

LONG EXAM 6

ANATOMY

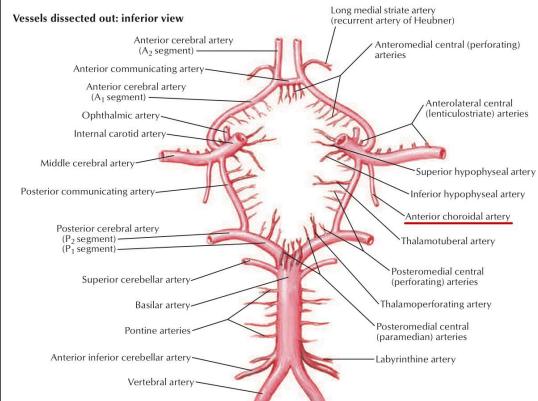
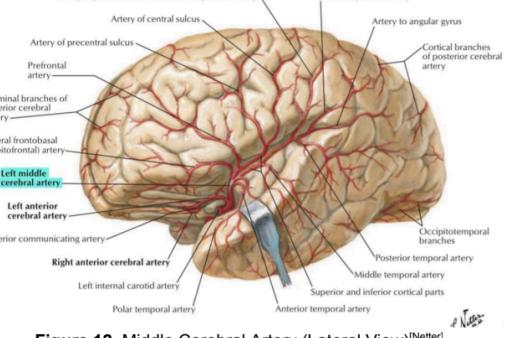
TOPICS: BLOOD SUPPLY OF THE BRAIN AND SPINAL CORD, GENERAL SOMATIC AFFERENT, PYRAMIDAL TRACTS, BASAL GANGLIA AND CEREBELLUM, OPTIC AND EXTRAOCULAR MOTOR PATHWAYS, AUDITORY AND VESTIBULAR PATHWAY, HYPOTHALAMUS AND LIMBIC SYSTEM, NEUROLOGICAL EXAMINATION

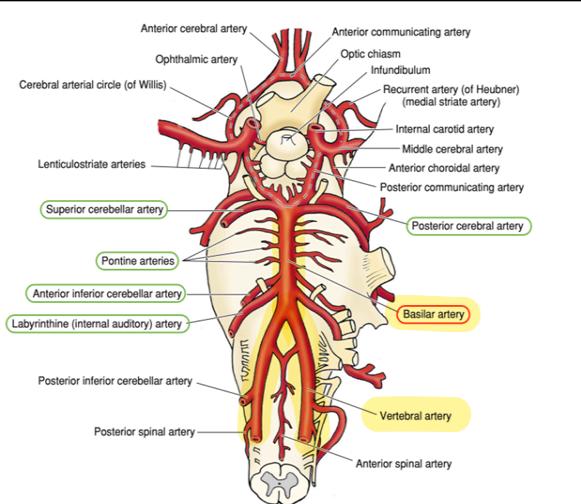
LEGEND

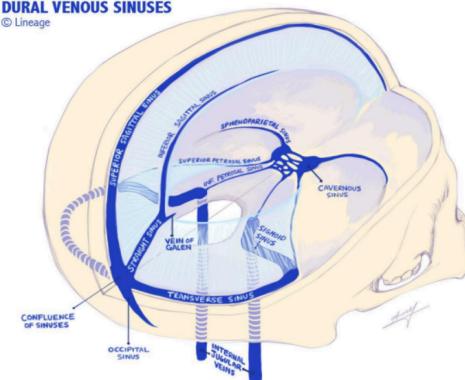
Ratio from 2026 Cuervo

Explanation from Book / Trans

Explanation from Prof

QUESTION	CHOICES	ANSWER & RATIONALE	
1. Which of the following arteries of the anterior circulation does not contribute to the circle of Willis?	A. Anterior choroidal a. B. Posterior cerebral a. C. Anterior communicating a. D. Anterior cerebral a.	A	 <p>Vessels dissected out: inferior view</p> <ul style="list-style-type: none"> Anterior cerebral artery (A_2 segment) Anterior communicating artery Ophthalmic artery Internal carotid artery Middle cerebral artery Posterior communicating artery Posterior cerebral artery (P_2 segment) (P_1 segment) Superior cerebellar artery Basilar artery Pontine arteries Anterior inferior cerebellar artery Vertebral artery Long medial striate artery (recurrent artery of Heubner) Anteromedial central (perforating) arteries Anterolateral central (lenticulostriate) arteries Superior hypophyseal artery Inferior hypophyseal artery Anterior choroidal artery Thalamotuberal artery Posteroventral central (perforating) arteries Thalamoperforating artery Posteroventral central (paramedian) arteries Labyrinthine artery <p>What comprises the Circle of Willis? 2 internal carotid arteries (ICA) 2 anterior cerebral arteries (ACA) 2 posterior cerebral arteries (PCA) Anteriorly: ACA (from the ICA) are linked by the small AComA Posteriorly: two PCA (from the basilar artery) are joined to the ipsilateral ICA by the small PComA The middle cerebral artery is NOT part of your circle of willis.</p>
2. Which of the following arteries runs along the Sylvian fissure?	A. Anterior cerebral artery B. Anterior communicating artery C. Middle cerebral artery D. Posterior communicating artery	C	 <p>MIDDLE CEREBRAL ARTERY (MCA)</p> <p>Artery of postcentral sulcus (anterior parietal artery) Artery of precentral sulcus Prefrontal artery Terminal branches of anterior cerebral artery Lateral frontobasal (orbitofrontal) artery Left middle cerebral artery Left anterior cerebral artery Anterior communicating artery Right anterior cerebral artery Left internal carotid artery Polar temporal artery Artery to angular gyrus Artery to angular gyrus Cortical branches of posterior cerebral artery Occipitotemporal branches Posterior temporal artery Superior and inferior cortical parts Middle temporal artery Anterior temporal artery</p> <p>Figure 12. Middle Cerebral Artery (Lateral View) [Netter]</p> <ul style="list-style-type: none"> Larger terminal branch of the ICA ! From the ICA, it runs in the lateral fissure then posterosuperiorly on the insula, dividing into superior and inferior branches exhibiting a fan-like distribution over the insula and the lateral surface of the cerebrum MCA does not participate in the formation of the Circle of Willis !
3. Weakness and sensory loss is experienced in the lower extremities, a lesion in which part of the cerebral cortex would MOST LIKELY MANIFEST?	A. Prefrontal gyrus B. Paracentral lobule C. Postcentral gyrus D. Precentral gyrus	B	<p>The paracentral lobule includes portions of both the primary motor cortex (precentral gyrus) and primary somatosensory cortex (postcentral gyrus) that represent the lower extremities. This region is located on the medial surface of the cerebral hemisphere, part of the frontal and parietal lobes, adjacent to the central sulcus.</p>

4. Which of the following arteries supply the calcarine fissure of the occipital lobe?	A. Basilar a. B. Posterior cerebral a. C. Posterior communicating a D. Superior cerebellar a.	B	<p>POSTERIOR CEREBRAL ARTERY (PCA)</p> <ul style="list-style-type: none"> Terminal branch of the Basilar Artery ! Separated from the superior artery near its origin by the oculomotor nerve (CN III) Curves laterally around the midbrain and is joined by the posterior communicating artery (PComA) to complete the Circle of Willis <p>Table 8. Branches of the PCA</p> <table border="1"> <thead> <tr> <th>Blood vessels</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Calcarine artery</td><td>Supplies the visual cortex</td></tr> <tr> <td>Temporal artery</td><td>Supplies the uncus, parahippocampal, and medial and lateral occipital temporal gyri</td></tr> <tr> <td>Occipital branches</td><td>Supplies the cuneus, lingual gyrus, and posterolateral surface of the occipital lobe</td></tr> <tr> <td>Parieto-occipital branches</td><td>Supplies the cuneus, and the precuneus</td></tr> </tbody> </table>	Blood vessels	Description	Calcarine artery	Supplies the visual cortex	Temporal artery	Supplies the uncus, parahippocampal, and medial and lateral occipital temporal gyri	Occipital branches	Supplies the cuneus, lingual gyrus, and posterolateral surface of the occipital lobe	Parieto-occipital branches	Supplies the cuneus, and the precuneus
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5. Which of the following statements are TRUE about Cerebral Veins?	A. They accompany the cerebral arteries B. They do not have muscular tissue in their walls C. They have valves to prevent backflow of blood D. They lie in the subdural space	B	<p>A. CEREBRAL VEINS</p> <p>★ Different from veins of the other parts of the body in that they:</p> <ul style="list-style-type: none"> Do not run along the course of the cerebral arteries Do not have muscular tissue in the thin walls Valveless <ul style="list-style-type: none"> Pierces the arachnoid layer to drain into the dural sinuses Divided into 2 subgroups: <ul style="list-style-type: none"> Superficial/External Cerebral Veins Deep/Internal Cerebral Veins 										
6. Which of the following arteries supplying the spinal cord arises from the union of 2 vertebral arteries?	A. Anterior cerebral B. Basilar C. Radicular D. Segmental Medullary	B	 <p>The basilar artery is formed by the union of the two vertebral arteries.</p>										
7. Metastasis of the abdominal and pelvic organ can spread through the brain through which of the following vessels?	A. Basilarvertebral vein B. External vertebral venous plexus C. Internal vertebral venous plexus D. Pial venous plexus	C	<p>The internal vertebral venous plexus, also known as Batson's plexus, is a network of valveless veins located within the vertebral column. This plexus provides a route for cancer cells to spread from the abdominal and pelvic organs to the brain, bypassing the traditional lymphatic and circulatory systems. The absence of valves in this venous system allows for bidirectional flow, facilitating the spread of metastases to the brain and other distant sites.</p>										
8. Which of the following structures of the spinal cord is supplied MAINLY by the central branch of the anterior spinal artery?	A. Dorsal horn B. Fasciculus gracilis C. Lateral funiculus D. Ventral horn	D	<p>Central/ Sulcal branches of the Anterior Spinal Artery penetrates the substance of the spinal cord through the anterior median fissure to supply about anterior two-thirds of the cross-sectional area of the spinal cord (ventral gray horn and white matter)</p>										
9. Which of the following arteries is a central branch of the middle cerebral artery?	A. Anterior choroidal artery B. Lenticulostriate artery	B	<p>The central branches of MCA are several branches collectively known as Lateral Striate or Lenticulostriate arteries, which</p>										

	C. Medial striate artery	B	enters the anterior perforated substance with the <u>medial striate artery</u> (Recurrent artery of Heubner) to supply:
	D. Pericallosal artery		<ul style="list-style-type: none"> • Putamen • Globus pallidus • Caudate nucleus • Internal capsule
10. Which of the following veins drain into the straight sinus?	A. Deep middle	B	 <p>DURAL VENOUS SINUSES © Lineage</p>
	B. Great cerebral		
	C. Superficial middle cerebral		
	D. Superficial cerebral		
11. A 50-year-old woman with a history of hypertension and diabetes went to the ER presenting with sudden difficulty in speaking complete sentences. You should suspect occlusions of the following arteries?	A. Anterior cerebral	C	The Middle cerebral artery supplies a significant portion of the lateral aspect of the cerebral hemispheres, including areas responsible for speech and language, such as Broca's area and Wernicke's area in the dominant hemisphere.
	B. Basilar		
	C. Middle cerebral		
	D. Posterior cerebral		
12. The feeder artery which supplies the lower $\frac{2}{3}$ of the spinal cord arises from which of the following arteries?	A. Deep cervical artery	B	One large feeder artery coming from the left posterior intercostal artery coming from the aorta is the Great Anterior Medullary Artery or Major Anterior Segmental Medullary Artery (aka Anterior Medullary Artery of Adamkiewicz) <ul style="list-style-type: none"> • A unilateral artery often entering the spinal cord from the left side that maybe seen at the thoracic or lumbar vertebral levels • Main source of arterial blood supply to the lower two-thirds of the spinal cord
	B. Left posterior intercostal artery		
	C. Right lower lumbar artery		
	D. Vertebral artery		
13. Which is true regarding the circle of willis?	A. The anterior and posterior communicating arteries are the main sources of collateral blood supply	A	The anterior communicating artery connects the two anterior cerebral arteries , while the posterior communicating arteries connect the internal carotid arteries with the posterior cerebral arteries, facilitating collateral blood flow in case of arterial blockage.
	B. The only source of blood supply of the circle of willis is from the internal carotid artery		Circle of Willis receives blood supply from both the internal carotid arteries and the vertebral arteries , not solely from the internal carotid artery.
	C. The blood pressure from the branches of the internal carotid is greater than from the branch of the vertebral artery		In the Circle of Willis, blood flow and pressure are usually balanced to ensure adequate perfusion of the brain from multiple sources.
	D. The blood from the internal carotid artery and vertebral artery comes together at the anterior communicating artery		The internal carotid artery and vertebral artery do not come together at the anterior communicating artery.

