infection?
a. Rubella
b. Cytomegalovirus
c. HSV-2
d. Varicella
e. Mumps
Answer: b. Cytomegalovirus

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3. Which cell types are sites of latency for CMV?
a. Neutrophils and dendritic cells
b. Monocytes, macrophages, and kidney
c. B cells and T cells
d. Hepatocytes and neurons
e. Keratinocytes and fibroblasts
Answer: b. Monocytes, macrophages, and kidney

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4. Which stain is used to detect CMV inclusion bodies (owl's eye appearance)?
a. Ziehl-Neelsen
b. India ink
c. Giemsa stain
d. Gram stain
e. PAS stain
Answer: c. Giemsa stain

5. Epstein-Barr virus primarily replicates in which tissue?
a. Bone marrow
b. Respiratory cilia
c. Hepatic tissue
d. Oropharyngeal epithelium
e. Intestinal mucosa
Answer: d. Oropharyngeal epithelium

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6. Which test detects heterophile antibodies in infectious mononucleosis?
a. Coombs test

b. Weil-Felix test
c. Paul-Bunnell test
d. Monospot test
e. VDRL test
Answer: d. Monospot test

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7. In Burkitt's lymphoma, EBV-infected cells are primarily:
a. CD8+ T lymphocytes
b. NK cells
c. Macrophages
d. B lymphocytes
e. Monocytes
Answer: d. B lymphocytes

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8. Which of the following viruses is transmitted via the respiratory route and primarily affects the salivary glands?
a. CMV
b. EBV
c. Varicella
d. Mumps
e. HSV-2
Answer: d. Mumps

9. What is the clinical hallmark of mumps virus infection?
a. Rose spots on abdomen
b. Parotid and submandibular gland swelling
c. Severe watery diarrhea
d. Retinal hemorrhages
e. Genital vesicular ulcers
Answer: b. Parotid and submandibular gland swelling

1. Which of the following is a recognized complication of mumps infection?
a. Encephalitis
b. Parotid carcinoma

c. Tonsillitis
d. Liver cirrhosis
e. Conjunctivitis
Correct answer: a

---

2. Which of the following is the most reliable laboratory method for confirming measles infection serologically?
a. Detection of IgG only
b. Staining with Ziehl-Neelsen
c. Positive IgM antibodies by ELISA
d. Blood smear for lymphocytosis
e. Detection of acid-fast bacilli
Correct answer: c

---

3. What is the common mode of transmission for mumps and measles viruses?
a. Fecal-oral route
b. Respiratory droplets
c. Skin contact
d. Blood transfusion
e. Sexual contact
Correct answer: b

4. What is the pathognomonic sign observed in the prodromal phase of measles?
a. Oral thrush
b. Maculopapular rash
c. Koplik's spots
d. Petechiae
e. Erythema multiforme
Correct answer: c

---

5. What is the characteristic feature of the rash in measles?
a. Vesicular with crusting
b. Blistering with necrosis
c. Non-pruritic petechial rash

d. Maculopapular rash spreading from head to trunk
e. Localized nodular rash
Correct answer: d

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6. Subacute sclerosing panencephalitis is a rare complication of which virus?
a. Varicella-zoster virus
b. Mumps virus
c. Rubella virus
d. Measles virus
e. Cytomegalovirus
Correct answer: d

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7. Which test is most commonly used to diagnose measles virus antibodies?
a. PCR
b. ELISA
c. Giemsa stain
d. Monospot test
e. Thayer-Martin culture
Correct answer: b

8. Which of the following organs is rarely affected in mumps-related complications?
a. Pancreas
b. Ovaries
c. Thyroid
d. Adrenal gland
e. Testes
Correct answer: d

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9. The MMR vaccine provides protection against which of the following viruses?
a. Measles, Mumps, and Rubella
b. Measles, Mumps, and Varicella
c. Measles, Rubella, and Polio
d. Mumps, Rubella, and Hepatitis B

e. Mumps, Measles, and Influenza
Correct answer: a

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10. What is the treatment for measles in most uncomplicated cases?
a. Acyclovir
b. Symptomatic treatment only
c. Ceftriaxone
d. Oseltamivir
e. Ribavirin
Correct answer: b

