

Review for Final

1.0 Match cranial nerve number to name 5 questions

- I. On - Olfactory
- II. Old - Optic
- III. Olympus' - Oculomotor
- IV. Towering - Trochlear
- V. Top - Trigeminal
- VI. A - Abducense
- VII. Finn - Facial
- VIII. And - Aucustic (Vestibulocochlear)
- IX. German - Glossophyrengeal
- X. Viewed - Vagus
- XI. A - Accessory
- XII. Hop - Hypglossal

2.0 Match cranial nerve to class (sensory motor or mixed) 5 questions

Sensory Only:

CN I – (olfactory) Special sense for smell.

CN II – (optic) Special sense for vision (can they see)

CN VIII – (Vestibulocochlear) Special sense for equilibrium and hearing (can they hear and not fall over)

Motor Only:

CN IV – (tochlear) enervates the superior oblique muscle of the eye. (cardinal movements of the eye)

CN VI – (abducense) enervates the lateral rectus muscle of the eye. (cardinal movements of the eye)

CN XI – (accessory) enervates the SCM and upper trapezius. (turn the head and shrug their shoulders with resistance)

CN XII – (hypoglossal) enervates muscles of the tongue. (move the tongue)

Mixed:

CN III – Oculomotor

1. Extrinsic muscles of the eye. (4 out of 6) (eight cardinal directions of the eye)
2. Parasympathetic to/from the eye. (dialation of pupil, accomodation) (reactive pupils and accomodation)

CN V - Trigeminal

1. General sense of the skin of the face (trigeminal nueroglia. Tic Do Lar Rue (sp?))
2. Motor to muscles of mastication

CN VII - Facial

1. General sense from the external ear.
2. Special sense of taste for anterior 2/3rds of the tongue and soft palette
3. Motor to the muscles of facial expression

4.Parasympathetic to the submandibular gland, sublingual gland, and the lacrimal gland.

CN IX – Glossopharyngeal (CN IX & X share a nucleus – nucleus ambiguus – tough to test separately)

- 1.General sense of skin of external ear and the meatus.
- 2.Special sense for taste for posterior 1/3rd of the tongue.
- 3.General sense for the posterior 1/3rd of the tongue.
- 4.General sense for the major portion of the pharynx and related structures.
- 5.Parasympathetic to the parotid gland
- 6.Motor to the stylopharyngeous muscle

CN X – Vagus

- 1.General sense from the external auditory meatus
- 2.General sense from the lower portion of the pharynx and associated areas
- 3.Motor to much of the muscles of the pharynx and larynx.
- 4.Parasympathetic supply to chest and much of the abdomen.

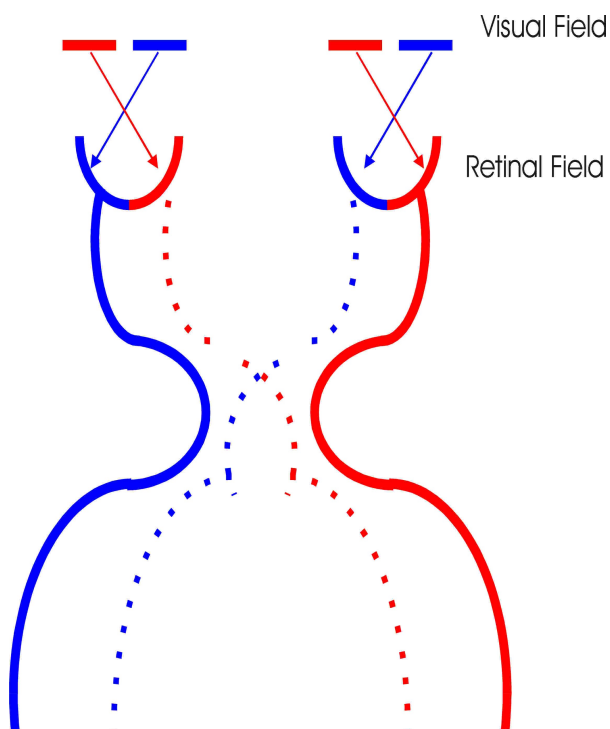
Autonomic Nervous System:

- CN III – parasympathetic to the eye (dilation & accommodation)
- CN VII (Facial) – parasympathetic to lacrimal and submandibular and sublingual glands.
- CN IX (Glossopharyngeal) – parasympathetic to parotid gland
- CN X (Vagus) – parasympathetic to chest/abdomen

Special Senses:

- Vision – Optic (CN II)
- Hearing – Acoustic/Vestibulocochlear (CN VIII)
- Balance – Acoustic/Vestibulocochlear (CN VIII)
- Taste – 1/3rd Posterior IX (Glossopharyngeal) & 2/3rd Anterior VII (Facial)
- Smell - Olfactory

3.0 Match visual field to the side of brain on which it is seen. (right nasal visual field goes to the ...) 3 questions



4.0 Correct order of structures from the eye back into the brain 1 question

CN II – optic nerve

Pupil – the opening in the iris.