14. Among the choices, which is the LARGEST branch of the vertebral artery?	A. Anterior Inferior Cerebellar B. Pontine C. Posterior Inferior Cerebellar D. Superior Cerebellar	C	<p>The Posterior Inferior Cerebellar Artery (PICA) is the largest branch of the vertebral artery. It supplies a significant portion of the cerebellum, as well as parts of the medulla oblongata. The other arteries listed are branches of either the basilar artery (like the anterior inferior cerebellar artery and the pontine arteries) or other vessels (such as the superior cerebellar artery, which is a branch of the basilar artery).</p>
15. Supplies the medial aspect of the occipital lobe:	A. PCA B. ACA C. MCA D. VA	A	<p>The Posterior Cerebral Artery (PCA) is responsible for supplying blood to the medial aspect of the occipital lobe, including the primary visual cortex.</p> <p>The ACA primarily supplies the medial and superior parts of the frontal lobe and the anterior portion of the parietal lobe.</p> <p>The MCA supplies the lateral aspects of the frontal, temporal, and parietal lobes, including the primary motor and sensory areas of the cortex.</p> <p>The vertebral arteries primarily supply the brainstem, cerebellum, and posterior circulation of the brain through their branches (like the basilar artery, which further branches into the posterior cerebral arteries).</p>
16. The nerve fibers that carry which of the following sensations have the smallest diameter?	A. Warmth B. Sharp pain C. Cold D. Discriminative touch	A	<p>Warmth sensation is primarily carried by unmyelinated C fibers. These C fibers are smaller in diameter compared to other types of nerve fibers such as Aδ and Aβ fibers.</p> <p>Sharp pain is typically carried by thinly myelinated Aδ fibers, which are larger in diameter compared to unmyelinated C fibers that carry warmth sensations.</p> <p>Cold sensations are carried by both Aδ and C fibers. Aδ fibers carry fast, initial sensations of cold, while C fibers carry slow, prolonged cold sensations. However, Aδ fibers are slightly larger in diameter than C fibers that carry warmth.</p> <p>Discriminative touch is carried by myelinated Aβ fibers, which are larger in diameter compared to both Aδ fibers (which carry sharp pain) and C fibers (which carry warmth sensations).</p>

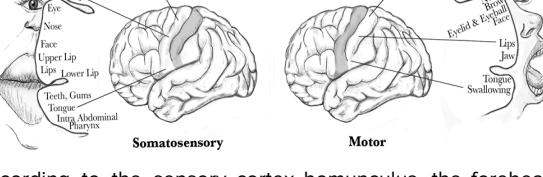
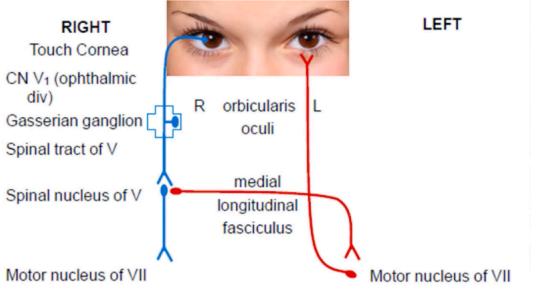
A. CLASSIFICATION OF PERIPHERAL AFFERENT FIBERS

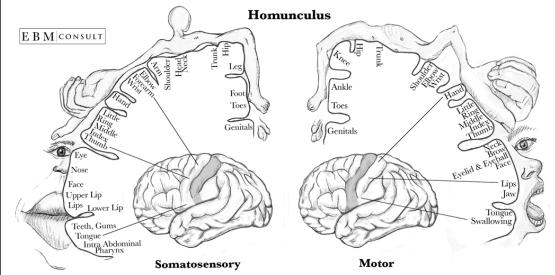
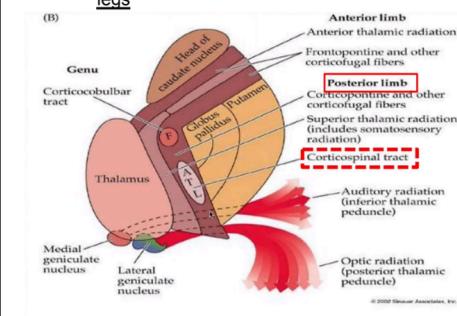
	MYELINATED			UNMYELINATED
	largest; fastest ← → smallest; slowest			
MUSCLE	Ia (A α) Annulospiral endings of NM spindles	Ib (A α) Golgi tendon	II (A β) Flower spray endings of NM spindles	
	NON-MUSCLE [skin/deep]	none	A α - β (Ib & II) 2-point discrimination Vibration Conscious proprioception	A δ (III) Fast (first, sharp) pain Cold Crude touch
				C (IV) Slow (second, burning) pain Itch Warmth

Figure 2. Classification of Peripheral Afferent Fibers [Lecture PPT]

17. Due to the heat wave in the metropolitan area, an office secretary applied a cold pack on her forehead to cool off. Which of the following nuclei serves as the third order neuron for this sensory pathway?	A. Geniculate ganglion B. Mesencephalic nucleus of CN V C. Spinal nucleus of CN V D. Ventral Posterior Medial Nucleus of the thalamus	D	<p>PRIMARY SENSORY CORTEX</p> <ul style="list-style-type: none"> Postcentral gyrus ("face area" of Brodmann areas 3, 1, & 2) Spinal tract of CN V: Axons from N1 Spinal nucleus of CN V: Nerve cell bodies of N2 <p>Table 14. Pattern for Pain, Temperature, and Light Touch of the Face</p> <table border="1"> <thead> <tr> <th colspan="2">Trigeminothalamic Tract (TTT): For the Face Region</th> </tr> <tr> <th>Receptors</th><th></th></tr> </thead> <tbody> <tr> <td></td><td>Merkel discs Free nerve endings</td></tr> <tr> <td>Neuron 1 [N1]</td><td>Gasserian ganglion: [CN V] Geniculate ganglion: [CN VII] Superior ganglia: [CN IX & X]</td></tr> <tr> <td>Neuron 2 [N2]</td><td>Spinal nucleus of CN V (mainly)</td></tr> <tr> <td>Neuron 3 [N3]</td><td>VPM of the Thalamus</td></tr> <tr> <td>Primary Sensory Cortex</td><td>Postcentral gyrus ("face area" of Brodmann areas 3, 1, & 2) Spinal tract of CN V: Axons from N1 Spinal nucleus of CN V: Nerve cell bodies of N2</td></tr> </tbody> </table>	Trigeminothalamic Tract (TTT): For the Face Region		Receptors			Merkel discs Free nerve endings	Neuron 1 [N1]	Gasserian ganglion: [CN V] Geniculate ganglion: [CN VII] Superior ganglia: [CN IX & X]	Neuron 2 [N2]	Spinal nucleus of CN V (mainly)	Neuron 3 [N3]	VPM of the Thalamus	Primary Sensory Cortex	Postcentral gyrus ("face area" of Brodmann areas 3, 1, & 2) Spinal tract of CN V: Axons from N1 Spinal nucleus of CN V: Nerve cell bodies of N2										
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18. A 40-year old developed a spinal infection (transverse myelitis) involving the entire RIGHT half of the spinal cord at the level of T12-L1. DIMINISHED discriminative touch will most likely occur in which of the following structures:	A. LEFT foot B. LEFT palm C. RIGHT foot D. RIGHT palm	C	<p>R sided manifestation - Ipsilateral because the lesion of the ascending tract (DCML) is before decussation.</p> <p>Manifestation of symptoms at the foot due to lesion being present at T12-L1 (each dermatome below the level of the lesion is affected)</p>																								
19. The following sensations makes use of free nerve ending as receptors <u>EXCEPT</u> :	A. Cold B. Sharp pain C. Vibration D. Warmth	C	<p>Table 7. Summary of sensations and their receptors</p> <table border="1"> <thead> <tr> <th>Sensation</th><th>Type of Receptor</th><th>Receptors</th></tr> </thead> <tbody> <tr> <td>Light touch</td><td>Mechanoreceptor</td><td>Merkel disc, Meissner corpuscle, Hair follicle nerve endings</td></tr> <tr> <td>Discriminative touch</td><td>Mechanoreceptor</td><td>Merkel disc, Meissner corpuscle, Pacinian corpuscle</td></tr> <tr> <td>Itch</td><td>Chemoreceptor</td><td>Free nerve endings</td></tr> <tr> <td>Vibration</td><td>Mechanoreceptor</td><td>Merkel disc, Meissner corpuscle, Pacinian corpuscle, Joint encapsulated receptor</td></tr> <tr> <td>Proprioception</td><td>Mechanoreceptor</td><td>Golgi tendon organ, Neuromuscular spindle, Joint encapsulated receptor</td></tr> <tr> <td>Temperature (Cold & Warmth)</td><td>Thermoreceptor</td><td>Free nerve endings</td></tr> <tr> <td>Pain (Nociception)</td><td>Mechanoreceptor (high threshold); Thermoreceptor (high threshold); Chemoreceptor</td><td>Free nerve endings</td></tr> </tbody> </table>	Sensation	Type of Receptor	Receptors	Light touch	Mechanoreceptor	Merkel disc, Meissner corpuscle, Hair follicle nerve endings	Discriminative touch	Mechanoreceptor	Merkel disc, Meissner corpuscle, Pacinian corpuscle	Itch	Chemoreceptor	Free nerve endings	Vibration	Mechanoreceptor	Merkel disc, Meissner corpuscle, Pacinian corpuscle, Joint encapsulated receptor	Proprioception	Mechanoreceptor	Golgi tendon organ, Neuromuscular spindle, Joint encapsulated receptor	Temperature (Cold & Warmth)	Thermoreceptor	Free nerve endings	Pain (Nociception)	Mechanoreceptor (high threshold); Thermoreceptor (high threshold); Chemoreceptor	Free nerve endings
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20. Fibers of the pathway for joint sense of the body decussate via the:	A. Corpus callosum B. Internal arcuate fibers C. Ventral white commissure D. Zone of Lissauer	B	<p>The internal arcuate fibers, located in the medulla oblongata, are where the decussation of the dorsal column pathway occurs. Specifically for proprioceptive information related to joint sense and other sensations from the body.</p>																								
21. The axon conducting vibratory sensation for the RIGHT upper extremities ascend the spinal cord in the following funiculus:	A. LEFT lateral B. LEFT posterior C. RIGHT lateral D. RIGHT posterior	B	<p>When sensory information such as vibratory sensation from the right upper extremities reaches the spinal cord, it initially ascends ipsilaterally (on the same side) in the dorsal column-medial lemniscus pathway. However, at the level of the medulla oblongata, where the fibers of this pathway synapse, they cross over (decussate) to the opposite side of the spinal cord. After crossing, the sensory information continues to ascend in the contralateral (opposite side) pathway, which is the left posterior funiculus.</p>																								
22. You feel your cell phone vibrating on your right elbow while studying. The	A. Dorsal Horn B. Dorsal Root Ganglion	C	<p>Upper extremities are felt and go in the pathway of the nucleus cuneatus, while for lower extremities, it is the nucleus gracile.</p>																								