Q1. Which of the following is a fungal cause of encephalitis?
a) Measles virus
b) Treponema pallidum
c) Candida
d) HIV
e) Varicella-zoster virus
Answer: c) Candida

Q2. Which of the following viruses is classified under the **Flaviviridae** family and causes encephalitis?
a) Eastern equine encephalitis virus
b) West Nile virus
c) Rabies virus
d) Rubella virus
e) Varicella-zoster virus
Answer: b) West Nile virus

Q3. Which of the following statements about the rabies virus is CORRECT?
a) It has a DNA genome
b) It is bullet-shaped and positive-sense RNA
c) It has a non-enveloped capsid
d) It travels along sensory ganglia directly to muscles

e) It causes fatal encephalitis after CNS involvement
Answer: e) It causes fatal encephalitis after CNS involvement

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Q4. The detection of **Negri bodies** in brain tissue is pathognomonic for:
a) HSV-1 encephalitis
b) Rabies
c) Cryptococcal meningitis
d) Measles
e) CMV encephalitis
Answer: b) Rabies

Q5. The best **post-exposure prophylaxis** for severe rabies exposure includes:
a) Antibiotics and tetanus toxoid
b) Duck embryo vaccine only
c) Rabies vaccine + rabies immunoglobulin (IG)
d) HDC vaccine alone
e) No intervention is effective after exposure
Answer: c) Rabies vaccine + rabies immunoglobulin (IG)

Q6. Which of the following statements about human rabies vaccines is FALSE?
a) HDC vaccine is effective and safe
b) Duck embryo vaccine requires 21 injections
c) Nerve tissue vaccines are obtained from sheep or goat brains
d) All vaccines eliminate latent virus completely
e) Rabies vaccination is used in veterinary medicine as well
Answer: d) All vaccines eliminate latent virus completely

Q7. Which arbovirus causes **primary encephalitis** and is rare in Egypt due to cross-immunity with West Nile Fever?
a) La Crosse virus
b) Japanese encephalitis virus
c) Western equine encephalitis virus
d) Rubella virus

e) Measles virus
Answer: c) Western equine encephalitis virus

Q8. Which virus is known to have a **negative-sense ssRNA genome** and is associated with encephalitis?
a) HSV-2
b) Poliovirus
c) Rabies virus
d) Varicella-zoster virus
e) West Nile virus
Answer: c) Rabies virus

Q9. Which of the following viruses causes **secondary encephalitis** rather than primary?
a) La Crosse virus
b) Rabies virus
c) Measles virus
d) West Nile virus
e) Japanese encephalitis virus
Answer: c) Measles virus

Q10. Which fungal pathogen is **encapsulated** and associated with encephalitis, particularly in immunocompromised patients?
a) Aspergillus
b) Candida
c) Mucor
d) Cryptococcus
e) Penicillium
Answer: d) Cryptococcus

1. Which of the following fungal agents is an encapsulated yeast and a leading cause of fungal meningitis and encephalitis?
a) Candida albicans
b) Aspergillus fumigatus
c) Histoplasma capsulatum
d) Cryptococcus neoformans
e) Coccidioides immitis
Answer: d) Cryptococcus neoformans

2. Candida albicans is most commonly diagnosed by which of the following features?
a) Septated mycelium and conidial heads
b) Production of β-hemolysis on blood agar
c) Yeast cells with pseudohyphae formation
d) Detection of Negri bodies in CSF
e) Formation of spherules with endospores
Answer: c) Yeast cells with pseudohyphae formation

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3. Which of the following is the primary mode of transmission for Aspergillus species?
a) Sexual contact
b) Ingestion of contaminated food
c) Inhalation of spores from the environment
d) Direct skin contact with infected individuals
e) Vertical transmission from mother to fetus
Answer: c) Inhalation of spores from the environment