<p>decussating axonal fibers of the involved pathway arise from the cell body of which of the following structure?</p>	<p>C. Nucleus Cuneatus D. Nucleus Gracile</p>		
<p>23. Fibers of the thalamic nuclei that convey discriminative touch from the hand going to the primary sensory cortex go through which part of the internal capsule?</p>	<p>A. Proximal posterior limb of the Internal capsule B. Distal posterior limb of the Internal Capsule C. Anterior limb of the Internal Capsule D. Genu of the Internal Capsule</p>	A	<p>The proximal posterior limb of the internal capsule is associated with fibers related to sensory functions, including discriminative touch from the upper extremities.</p> <p>The distal posterior limb of the internal capsule is associated with fibers related to the lower extremities, not the upper extremities.</p> <p>The anterior limb of the internal capsule contains fibers that carry fibers related to the corticofugal pathways, including the corticopontine fibers, which project from the cortex to the pontine nuclei.</p> <p>The genu of the internal capsule contains fibers related to corticobulbar pathways.</p>
<p>24. Which of the following structures is the second order motor neuron of the conscious pathway in the control of the fine motor and control of the hands and fingers of a concerto pianist?</p>	<p>A. Accessory nucleus of cuneate B. Dorsal horn C. Nucleus centrobasalis D. Nucleus of Clarke</p>	A	<p>The accessory nucleus of cuneate, located lateral to the cuneate nucleus in the medulla oblongata, receives proprioceptive input from the upper extremities, particularly the cervical spinal nerves. It processes this sensory information and sends it to the cerebellum via the cuneocerebellar fibers.</p>
<p>25. A 70-yr old male developed an Extramedullary tumor of the spinal column impinging the right lateral aspect. What is affected first if the lateral spinothalamic tract was injured?</p>	<p>A. Arm B. Chest C. Lower back D. Thighs</p>	A	<p>The lateral spinothalamic tract carries sensory information related to pain and temperature from the opposite side of the body. If the right lateral spinothalamic tract is injured, the first area affected would be the left arm, as sensory information from the left arm would be compromised.</p>
<p>26. MRI in a 65-year-old woman presents with left-sided weakness and impaired joint position sense on the left upper and lower extremities revealing ischemic shock of the brainstem. The impaired joint position sense is MOST LIKELY involved in which of the following structures?</p>	<p>A. Dorsal horn B. Medial lemniscus C. Spinal lemniscus D. VPL of the thalamus</p>	B	<p>The medial lemniscus carries these proprioceptive signals, fine touch, and vibration from dorsal columns of the spinal cord, which then synapse in the dorsal column nuclei (gracile and cuneate nuclei) in the medulla. From there, the second-order neurons decussate (cross over) and ascend as the medial lemniscus to the thalamus ventral posterolateral nucleus (VPL) of the thalamus. Any disruption along this pathway, especially in the brainstem where the medial lemniscus is located, can result in impaired proprioception. Given that the lesion is described as an ischemic shock of the brainstem, it implicates structures within the brainstem rather than higher or lower areas.</p> <p>Dorsal Horn - where sensory neurons synapse in the spinal cord</p> <p>Spinal Lemniscus - or spinothalamic tract, responsible for the relay of pain and temperature</p> <p>VPL of thalamus - also part of the medial lemniscus pathway, however the lesion is said to be in the brain stem, thus this is ruled out</p>

27. A 2 year old toddler complains of pain on his forehead when he accidentally tripped hitting a table. At which part of the primary sensory cortex does the pathway terminate?	<p>A. Superior edge of the interhemispheric fissure</p> <p>B. Deep medial surface of the cerebral hemisphere</p> <p>C. Lateral surface above the lips of the Sylvian fissure</p> <p>D. Superior lateral surface of the cerebral hemisphere</p>	D	 <p>Somatosensory</p> <p>Motor</p>
28. Fibers of the spinotectal tract mix with the fibers of which of the following ascending tracts along its course in the spinal cord?	<p>A. Anterior spinocerebellar</p> <p>B. Lateral spinothalamic</p> <p>C. Medial lemniscal</p> <p>D. Ventral spinothalamic</p>	B	<p>The location of N1 and N2 of the spinotectal tract are the same as that of the lateral spinothalamic tract. The N2 axons ascend via the contralateral lateral funiculus.</p>
29. What facial sensation makes use of the Dorsal Trigeminothalamic	<p>A. Cold</p> <p>B. Itch</p> <p>C. Fast pain</p> <p>D. Vibration</p>	C	<p>The Dorsal Trigeminothalamic Tract (DTT) is a pathway in the central nervous system responsible for transmitting sensory information related to pain, temperature, and touch from the face to the brain. Specifically, it carries fast pain (sharp, acute pain) and temperature sensations.</p>
30. Which of the following structures must be intact in the direct/ consensual corneal blink reflex?	<p>A. Anterior commissure</p> <p>B. Medial longitudinal fasciculus</p> <p>C. Posterior commissure</p> <p>D. Superior cerebellar decussation</p>	B	<p>B. INDIRECT OR CONSENSUAL CORNEAL BLINK REFLEX</p>  <p>RIGHT</p> <p>Touch Cornea</p> <p>CN V1 (ophthalmic div)</p> <p>Gasserian ganglion</p> <p>Spinal tract of V</p> <p>Spinal nucleus of V</p> <p>Motor nucleus of VII</p> <p>LEFT</p> <p>R orbicularis oculi</p> <p>L</p> <p>medial longitudinal fasciculus</p> <p>Motor nucleus of VII</p> <p>Pathway:</p> <ul style="list-style-type: none"> The afferent arm of this pathway is the same as the direct corneal blink reflex However, there are axons also arising from the ipsilateral spinal nucleus of CN V → pass through the medial longitudinal fasciculus → cross the midline and synapse with the contralateral facial motor nucleus <ul style="list-style-type: none"> Innervates the contralateral orbicularis oculi → eye blinking on the contralateral side.
31. The primary motor cortex corresponds to which Brodmann area?	<p>A. 3, 1, 2</p> <p>B. 4</p> <p>C. 6</p> <p>D. 44, 45</p>	B	<p>BA 3, 1, 2 - Primary somatosensory</p> <p>BA 6 - Premotor</p> <p>BA 44, 45 - Motor speech</p>

32. Which structures are related to LATERAL CORTICOSPINAL TRACT but not applicable to the ventral corticospinal tract?	A. Anterior Funiculus B. Cerebral peduncle C. Corona radiata D. Pyramidal decussation	D	Differences between anterior and lateral CST	
			Ventral CST	Lateral CST
			Uncrossed fibers (10-15%)	Crossing of fibers (75-90%)
			Eventually cross before terminating on the anterior horn cells the cervical and upper thoracic spinal segments	Forms pyramidal decussations
33. What lobe contains the neurons that give rise to pyramidal fibers?	A. Frontal B. Insular C. Occipital D. Parietal	A	Located at the anterior funiculus close to the anterior median fissure	
			Terminate at the anterior gray column of all spinal cord segments	
			Located at the lateral funiculus of the spinal cord	
			Shorter tract	Longer tract
34. Which body region is represented in the most lateral portion near the Sylvian fissure?	A. Head B. Foot C. Tongue D. Hand	C	Pyramidal fibers are part of the corticospinal tract which originate from the primary motor cortex. The primary motor cortex is located in the precentral gyrus of the frontal lobe .	
			 <p>The figure consists of two diagrams. The left diagram, labeled 'Somatosensory', shows the brain with various body parts labeled: Eye, Nose, Ear, Upper Lip, Lower Lip, Mouth, Gums, Throat, Larynx, Abdominal Pharynx, Hand, Middle Finger, Index Finger, Middle Finger, Ring Finger, Little Finger, Toe, Ankle, Toes, Genitals. The right diagram, labeled 'Motor', shows the brain with similar labels: Eye & Orbit, Mouth, Lips, Tongue, Swallowing, Hand, Middle Finger, Index Finger, Middle Finger, Ring Finger, Little Finger, Toe, Ankle, Toes, Genitals.</p>	
			3. Posterior limb <ul style="list-style-type: none"> Where CST fibers would pass through Fibers follows a somatotopic arrangement <ul style="list-style-type: none"> Anterior: Fibers controlling the <u>upper limbs</u> Posterior: Fibers controlling the <u>lower extremities</u> and <u>legs</u> 	
			 <p>The diagram illustrates the posterior limb of the internal capsule. It shows the thalamus, geniculate nuclei, and various subcortical structures. The corticospinal tract is highlighted in red, originating from the posterior limb and descending to the medulla. Other tracts shown include the anterior thalamic radiation, frontopontine tract, superior thalamic radiation, auditory radiation, optic radiation, and corticobulbar tract.</p>	
35. Corticospinal tract that controls upper extremities passes through which part of the internal capsule?	A. Proximal Part of Anterior Limb B. Genu C. Proximal Part of Posterior Limb D. Distal Part of Posterior Limb	C	Figure showing Corticospinal & Corticobulbar Fibers in Internal capsule Figure 11. CST at the posterior limb of the internal capsule. A CST controlling the arms (A), trunk (T), lower limbs (L). <small>[Lecture PPT]</small>	
			A positive Babinski sign indicates an upper motor neuron (UMN) lesion that can be observed if there is damage to the corticospinal tract. A vascular hemorrhage in the medullary pyramids would disrupt the corticospinal tract fibers before it decussates in the lower medulla. Since the question specifies the left side, a lesion affecting the corticospinal tract within the	
36. Which of the following conditions would present with (+) Babinski on the L?	A. Intracranial hemorrhage at L Primary Visual Cortex	D		

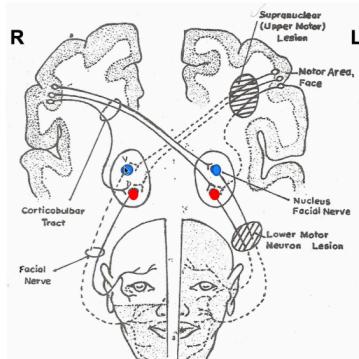
	B. Poliomyelitis infection on the anterior horn cells at L T5 level C. Transection at L T12 spinal cord due to vehicular accident D. Vascular hemorrhage at the medullary pyramids		pyramids or just before crossing could result in a positive Babinski sign on the left side. A. Intracranial hemorrhage at L Primary Visual Cortex - affects vision, not motor pathways. B. Poliomyelitis infection on the anterior horn cells at L T5 level - Poliomyelitis affects lower motor neurons C. Transection at L T12 spinal cord due to vehicular accident - also an UMN lesion however, would elicit a Babinski sign to both sides																				
37. Which of the following descending pathways modulates motor reflex on postural movements in response to auditory and visual stimuli, and uncrossed?	A. interstitiospinal B. lateral vestibulospinal C. medial vestibulospinal D. tectospinal	A	lateral vestibulospinal - excites <u>extensor</u> motor neurons of <u>neck, back, forelimb, and hindlimb</u> ; maintains upright posture and balance; <u>uncrossed</u> medial vestibulospinal - excites <u>extensor</u> motor neurons of <u>neck and back</u> only; maintains upright posture; <u>both crossed and uncrossed (bilateral)</u> tectospinal - mediates reflex postural movements of head and neck in response to <u>visual</u> stimuli (head turning and eye movements); <u>crossed</u>																				
38. Which of the following neurologic findings is MOST suggestive of UPPER MOTOR NEURON LESION?	A. Complete paralysis B. Hyperreflexia C. Intact superficial abdominal reflex D. Intention tremors	B	Table 4. Manifestations of Upper vs. Lower Motor Neuron Lesions <table border="1"> <thead> <tr> <th>Upper Motor Neuron</th> <th>Lower Motor Neuron</th> </tr> </thead> <tbody> <tr> <td>Paresis</td> <td>Complete paralysis</td> </tr> <tr> <td>No muscle atrophy (initially) Disuse atrophy</td> <td>With muscle atrophy</td> </tr> <tr> <td>Spasticity (\uparrow muscle tone)</td> <td>Flaccidity (\downarrow to no muscle tone)</td> </tr> <tr> <td>Hyperreflexia</td> <td>Areflexia</td> </tr> <tr> <td>Clonus</td> <td>NO Clonus</td> </tr> <tr> <td>Babinski (Extensor Plantar Reflex)</td> <td>NO Babinski</td> </tr> <tr> <td>Loss of certain superficial reflexes</td> <td></td> </tr> <tr> <td>a. Superficial abdominal</td> <td></td> </tr> <tr> <td>b. Cremasteric Reflex</td> <td></td> </tr> </tbody> </table>	Upper Motor Neuron	Lower Motor Neuron	Paresis	Complete paralysis	No muscle atrophy (initially) Disuse atrophy	With muscle atrophy	Spasticity (\uparrow muscle tone)	Flaccidity (\downarrow to no muscle tone)	Hyperreflexia	Areflexia	Clonus	NO Clonus	Babinski (Extensor Plantar Reflex)	NO Babinski	Loss of certain superficial reflexes		a. Superficial abdominal		b. Cremasteric Reflex	
Upper Motor Neuron	Lower Motor Neuron																						
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Loss of certain superficial reflexes																							
a. Superficial abdominal																							
b. Cremasteric Reflex																							
39. A lesion involving the LEFT corticobulbar tract projecting to the facial motor nucleus (CN VII) would manifest with which of the following findings on the face?	A. Paralysis of the LEFT half B. Paralysis of the RIGHT half C. Weakness of the LEFT lower half D. Weakness of the RIGHT lower half	D	Lesion involving corticobulbar tract = UMN lesion Paralysis of contralateral lower half of the face (Central Facial Paralysis)  <p>Figure 18. Corticobulbar tract of CN VII [lecture PPT]</p>																				

Table 6. Lesions involving Facial Motor Nucleus I

Upper Motor Neuron Lesion	Lower Motor Neuron
Supranuclear lesion	
Above the facial motor nucleus (from the cortex to the corticobulbar tract fibers)	facial motor nucleus / facial nerve is affected
Central facial paralysis: paralysis of the <u>contralateral lower half</u> of the face only	Peripheral facial paralysis (Bell's palsy): paralysis of the entire <u>ipsilateral half side</u> of the face

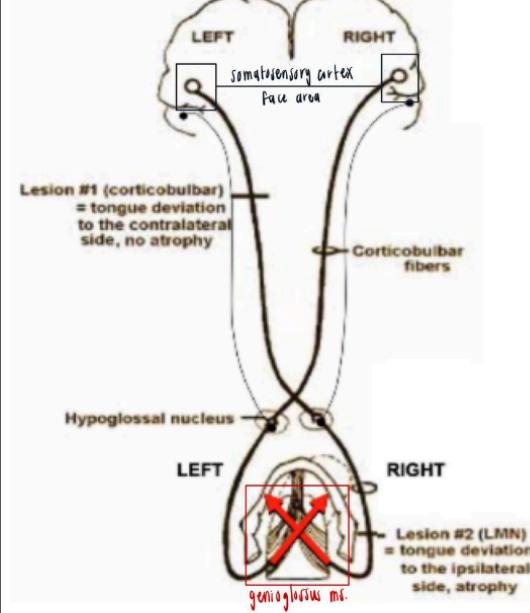
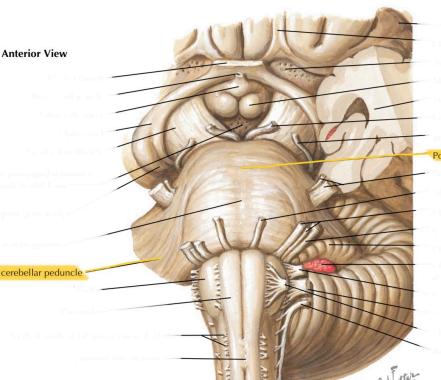
40. Which of the following is indicative of a cerebellar stroke?	A. Dysdiadochokinesia B. Hemiparesis C. Aphasia D. Hemianopsia	A	<p>Dysdiadochokinesia is a common sign of cerebellar dysfunction, characterized by the inability to perform rapid, alternating movements smoothly, indicative of a cerebellar stroke.</p>
41. Which of the following motor manifestations is most likely seen in occlusion of the right anterior cerebral artery?	A. Atrophied tongue deviated on right B. Atrophy of right leg C. Dragging of left leg while walking D. Difficulty lifting glass using left hand	C	<p>The anterior cerebral artery supplies the medial part of the cerebrum. This area is responsible for the control of the motor and sensory functions of the lower extremities. Thus, motor manifestations would involve the contralateral leg due to the crossing of the pathways.</p>
42. Which of the descending tract has efferent connections from the cerebellum and excites extensor muscles until the mid-thoracic level?	A. Lateral Vestibulospinal B. Lateral Reticulospinal C. Medial Vestibulospinal D. Medial Reticulospinal	A	<p>The lateral vestibulospinal tract primarily originates in the lateral vestibular nucleus and descends ipsilaterally through the spinal cord to control motor neurons in the anterior horn, primarily targeting extensor muscles. It plays a key role in maintaining balance and postural control. Its influence extends to the mid-thoracic level, with its excitatory signals promoting extensor muscle activity to help Maintain an upright posture and coordinate balance.</p>
43. The lesion in which structure would cause tongue deviation to the contralateral side	A. CN XII B. Crus cerebri C. Hypoglossus D. genioglossus	B	<p>The crus cerebri or the cerebral peduncles are part of the midbrain where the corticobulbar and corticospinal tracts pass through. A lesion here would affect upper motor neurons resulting in the weakness of the genioglossus and the tongue would deviate to the contralateral side.</p> 
44. Which of the following manifest an UMN in an 8 month old infant?	A. 0/5 motor grading B. +1 DTR C. (+) Babinski D. Increased muscle tone	D	<p>0/5 motor grading and +1 DTR are signs of a LMN while (+) Babinski is a normal finding since it can still be observed until 2 yrs of age</p>
45. What best describes the rubrospinal tract?	A. Crosses at the dorsal gray decussation B. Facilitates tone of the extensor muscles	D	<p>The rubrospinal tract crosses at the ventral tegmental decussation. Tectospinal and Tectobulbar tracts cross at the dorsal tegmental decussation</p> <p>Must be flexor muscles. The reticulospinal tract facilitates and inhibits extensor muscles.</p>

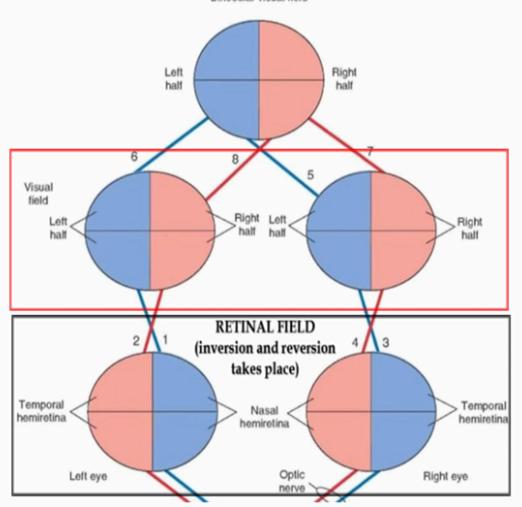
figure 20. Corticobulbar tract of CN XII [Lecture PPT]