4. Which of the following culture media is most appropriate for fungal growth such as Candida or Aspergillus?
a) Chocolate agar
b) MacConkey agar
c) Blood agar
d) Sabouraud's dextrose agar (SDA)
e) Löwenstein–Jensen medium
Answer: d) Sabouraud's dextrose agar (SDA)

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5. A vaginal smear stained with lactophenol cotton blue reveals septated mycelia and Aspergillus head. Which diagnosis is most likely?
a) Histoplasmosis
b) Cryptococcosis
c) Candidiasis
d) Aspergillosis
e) Blastomycosis
Answer: d) Aspergillosis

6. What is the optimal incubation condition for fungal culture on SDA for Aspergillus diagnosis?
a) 42°C for 6 hours
b) Room temperature for 24–48 hours
c) 4°C for 7 days
d) 37°C for 15 minutes
e) 50°C for 3 hours
Answer: b) Room temperature for 24–48 hours

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7. Which of the following fungal infections is especially associated with hematological malignancies or organ transplant patients?
a) Candida albicans
b) Mucormycosis
c) Cryptococcus neoformans
d) Aspergillus fumigatus
e) Coccidioides immitis
Answer: d) Aspergillus fumigatus

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8. The presence of creamy white colonies on SDA and detection of pseudohyphae in serum germ tube test is diagnostic of:
a) Histoplasma capsulatum
b) Candida albicans
c) Aspergillus flavus
d) Mucor
e) Cryptococcus gattii
Answer: b) Candida albicans

Q1. Which of the following is the most common asexual reproductive method in Mucor species?
a. Binary fission
b. Budding
c. Fragmentation of hyphae
d. Production of zygospore
e. Production of spores

Correct answer: e. Production of spores

Q2. Which of the following is a key virulence factor of Mucorales fungi enabling rapid colonization of host tissue?
a. Hemagglutinin production
b. Capsule formation
c. Slow replication rate
d. Rapid growth
e. Endotoxin release

Correct answer: d. Rapid growth

Q3. Rhizopus species cause rhinocerebral mucormycosis by:
a. Spreading hematogenously from the lungs
b. Germinating in the nasal cavity and invading blood vessels
c. Multiplying in red blood cells
d. Colonizing alveoli only
e. Inducing immune complex vasculitis

Correct answer: b. Germinating in the nasal cavity and invading blood vessels

---

Q4. The clinical type of mucormycosis that involves infarction of the lung tissue is called:
a. Cutaneous mucormycosis
b. Gastrointestinal mucormycosis
c. Thoracic mucormycosis
d. Rhinocerebral mucormycosis
e. CNS mucormycosis

Correct answer: c. Thoracic mucormycosis

Q5. Which of the following is a direct examination finding suggestive of mucormycosis?
a. Septated narrow hyphae branching at acute angles
b. Gram-negative rods in clusters
c. Broad, non-septated hyphae with irregular branching
d. Cyst-like forms with central karyosome
e. Thick-walled spores only

Correct answer: c. Broad, non-septated hyphae with irregular branching

Q6. The characteristic appearance of Mucor colonies on culture is:
a. Black pinpoint colonies with green pigment
b. Shiny mucoid colonies
c. Hairy white-to-gray or black colonies
d. Pale pink flat colonies
e. Cottony white colonies with red center

Correct answer: c. Hairy white-to-gray or black colonies

Q7. In laboratory diagnosis of mucormycosis, culture is typically performed on:
a. Blood agar
b. MacConkey agar
c. Chocolate agar
d. Sabouraud's dextrose agar (SDA)
e. Lowenstein-Jensen medium

Correct answer: d. Sabouraud's dextrose agar (SDA)

Q8. Which histological structure is seen in mucormycosis?
a. Gram-positive cocci in clusters
b. Pseudohyphae with budding
c. Hyaline hyphae with sporangia and sporangiospores
d. Acid-fast bacilli in chains
e. Yeast cells with capsule

Correct answer: c. Hyaline hyphae with sporangia and sporangiospores