	C. Originates from the inferior colliculus D. Terminates in all spinal cord levels		Must be superior colliculus .												
46. The lentiform nucleus is composed of putamen and?	A. Caudate nucleus B. Claustrum C. Globus pallidus D. Amygdaloid nucleus	C	Table 1. Terminology commonly used to describe the basal nuclei <table border="1"> <thead> <tr> <th>Neurologic Structure</th> <th>Basal Nucleus (Nuclei)</th> </tr> </thead> <tbody> <tr> <td>Caudate Nucleus</td> <td>Caudate Nucleus</td> </tr> <tr> <td>Lentiform Nucleus</td> <td>Globus Pallidus + Putamen</td> </tr> <tr> <td>Claustrum</td> <td>Claustrum</td> </tr> <tr> <td>Corpus Striatum</td> <td>Caudate Nucleus + Lentiform Nucleus</td> </tr> <tr> <td>Amygdaloid Body</td> <td>Amygdaloid Nucleus</td> </tr> </tbody> </table>	Neurologic Structure	Basal Nucleus (Nuclei)	Caudate Nucleus	Caudate Nucleus	Lentiform Nucleus	Globus Pallidus + Putamen	Claustrum	Claustrum	Corpus Striatum	Caudate Nucleus + Lentiform Nucleus	Amygdaloid Body	Amygdaloid Nucleus
Neurologic Structure	Basal Nucleus (Nuclei)														
Caudate Nucleus	Caudate Nucleus														
Lentiform Nucleus	Globus Pallidus + Putamen														
Claustrum	Claustrum														
Corpus Striatum	Caudate Nucleus + Lentiform Nucleus														
Amygdaloid Body	Amygdaloid Nucleus														
47. Which of the following is TRUE regarding the function of the Basal Ganglia	A. All the nuclei in the Basal Ganglia is excitatory B. Motor cortex is inhibitory to the striatum C. It affects the final common motor pathway directly D. Its effects are contralateral to the side of lesion	Different nuclei in the Basal Ganglia have either excitatory or inhibitory effects to their connected structures. All impulses from the motor cortex are EXCITATORY to the STRIATUM. Basal Ganglia has no direct connection to the spinal cord or lower motor neuron. It affects these pathways indirectly.													
48. The major efferent fibers from the basal ganglia comes from which structure?	A. Caudate nucleus B. Globus pallidus externa C. Globus pallidus interna D. Putamen	The major outflow (efferent fibers) from the basal ganglia comes from the Globus pallidus interna while the striatum receives major inputs (afferent fibers) to the basal ganglia .													
49. Which nucleus DIRECTLY affects the substantia nigra in the nigrostriatal pathway	A. Caudate nucleus B. Globus pallidus interna C. Putamen D. Subthalamic nucleus	Subthalamic nucleus excites substantia nigra. Substantia nigra then sends dopamine to bind to D2 receptors of the striatum through the indirect pathway.													
50. What neurotransmitter is secreted by the striatum?	A. Acetylcholine B. Dopamine C. GABA D. Glutamate	C	<p>DIRECT LOOP (INCREASES THALAMOCORTICAL EXCITATION)</p> <pre> graph TD CORTEX[glu] --> STRIUM[+] STRIUM --> GABA1[GABA] GABA1 --> GPi[+] GPi --> SNr[+] SNr --> GABA2[GABA] GABA2 --> THALAMUS[glu] DA --> D1RECEPTORS[D1 RECEPTORS] D1RECEPTORS --> CORTEX[+] </pre> <p>SUBSTANTIA NIGRA, COMPACTA</p> <p>INDIRECT LOOP (DECREASES THALAMOCORTICAL EXCITATION)</p> <pre> graph TD CORTEX[glu] --> STRIUM[+] STRIUM --> GPe[+] GPe --> STN[+] STN --> GPe[+] GPe --> GPi[+] GPi --> SNr[+] SNr --> GABA2[GABA] GABA2 --> THALAMUS[glu] DA --> D2RECEPTORS[D2 RECEPTORS] D2RECEPTORS --> CORTEX[-] </pre> <p>Figure 16. Indirect and Direct Pathway [Lecturer's PPT]</p>												
51. A lesion in the substantia nigra shows the following symptoms, EXCEPT:	A. Resting tremors B. Intentional tremors C. Short-stepped gait D. Difficulty initiating movements		The striatum will always secrete GABA (inhibitory neurotransmitter) onto its connected structures. However, the amount of GABA secreted may be modulated depending on the pathway. Intentional tremor is a sign of cerebellar damage. Resting tremors, short-stepped gait, and difficulty in initiating movements are symptoms of Parkinson's disease, a basal ganglia disease that affects the substantia nigra.												

52. Which of the following lobes is responsible for speech and coordinated movement?	<p>A. anterior lobe</p> <p>B. posterior lobe</p> <p>C. flocculonodular lobe</p>	B	<p>Anterior lobe - responsible for stance and gait</p> <p>Posterior Lobe - responsible for speech and coordinated movement</p> <p>Flocculonodular lobe - responsible for equilibrium (balance, posture, and eye movement)</p>
53. Which structure connects the cerebellum to the pons?	<p>A. Superior cerebellar peduncle</p> <p>B. Middle cerebellar peduncle</p> <p>C. Inferior cerebellar peduncle</p>	B	 <p>Anterior View</p> <p>Pons</p> <p>Middle cerebellar peduncle</p> <p>Superior cerebellar peduncle: Midbrain</p> <p>Inferior cerebellar peduncle : Medulla</p>
54. What cell bodies can be seen in the molecular layer of the cerebellar cortex?	<p>A. Granule</p> <p>B. Golgi Type II</p> <p>C. Purkinje</p> <p>D. Stellate</p>	D	<p>Molecular layer contains Stellate and Basket cells. Purkinje layer contains only Purkinje cells. Granular layer contains 3Gs (Golgi Type II, Granule cells, and Glomeruli)</p>
55. Which functional zone of the cerebellum is responsible for distal limbs?	<p>A. Lateral</p> <p>B. Paravermal</p> <p>C. Vermal</p>	B	<p>Vermal Zone - Controls movement of the long axis of the body (neck, shoulders, thorax, abdomen, and hips).</p> <p>Lateral Zone - Involved in conscious assessment of movement.</p> <p>Paravermal Zone - Control of muscles in the distal limbs (especially hands and feet).</p>
56. The efferent fibers of which intracerebellar nuclei forms the majority of the superior cerebellar peduncle	<p>A. Fastigial</p> <p>B. Dentate</p> <p>C. Globose</p> <p>D. Emboliform</p>	B	<p>The dentate nucleus forms the majority of the superior cerebellar peduncle.</p>
57. Which of the following statements is TRUE regarding cortical cerebellar mechanism?	<p>A. The efferent output is transmitted by the mossy fibers</p> <p>B. They have an indirect neuronal connection with the lower motor neurons</p> <p>C. They influence the contralateral side of the body</p> <p>D. They inhibit antagonist muscles and stimulate agonist muscles</p>	B	<p>Mossy fibers are found in the hippocampus. Cerebellar afferent and efferent outputs transmit via cerebral peduncles.</p> <p>They influence the ipsilateral side of the body. They inhibit agonist muscles and stimulate antagonist muscles.</p>
58. When a patient is asked to look up and to the right, we are testing the integrity of which of the following cranial nerves?	<p>A. II</p> <p>B. III</p> <p>C. IV</p> <p>D. VI</p>	B	<p>Looking upward and to the right typically involves the movement of the superior rectus and inferior oblique muscles of the eye. Cranial Nerve III or the Oculomotor Nerve innervates both of these ocular muscles.</p>
59. Lesions involving the cuneus would result in which of the following visual field defects?	<p>A. Bitemporal hemianopsia</p> <p>B. Contralateral lower homonymous anopsia</p>	B	<p>Structure affected: Cuneus or Medial optic radiation</p> <p>Remember: There is reversion and inversion of the lesion.</p>

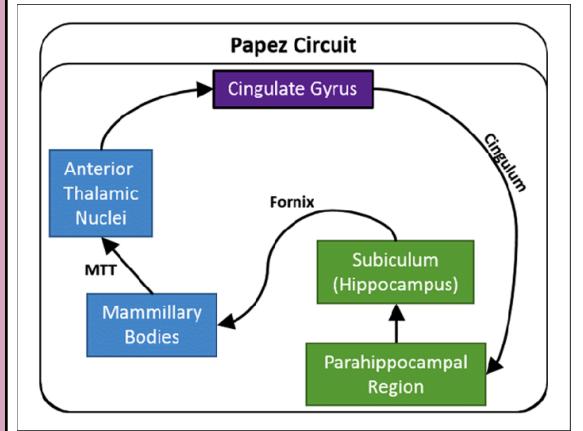
	C. Contralateral upper homonymous anopsia D. Heteronymous hemianopsia		Since the upper temporal and upper nasal are involved, the lesion projected would be the lower quadrant.
60. Direct downward gaze of both eyes are brought about by which yoke muscles?	A. Superior Rectus + Inferior Oblique	B	<p>A. YOKE MUSCLE MOVEMENTS</p> <ul style="list-style-type: none"> Yoke muscles in conjugate movement → Contralaterally paired EOMs that work synergistically to direct gaze in a given direction
	B. Inferior Rectus + Superior Oblique		
	C. Superior Rectus + Superior Oblique		
	D. Inferior Rectus + Inferior Oblique		
61. Which of the following statements is true about the fovea?	A. It corresponds to the physiological blind spot.	C	The optic disc is the physiological blind spot.
	B. It is found on a depression within the optic disc.		It is a depression found within the macula .
	C. It has high visual acuity which contains only cones.		
	D. It is where retinal vessels seem to arise.		Retinal vessels seem to arise from the optic disc .
62. Which of the following must be intact for direct consensual corneal reflex?	A. Anterior commissure	B	The medial longitudinal fasciculus (MLF) is a crucial pathway in the brainstem involved in coordinating eye movements, particularly in maintaining conjugate gaze during horizontal and vertical eye movements. It connects the cranial nerve nuclei responsible for controlling eye movement: the oculomotor (CN III), trochlear (CN IV), and abducens (CN VI) nuclei.
	B. Medial longitudinal fasciculus		
	C. Posterior commissure		
	D. Superior cerebellar decussation		
63. Second order neuron [N2] for the optic pathway	A. Bipolar neuron	B	N1: Bipolar cells N2: Ganglion cells N3: Lateral geniculate body
	B. Ganglion cell		
	C. Lateral Geniculate body		
64. What Brodmann Area is the primary visual cortex?	A. 17	A	BA 18, 19 - Secondary visual cortex
	B. 18, 19		BA 22 - Wernicke's area
	C. 22		
	D. 41, 42		BA 41, 42 - Primary & secondary auditory
65. Which of the following is true about lower nasal retinal field:	A. The upper temporal visual field is projected to it.	A	<ul style="list-style-type: none"> Occurs due to the crossing of the optic nerve fibers at the optic chiasm (contralateral processing of visual information). Fibers from the nasal (medial) half of each retina crosses the opposite side of the brain Fibers from the temporal (lateral) half remains on the same side
	B. Choice		
	C. Choice		
	D. Choice		
66. Where do the fibers of Meyer's loop terminate?	A. Cuneus	C	Lowermost/ventral fibers of the optic radiation forming the loop of Meyer projects to the lingual gyrus .

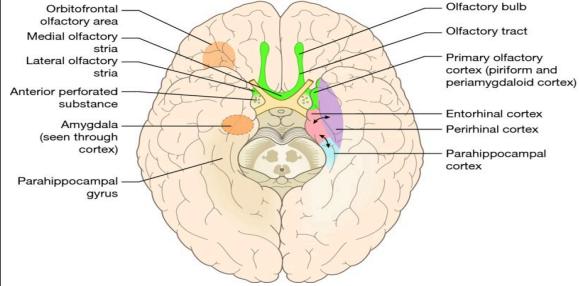
	B. Lateral geniculate body C. Lingual gyrus D. Medial geniculate body	D	
67. Bea de Leon plays for the volleyball team and serves the ball over the net. As she served, she followed the ball as it went over the net. Which command center did she utilize to track the course of the volleyball?	A. Frontal Eye Fields B. PPRP C. MiR D. Occipital Gaze Center		<ul style="list-style-type: none"> • Frontal eye field (BA 8) <ul style="list-style-type: none"> → Rapid eye movement <ul style="list-style-type: none"> ▪ Voluntary or by command • Occipital gaze center (BA 18, 19) <ul style="list-style-type: none"> → Smooth pursuit system → Involved in keeping an eye in a slow moving object or for tracking an object • Pontine gaze center <ul style="list-style-type: none"> → AKA paramedian pontine reticular formation (PPRF) → <u>Lateral</u> gaze → Lateral to CN VI nucleus • Rstral Internucleus of MLF (RiMLF) <ul style="list-style-type: none"> → Located at the pretectal region → Vertical gaze/vertical eye movement
68. Ipsilateral nasal hemianopsia involves a lesion in the	A. lateral angles of optic chiasm B. midline of optic chiasm C. optic tract D. optic nerve		<p>The nasal visual field projects to the temporal hemiretina which is seen as an uncrossed fiber in the optic chiasm. Hence, a lesion in the lateral part of the optic chiasm causes a defect in the ipsilateral nasal visual field.</p>
			<p>Figure 15. Visual pathway lesions [Lecturer's ppt]</p>
69. Which of the following structures is devoid of photoreceptors?	A. Fovea B. Macula C. Optic disc	C	<p>Fovea centralis – Depression at the center of macula; only closely packed cones are present</p> <p>Optic disc – Physiological blind spot; contains no rods or cones</p>
70. A patient shows no response to direct or consensual reflex when a light is directed to his right eye but presents with both direct and consensual reflex in his left eye. (A lesion is most likely found in the)	A. Right optic nerve B. Left optic nerve C. Right oculomotor nerve D. Left oculomotor nerve		<p>The oculomotor nerve controls ipsilateral pupillary constriction for both direct light reflex and consensual light reflex. The activated Edinger-Westphal nucleus is also responsible for ipsilateral pupillary constriction. Because the patient does not respond to direct or consensual reflex in the right eye, then the right oculomotor nerve is most likely affected.</p>

71. You are watching Michelle Dee perform her final walk live. Your eyes follow as you gaze on how she walks gracefully. Which of the following nerves did the impulse originate?	A. Occipital gaze center B. Frontal eye fields C. RMLF D. PPRF	B	Tracking a slow moving object Origin of visual impulses Vertical eye movement Lateral eye movement															
72. Images seen on the superior nasal field are projected in which retinal field?	A. Inferior nasal B. Inferior temporal C. Superior nasal D. Superior temporal	B	Images are projected inverted and reversed on the retinal field. Superior → inferior Nasal → temporal															
		B																
73. Where does the first neuron of the Auditory Pathway originate from?	A. From the internal acoustic meatus B. Lateral to the floor of the 4th ventricle C. Lateral to the inferior colliculus D. Originates from the cochlea's modiolus	D	The bipolar cells of the spiral ganglion , which are the N1 of the auditory pathway, are located in the cochlea's modiolus .															
74. Which is the correct statement regarding the inner hair cells of the organ of Corti?	A. Each cell synapses with 10 spiral ganglion B. It is found in the scala tympani C. It forms 5 rows at the apex of the cochlea D. It contains Kinocilium on its apical surface	A	<p>10 spiral ganglion cells innervate one inner hair cell via CN 8.</p> <p>Inner hair cells are located in the organ of Corti, which is situated on the basilar membrane in the scala media, not in the scala tympani. They are arranged in a single row along the length of the organ of Corti, not in multiple rows. They do not possess a kinocilium on their apical surface. Instead, they have a single row of stereocilia projecting from their apical surface.</p>															
75. High pitched sounds are directed through which of the following structures	A. posterolateral portion in Heschl's gyrus B. anterior portion of the cochlear nuclei C. Dorsal portion of the cochlear nuclei D. anterolateral portion in Heschl's gyrus	C	<p>Table 4. Examples of Pitch/Intensity and Loudness Levels [Lecturer's PPT]</p> <table border="1" data-bbox="959 1607 1503 1797"> <thead> <tr> <th></th> <th>LOW TONES</th> <th>HIGH TONES</th> </tr> </thead> <tbody> <tr> <td>Organ of Corti</td> <td>Upper/apical portion, cochlea</td> <td>Lower/basal portion, cochlea</td> </tr> <tr> <td>Cochlear Nuclei</td> <td>Ventral</td> <td>Dorsal</td> </tr> <tr> <td>Middle Geniculate Body</td> <td>Lateral</td> <td>Medial</td> </tr> <tr> <td>Heschl's Gyrus</td> <td>Anterolateral</td> <td>Posteromedial</td> </tr> </tbody> </table>		LOW TONES	HIGH TONES	Organ of Corti	Upper/apical portion, cochlea	Lower/basal portion, cochlea	Cochlear Nuclei	Ventral	Dorsal	Middle Geniculate Body	Lateral	Medial	Heschl's Gyrus	Anterolateral	Posteromedial
	LOW TONES	HIGH TONES																
Organ of Corti	Upper/apical portion, cochlea	Lower/basal portion, cochlea																
Cochlear Nuclei	Ventral	Dorsal																
Middle Geniculate Body	Lateral	Medial																
Heschl's Gyrus	Anterolateral	Posteromedial																
76. Which auditory reflex involves the deviation of eye in direction of sound	A. auditory oculogyric B. auditory palpebra C. cochlear pupillary	A	Rotation of eyes towards sudden sound Blinking of eyelids Dilatation of pupil															

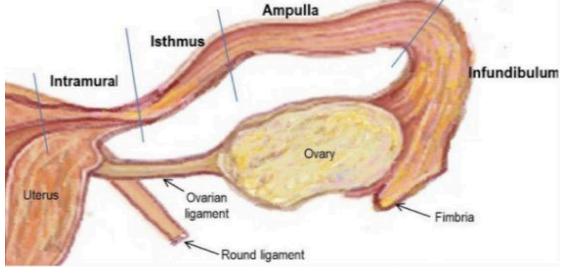
	D. stapedial		
77. Which of the following structures influences auditory stimuli allowing a person to pay particular attention to a specific sound in a noisy environment? (selective auditory attention)	A. Dorsal striae B. Efferent cochlear bundle C. Monaural central auditory pathway D. Tectospinal	B	Olivocochlear or efferent cochlear bundle <ul style="list-style-type: none">▪ Represents an inhibitory feedback system concerned with regulation/inhibition of certain impulses originating from the cochlea resulting to certain phenomena known as:<ul style="list-style-type: none">→ Auditory Sharpening▪ Enhancement of the impulses not subject to inhibition→ Selective Auditory Attention▪ The process by which our brain filters the non-essential sounds and focuses on the sounds to which we are paying attention to
78. The auditory radiations to the cerebral cortex are found in which part of internal capsule	A. Anterior limb B. Genu C. Retrolenticular D. Sublenticular	D	A. Anterior limb: Primarily contains fibers connecting the frontal cortex with the thalamus and other cortical areas; not involved in auditory pathways. B. Genu: Contains fibers that connect motor cortices and carry corticobulbar tracts; not related to auditory pathways. C. Retrolenticular: Contains optic radiations and some other sensory pathways, but not primarily associated with auditory pathways. D. Sublenticular : Contains the auditory radiations, which carry auditory information from the medial geniculate nucleus of the thalamus to the auditory cortex in the temporal lobe.
79. Lesion on the right anterior transverse temporal gyrus would manifest with which of the following findings	A. Partial deafness but mostly on the Left B. Partial deafness but mostly on the Right C. Total deafness on the Left D. Total deafness on the Right	C	The right anterior transverse temporal gyrus , also known as Heschl's gyrus, primarily processes auditory information from the contralateral (opposite) ear . Therefore, a lesion in the right anterior transverse temporal gyrus would typically affect auditory perception from the left ear .
80. Choose the CORRECT statement about the secondary vestibulocerebellar fibers	A. Their projections are unilateral B. They arise from the vestibular nuclei C. They pass through the restiform body D. They terminate at the neocerebellum	D	Distributed BILATERALLY within the cerebellum DO NOT BYPASS vestibular nuclei Pass through juxtarestiform body
81. Which of the semicircular ducts is stimulated when the eye directly looks downward and right?	A. Right anterior B. Left anterior C. Right posterior D. Left posterior	A	The right anterior semicircular duct detects the downward movement of the eye, as it is oriented in a vertical plane and aligned with the direction of the eye's movement. Similarly, the left posterior semicircular duct detects the horizontal component of the eye movement to the right.
82. Which is TRUE of the lateral vestibulospinal tract	A. It extends to the cervical spinal cord B. It is inhibitory to the flexor motor neurons C. It joins the medial longitudinal fasciculus D. It projects bilaterally	A	Terminates in LAMINA 7 and 8 on ALPHA and GAMMA MOTOR NEURONS from CERVICAL and LUMBOSACRAL levels
83. Which of the following structures connects the vestibular nuclei to the ocular nuclei?	A. Arcuate Fasciculus B. Medial Fasciculus C. Medial Longitudinal Fasciculus D. Uncinate fasciculus	C	The ascending portion of the medial longitudinal fasciculus consists of fibers interconnecting the vestibular nuclei to the extraocular motor nuclei.
84. The fastigiolobular tract terminates at which structure?	A. Cerebrum B. Cerebellum	C	Terminate on the vestibular nuclei and reticular formation of the pons and medulla

	C. Reticular Formation D. Spinal Cord		
85. Which vestibular receptor detects vertical linear acceleration?	A. Crista ampullaris B. Macula utriculi C. Macula sacculi D. Organ of Corti	C	Crista ampullaris - angular acceleration Macula utriculi - horizontal linear acceleration Organ of Corti - sound transduction
	A. Turning of the head to the left B. Deviation of the eyes to the left C. Tendency to fall to the left D. Spontaneous nystagmus to the left		Lesions of the vestibular system result in impaired postural adjustments. If unilateral , the eyes, head, and body will turn to the affected side. There will be vertigo and tendency to fall to the side of the lesion. If the lesion involves the receptors or the labyrinth , there will be nystagmus with its fast component opposite the side of the lesion. With central lesions, the nystagmus is usually vertical.
	A. Mammillotegmental B. Mamillothalamic C. Medial forebrain bundle D. Stria terminalis		A. Mammillotegmental: This pathway connects the mammillary bodies to the tegmentum in the brainstem and is involved in autonomic and visceral functions, not directly linked to the cingulate gyrus. B. Mamillothalamic: This pathway connects the mammillary bodies to the anterior nucleus of the thalamus, which then projects to the cingulate gyrus, thus relaying information to the cingulate gyrus. C. Medial forebrain bundle: This is a complex pathway involved in connecting the hypothalamus with various parts of the forebrain and midbrain, but it does not specifically relay to the cingulate gyrus. D. Stria terminalis: This pathway connects the amygdala to the hypothalamus and is primarily involved in the stress response and emotional regulation, not directly linked to the cingulate gyrus.
	A. Body B. Crura C. Columns D. Commissure		Body: Anteriorly, the body of the fornix is connected to the under surface of the corpus callosum by the septum pellucidum. Crura: The crura (or crus) are the posterior extensions of the fornix that arch backward from the hippocampus, and they do not connect directly to the corpus callosum under the septum pellucidum. Columns: The columns of the fornix are the anterior descending parts that extend towards the mammillary bodies, not directly under the septum pellucidum. Commissure: The commissure of the fornix is a connecting structure between the two sides of the fornix, but it is not specifically described as lying under the septum pellucidum in connection with the corpus callosum.
89. Hippocampal lesions can disrupt which of the following functions?	A. Growth B. Body temperature C. Emotions D. Learning	D	Hippocampus is involved in learning and memory according to James Papez

90. Where can the 3rd-order neuron of the gustatory pathway be found?	A. Geniculate Ganglion B. Solitary Nucleus C. Superior salivatory nucleus D. VPM of Thalamus	C.	Geniculate Ganglion - N1 of trigeminothalamic tract Solitary Nucleus - N2 of Gustatory Pathway Superior salivatory nucleus - Not discussed VPM of Thalamus - projects into gustatory cortex
91. Which group of nuclei of the amygdala modulates fear?	A. Basolateral B. Central C. Corticomedial	B	Central coordinates emotional and autonomic responses: Fear and stress
92. What hypothalamic nucleus is mainly responsible for antidiuretic hormone production?	A. Anterior B. Paraventricular C. Suprachiasmatic D. Supraoptic	D	Controls body temperature and aggressive behavior Synthesizes oxytocin Controls circadian rhythms Synthesizes vasopressin/ antidiuretic hormone
93. Releasing hormones from the hypothalamus reach the pituitary gland via venous channels arising from the capillary branches of which of the following arteries?	A. Anterior Cerebral B. Inferior Hypophyseal C. Posterior Communicating D. Superior Hypophyseal	D	Hypophyseal Portal System <ul style="list-style-type: none"> Formed on each side from the superior hypophyseal artery Delivers hormones into the anterior pituitary gland
94. The hippocampal formation is DIRECTLY related to which part of the ventricular system?	A. Aqueduct of Sylvius B. Lateral Ventricle C. Third ventricle D. Fourth ventricle	B	Hippocampal Formation <ul style="list-style-type: none"> Located on the floor of the lateral ventricle Consists of the following: <ul style="list-style-type: none"> Dentate gyrus Hippocampus proper (Ammon's horn) Subiculum
95. In Papez Circuit, impulses from the hippocampus project to the hypothalamus via:	A. Anterior Thalamic Nucleus B. Cingulate Gyrus C. Dentate Gyrus D. Fornix	D	 <p>Papez Circuit</p> <pre> graph TD CG[Cingulate Gyrus] --> ATN[Anterior Thalamic Nuclei] ATN -- MTT --> MB[Mammillary Bodies] MB --> F[Fornix] F --> SH[Subiculum
(Hippocampus)] SH --> PHR[Parahippocampal Region] PHR -- Cingulum --> CG </pre> <ul style="list-style-type: none"> From the hippocampus, fibers pass through the C-shaped fornix and connect to the mammillary body.
96. Dorsal longitudinal fasciculus is a tract that connects hypothalamus to which structure?	A. Amygdala B. Anterior Thalamic Nucleus C. Cingulate Gyrus D. Reticular Formation	D	<ul style="list-style-type: none"> Dorsal Longitudinal Fasciculus <ul style="list-style-type: none"> → small tracts connecting the hypothalamus with the brainstem reticular formation and indirectly to the cranial nerve nuclei (...) → Origin: Hypothalamus → Termination: Brainstem Reticular Formation indirectly to the cranial nerve nuclei
97. A medical student has been having problems with their sleep-wake cycle. What hypothalamic nucleus is involved?	A. Posterior B. Anterior C. Preoptic	D	Regulates temperature (response to cold). Regulates temperature (response to heat). Control parasympathetic system.

	D. Suprachiasmatic		Controls circadian rhythm. Sleep wake cycle is involved in circadian rhythm.
98. The secondary olfactory area of the cerebral cortex is located at the:	A. Anterior parahippocampal gyrus	A	Also known as the entorhinal area (BA 28).  This area, located in the anterior parahippocampal gyrus, is shaded pink in the figure above.
	B. Insular lobe		Involved in the gustatory pathway.
	C. Periamygdaloid area		Form part of the primary olfactory cortex.
	D. Prepiriform cortex		
99. The patient during evaluation for unsteadiness, sways to the left while standing with his feet together and his eyes are closed but not when his eyes are open. He MOST LIKELY has a lesion involving the:	A. Cerebellar vermis B. Corticospinal tract C. Dorsal column pathway D. Nondominant parietal lobe	C	Dorsal column pathway <ul style="list-style-type: none"> Responsible for carrying proprioceptive information (position sense) A lesion in this pathway may lead to patients experiencing a positive Romberg sign.
100. Substance not to use for cranial nerve I assessment:	A. Coffee B. Cigarette C. Cologne D. Vanilla	C	Cologne typically contains alcohol. Alcohol can temporarily impair the sense of smell. This effect, known as anosmia, can occur due to the irritant properties of alcohol or its ability to desensitize the olfactory receptors. Anosmia would interfere with the accuracy of the olfactory assessment.
101. A patient was brought in by his family members due to a "speech problem" after sustaining a fall. You ask the patient where he is and he responds: "I ate a burger for breakfast." To which cerebral lobe does the lesion localize?	A. Frontal B. Parietal C. Temporal D. Occipital	C	Speech Sensory/ Fluent/ Receptive/ Posterior or Wernicke's Aphasia - Intact speech, loss of comprehension. Location of Wernicke's Area is Left Temporal lobe.
102. A patient diagnosed with cerebellar stroke would MOST PROBABLY show which of the following clinical findings?	A. Anosmia B. Blunt Affect C. Dysdiadochokinesia D. Hemiballism	C	"VANISHED" Signs of cerebellar damage V = Vertigo A = Ataxia N = Nystagmus / Ocular Ataxia I = Intentional Tremor S = Slurred Speech H = Hypotonia E = Exaggerated Broad-based Gait D = Dysdiadochokinesia
103. A patient presents with "Blind Spot". On a neurologic exam, a confrontation test revealed intact visual fields. On further testing, you hold both of your arms up the patient's peripheral view and move either one or both hands together. The patient was consistently able to detect only	A. Frontal B. Parietal C. Temporal	B	Parietal lobe <ul style="list-style-type: none"> Involved in attention and spatial awareness for both sides of the visual field Hemineglect <ul style="list-style-type: none"> Function of the nondominant parietal lobe Neglect of the left side or the right side <ul style="list-style-type: none"> Right neglect → left parietal lobe involved Test by doing Double Simultaneous Stimulation

one movement whether you move one or both arms. Which cortex of the cerebral lobes are MOST LIKELY involved?	D. Occipital		
104. Taste in the posterior 1/3 of the tongue is subserved by which cranial nerve?	A. CN V	C	Oral Part (anterior 2/3) <ul style="list-style-type: none"> General sensation - Lingual nerve (branch of CN V3) Special sensation - Chorda tympani nerve (branch of CN VII) Pharyngeal Part (posterior 1/3) <ul style="list-style-type: none"> Both general and special sensation - Lingual branch of CN IX
	B. CN VII		
	C. CN IX		
	D. CN X		
105. What condition is present if a patient is unable to identify a pen placed on his right hand with his eyes closed?	A. Agraphesthesia	D	Inability to recognize letters or numbers traced on the skin
	B. Apraxia		Inability to perform learned, purposeful movements despite having the desire and physical capability to perform the movements
	C. Asomatognosia		Loss of recognition or awareness of one's own body or body parts
	D. Astereognosis		Inability to recognize objects by touch alone
106. What structure can mucosal circular folds be seen?	A. Colon	C	Colon - Hastrations
	B. Duodenum		Duodenum - Brunner's Glands
	C. Jejunum		Ileum - Peyer's Patches
	D. Ileum		
107. What ligament forms the epiploic foramen?	A. Gastrocolic	B	Hepatoduodenal ligament forms the anterior boundary of the epiploic foramen, which is the opening to the lesser sac of the peritoneal cavity.
	B. Hepatoduodenal		
	C. Hepatogastric		
	D. Hepatorenal		
108. On barium swallow, the esophageal constriction is caused by which of the following anatomic structures?	A. Arch of aorta	B	Cricopharyngeus muscle forms the upper esophageal sphincter, causing the first constriction observed in a barium swallow study.
	B. Cricopharyngeus		
	C. Diaphragm		
	D. Right bronchus		
109. Which of the following arteries would need to be dissected, localized, and ligated in performing a resection of the proximal transverse colon at the level of the hepatic flexure?	A. Inferior mesenteric	C	Right colic artery <ul style="list-style-type: none"> Branch of superior mesenteric artery Supplies blood to the ascending colon and the proximal portion of the transverse colon
	B. Left colic		
	C. Right colic		
	D. Superior mesenteric		
110. Which of the following structures crosses the midline between the abdominal aorta and the superior mesenteric artery?	A. Left renal vein	A	Left renal vein from the left kidney crosses the midline to drain into the inferior vena cava.
	B. Left testicular vein		
	C. Right renal vein		
	D. Right ureter		
111. The Hypophyseal Portal System is found in what part of the Pituitary Gland	A. Pars Distalis	A	Hypophyseal portal system primarily supplies the anterior pituitary, specifically the pars distalis, facilitating hormone transport between the hypothalamus and the anterior pituitary.
	B. Pars Intermedia		
	C. Pars Nervosa		
	D. Pars Tuberalis		
112. The liver is mainly supplied by which of the following vessels?	A. Celiac trunk	C	The liver has a dual blood supply ; a dominant venous source (Hepatic Portal vein: 75-80%) and a lesser arterial one (Hepatic Artery: 20-25%).
	B. Hepatic Artery		

	C. Hepatic Portal Vein D. Hepatic Vein		
113. Which of the following structures can be appreciated in a normal abdominal radiograph?	A. Adrenal Glands	D	Psoas is often visible on a normal abdominal radiograph due to its location and density. Other structures that can be seen in an abdominal radiograph include the liver, spleen, kidneys, stomach, intestines, and the outline of the bladder.
	B. Kidney		
	C. Pancreas		
	D. Psoas Muscle		
114. Which of the following structures separates the Pelvic Cavity from the Perineum	A. Colles Fascia	B	Colles Fascia <ul style="list-style-type: none">- Separates superficial and deep perineal space
	B. Pelvic Diaphragm		Perineal Diaphragm <ul style="list-style-type: none">- Located Deeper than Colles Fascia- Involved in supporting pelvic organs and separating anatomical spaces within the perineum
	C. Perineal Diaphragm		Urogenital Diaphragm <ul style="list-style-type: none">- Helps in maintaining pelvic floor integrity
	D. Urogenital Diaphragm		
115. Which of the following uterine structures form the lower uterine segment?	A. Cornu	D	Cornu - region located at each superolateral margin where the tubes emerge
	B. Fundus		Uterine fundus - convex/dome portion between insertion of the tubes
	C. Corpus		Body/corpus - upper ⅔; lies between the layers of the broad ligament
	D. Isthmus		Isthmus - topographic zone between the uterine corpus/body and the cervix
116. Which of the following tubal segments is the widest and usual site of fertilization?	A. Ampulla	A	Ampulla - widest and longest segment. It is also the site of fertilization.
	B. Cornua		Cornua - also known as uterine horns. These are the superolateral regions of the uterine cavity, where the uterine tubes meet.
	C. Infundibulum		Infundibulum - funnel-shaped distal end with finger-like projections called the fimbriae
	D. Isthmus		Isthmus - thick-walled, narrowest part of the tube that enters the uterine horn
			
117. Which ovarian follicle comprises an oocyte surrounded by simple squamous epithelium?	A. Primordial	A	Primordial: <u>simple squamous epithelium</u>
	B. Primary		Primary Unilaminar Follicle: change from <u>squamous</u> to <u>cuboidal</u> in morphology
	C. Secondary		Primary Multilaminar Follicle: Rapid mitotic proliferation of the single layer of follicular cells will give rise to <u>stratified cuboidal epithelial cells</u> or <u>granulosa cells</u>
	D. Mature		Secondary Ovarian Follicle: presence of <u>antrum</u>

			Mature Follicle: <u>single large antrum</u> containing liquor folliculi																		
			Table 3. Summary of the Distinguishing Features of Ovarian Follicular Development [2023A] <table border="1"> <tr> <td>Primordial Follicle</td><td>Primary oocyte enveloped by a single layer of flattened follicular cells</td></tr> <tr> <td>Primary Unilaminar Follicle</td><td>Follicular cells undergo mitosis and forms a simple cuboidal epithelium (unilaminar)</td></tr> <tr> <td>Primary Multilaminar Follicle</td><td>Follicular cells undergo mitosis and forms a stratified cuboidal epithelium (multilaminar)</td></tr> <tr> <td>Secondary Follicle</td><td>(+) Many separate antra</td></tr> <tr> <td>Mature Follicle</td><td>Single large antrum</td></tr> </table>	Primordial Follicle	Primary oocyte enveloped by a single layer of flattened follicular cells	Primary Unilaminar Follicle	Follicular cells undergo mitosis and forms a simple cuboidal epithelium (unilaminar)	Primary Multilaminar Follicle	Follicular cells undergo mitosis and forms a stratified cuboidal epithelium (multilaminar)	Secondary Follicle	(+) Many separate antra	Mature Follicle	Single large antrum								
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118. Which of the following cells nourishes spermatogenic cells?	A. Leydig B. Myoid C. Sertoli	C	 Sertoli cells have 3 general functions: <ol style="list-style-type: none"> 1. Support, protection, and nutrition of the developing spermatogenic cells 2. Exocrine and endocrine secretion 3. Phagocytosis <p>They also form the <u>Blood-testis barrier</u></p> <p>Leydig cells produce testosterone which promotes development of the secondary male sex characteristics</p> <p>Myoid cells allow weak contractions to help move fluid and mature sperm in the tubules</p>																		
119. The epithelial lining of the penile urethra is BEST classified as:	A. Pseudocolumnar B. Simple Columnar C. Simple Squamous D. Transitional	A	<ul style="list-style-type: none"> → Intramural (Preprostatic) Urethra <ul style="list-style-type: none"> ▪ Lined by urothelium → Prostatic Urethra <ul style="list-style-type: none"> ▪ Widest, most dilated ▪ Lined by urothelium → Membranous urethra <ul style="list-style-type: none"> ▪ Shortest and least dilatable ▪ Short segment that passes through the external urethral sphincter ▪ Lined by <u>stratified columnar and pseudostratified columnar epithelium</u> ▪ Bulbourethral glands (or Cowper's glands) are seen here → Penile/Spongy urethra <ul style="list-style-type: none"> ▪ Narrowest part ▪ Longest segment ▪ Ends in male external urethral orifice ▪ Contained within the corpus spongiosum ▪ Lined by <u>stratified columnar and pseudostratified columnar epithelium</u> - EXCEPT in the area of the fossa navicularis, which is lined by stratified squamous epithelium 																		
120. Which lobe will only be revealed when the lips of Sylvian fissure are spread apart on the lateral cerebral hemisphere?	A. Frontal B. Limbic C. Insular D. Temporal	C	 Insular lobe is visible when lateral sulcus is separated. Lateral sulcus is also called as Sylvian fissure																		
121. Which of the following is best found at the level of the midbrain?	A. Facial colliculus B. Middle cerebellar peduncle C. Pyramids D. Red nucleus	D	 Table 28. Adult derivatives of the forebrain, midbrain, and hindbrain [Netter's Atlas of Neuroscience, 2nd Ed.] <table border="1"> <thead> <tr> <th>Primary Brain Vesicle</th> <th>Secondary Brain Vesicle</th> <th>Adult Derivative</th> </tr> </thead> <tbody> <tr> <td>Forebrain</td> <td>Telencephalon</td> <td>Cerebral hemispheres (neocortex) Olfactory cortex (paleocortex) Hippocampus (archicortex) Basal ganglia / corpus striatum Lateral and 3rd ventricles</td> </tr> <tr> <td></td> <td>Diencephalon</td> <td>Optic cup/nerve Thalamus Hypothalamus Mammillary bodies Part of 3rd ventricle</td> </tr> <tr> <td>Midbrain</td> <td>Mesencephalon</td> <td>Tectum (superior, inferior colliculi) Cerebral aqueduct Red nucleus Substantia nigra Crus cerebelli</td> </tr> <tr> <td>Hindbrain</td> <td>Metencephalon</td> <td>Pons Cerebellum</td> </tr> <tr> <td></td> <td>Myelencephalon</td> <td>Medulla oblongata</td> </tr> </tbody> </table>	Primary Brain Vesicle	Secondary Brain Vesicle	Adult Derivative	Forebrain	Telencephalon	Cerebral hemispheres (neocortex) Olfactory cortex (paleocortex) Hippocampus (archicortex) Basal ganglia / corpus striatum Lateral and 3rd ventricles		Diencephalon	Optic cup/nerve Thalamus Hypothalamus Mammillary bodies Part of 3rd ventricle	Midbrain	Mesencephalon	Tectum (superior, inferior colliculi) Cerebral aqueduct Red nucleus Substantia nigra Crus cerebelli	Hindbrain	Metencephalon	Pons Cerebellum		Myelencephalon	Medulla oblongata
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122. Which of the following Rexed laminae is the site of viscerosomatic	A. IX	B	Rexed Lamina IX - Medial nuclear group for the innervation of long and short axial muscles; lateral nuclear group for the																		

convergence responsible for referred pain?	B. V C. II D. VII		<p>innervation of appendicular muscles at spinal cord enlargements</p> <p>Rexed Lamina II - For transmission of pain stimuli, Substantia gelatinosa</p> <p>Rexed Lamina VII - Intermediolateral nucleus and intermediomedial nucleus</p>																									
123. Ninety percent of the human cerebral cortex is made of which type?	A. Archicortex B. Neocortex C. Paleocortex	B	<p>Neocortex constitutes the largest part of the cerebral cortex in humans, making up about 90% of its structure. The neocortex is responsible for higher-order brain functions such as sensory perception, cognition, and generation of motor commands, distinguishing it from the archicortex and paleocortex, which are involved in more primitive brain functions.</p>																									
124. Which of the following speech manifestations is observed in Wernicke's aphasia?	A. Speech without meaning B. No response C. Slow production D. Telegraphic speech	A	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th><th>Fluency</th><th>Comprehension</th><th>Repetition</th><th>Naming</th></tr> </thead> <tbody> <tr> <td>Wernicke's aphasia</td><td>PRESERVED</td><td>IMPAIRED</td><td>IMPAIRED</td><td>IMPAIRED</td></tr> <tr> <td>Broca's aphasia</td><td>IMPAIRED</td><td>PRESERVED</td><td>IMPAIRED</td><td>IMPAIRED</td></tr> <tr> <td>Global aphasia</td><td>IMPAIRED</td><td>IMPAIRED</td><td>IMPAIRED</td><td>IMPAIRED</td></tr> <tr> <td>Anomic aphasia</td><td>PRESERVED</td><td>PRESERVED</td><td>PRESERVED</td><td>IMPAIRED</td></tr> </tbody> </table>		Fluency	Comprehension	Repetition	Naming	Wernicke's aphasia	PRESERVED	IMPAIRED	IMPAIRED	IMPAIRED	Broca's aphasia	IMPAIRED	PRESERVED	IMPAIRED	IMPAIRED	Global aphasia	IMPAIRED	IMPAIRED	IMPAIRED	IMPAIRED	Anomic aphasia	PRESERVED	PRESERVED	PRESERVED	IMPAIRED
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125. Pyramidal cells predominates in which cerebral cortex layer	A. I B. II C. III D. IV	C	<p>Pyramidal cells are most abundant in layer III of the cerebral cortex, where they play a crucial role in intracortical communication and connectivity.</p>																									
126. A tumor compressing at the pre-olivary sulcus would result in an affection involving which structure?	A. CN VI B. CN VIII C. CN X D. CN XII	D	<p>The rootlets of the Hypoglossal nerve (XII) emerge in the sulcus between the pyramid and the inferior olive on the ventral aspect of the medulla (pre-olivary sulcus).</p>																									
127. The sympathetic portion of the intermediolateral gray column extends caudally until which spinal cord level?	A. T4 B. T10 C. L2 D. S4	C	<p>Location of Preganglionic cell bodies Sympathetic: Spinal segments T1-L2, mainly intermediolateral cell column</p> <p>Parasympathetic portion: extends to the spinal cord levels S2 to S4</p>																									
128. The cerebellum is derived from which of the following secondary brain vesicles?	A. Diencephalon B. Telencephalon C. Metencephalon D. Myelencephalon	C	<p>Cerebellum develops from the metencephalon, which is one of the secondary brain vesicles formed during embryonic development.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Primary Brain Vesicle</th><th>Secondary Brain Vesicle</th><th>Ventricular System</th><th>Adult Structure</th></tr> </thead> <tbody> <tr> <td rowspan="2">Prosencephalon</td><td>Telencephalon</td><td>Lateral ventricle</td><td>Cerebral hemisphere Basal ganglia Hippocampus</td></tr> <tr> <td>Diencephalon</td><td>3rd ventricle</td><td>Thalamus Hypothalamus Pineal body Infundibulum</td></tr> <tr> <td>Mesencephalon</td><td>Mesencephalon</td><td>Cerebral aqueduct</td><td>Tectum Tegmentum Crus cerebri</td></tr> <tr> <td rowspan="2">Rhombencephalon</td><td>Metencephalon</td><td>Upper part of 4th ventricle</td><td>Pons Cerebellum</td></tr> <tr> <td>Myelencephalon</td><td>Lower part of 4th ventricle</td><td>Medulla oblongata</td></tr> </tbody> </table>	Primary Brain Vesicle	Secondary Brain Vesicle	Ventricular System	Adult Structure	Prosencephalon	Telencephalon	Lateral ventricle	Cerebral hemisphere Basal ganglia Hippocampus	Diencephalon	3rd ventricle	Thalamus Hypothalamus Pineal body Infundibulum	Mesencephalon	Mesencephalon	Cerebral aqueduct	Tectum Tegmentum Crus cerebri	Rhombencephalon	Metencephalon	Upper part of 4th ventricle	Pons Cerebellum	Myelencephalon	Lower part of 4th ventricle	Medulla oblongata			
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Rhombencephalon	Metencephalon	Upper part of 4th ventricle	Pons Cerebellum																									
	Myelencephalon	Lower part of 4th ventricle	Medulla oblongata																									
129. The structures that absorb CSF are being projected from which meningeal layer?	A. Dura B. Pia C. Arachnoid	C	<p>Cerebrospinal fluid (CSF) is absorbed into the venous system through arachnoid granulations, which are projections of the arachnoid mater into the dural sinuses.</p>																									

130. CSF is withdrawn during a lumbar puncture from which of the following?	<p>A. Epidural</p> <p>B. Subdural</p> <p>C. Subarachnoid</p>	C	The cerebrospinal fluid (CSF) is contained in the brain ventricles and the cranial and spinal subarachnoid spaces .
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