Visual Field – The world out there that is reflecting/generating light back to the subject. We always describe things in terms of the patient's visual field.

Retinal Field – The area that the light is hitting on the back of the eyeball. The imprint of the visual field on the back of the eye. The visual field is turned upside down with the lens system in the eye which means that the light hits the retina has been upside down.

Nasal Field – Light that is entering from the nasal side. The nasal visual field is the temporal retinal field.

Temporal Field – Light that is entering from the temporal side. The temporal visual field is the nasal retinal field.

Receptors for color – cones

Receptors for light and dark – rods

Optic Nerve – from the eye back to the Chiasm.

Optic Chiasm - All the axons from the nerve cells of each eye join together to form the left and right optic nerve. They exit the back of the eyeball and merge together to form the optic chiasm.

Optic Tract - The new mix of fibers continues as the optic tract.

All cranial nerves except optic nerve synapse somewhere in the thalamus

Visual radiations – the nerve fibers that travel from the thalamus to the visual cortex.

Visual Cortex – located in the occipital lobe of the brain

Occipital pole – where we see with the most acute vision.

5.0 Lobe of the brain associated with hearing 1 q

- CN VII – the first order neurons travel to the pons and synapse in the nuclei called the dorsal and ventral cochlear nucleus (like the dorsal root ganglion) with the second order neurons.
- The pathway is both contralateral and ipsilateral. Meaning that if there is damage to one side of the brain, you still have bilateral hearing.
- There are commissural fibers that probably mean the two sides of the brain are “talking” with each other interpreting the messages.
- The final pathway is the auditory radiation. (pathway of the 3rd order neuron)
- **You end up in the temporal lobe called the “transverse gyrus of Heschl” - primary hearing center. (there's also a secondary hearing center as well.)**
- It's a three neuron pathway.

6.0 Lobe of brain associated with sight 1 q

Occipital Lobe.

7.0 Functions of ascending and descending reticular formations 1q

Reticular System: A “thing” found in the brain stem. – the oldest systems in animal nervous systems.

Both anatomically and physiologically it can be divided into two parts

- descending part is - motor
- ascending part is - sensory

The functions of the descending portion:

- To relay impulses from the hypothalamus to the preganglionic neurons in the autonomic nervous system.
- functions as a relay station, relaying involuntary motor impulses from the sub-cortical area to the voluntary muscles.
- **The Reticular system is found in the brain stem.** It is made up of numerous nuclei (groups of nerve cell bodies)

Reticular Activating System – RAS – the ascending part of the the reticular system that receives incoming messages. This goes to the thalamus and then to the cortex.

The RAS's major function that we are aware of is the control of the – levels of consciousness and sleep

8.0 Antidiuretic hormone, what it does and where it works. 1Q

Kidneys Function: Normally let water out of the body unless a hormonal brake is applied.

Hormone brake: Anti-diuretic hormone (ADH). This comes from the hypothalamus.

The hypothalamus can sense : The degree of hydration of the body by reading the degree of hydration of the blood. This is done by the posterior lobe of the pituitary gland

ADH is release when you want to retain water, it is withheld when you want to get rid of water.

The hypothalamus has direct control over the posterior lobe of the pituitary lobe. ADH is produced, in part, by the supra-optic nucleus. It is then sent to the posterior pituitary gland to be stored/released as needed.

9.0 Know actions of body (what raise or lower body temperature) 5 q's

Measuring:

- Anterior Hypothalamic area – measures the blood and sees if it is too hot.
- Posterior Hypothalamic area – measures the blood and sees if it is too cool.

The descending tract leaving the hypothalamus called the Dorsal longitudinal fasciculus (DLF).

To Warm – messages go out the DLF to

- Dialiation of peripheral blood vessels under the skin
- Increase in sweating
- Increase in respiratory rate
- Increase in body's metabolic rate (slow down the engine)
- Increase in blood flow to the periphery of the body.

To Cool - Messages go out the DLF to

- Peripheral vasoconstriction
- Decrease in peripheral blood flow
- decrease in body's metabolism (turns up the engine)
- Shivering (of voluntary muscles – to produce heat)
- Decrease the respiratory rate.

10.0 Brodman's Classification (numbering of cortex) to the degree in class 5q's

Brodman System – system for mapping the brain and giving specific areas that have a proven function a specific number.

Primary motor area – 4 (pre-central gyrus)

Primary Visual area - 17 (occipital pole – area for most acute vision)

Primary auditory areas – 41 & 42

Primary sensory reception – 3, 1, & 2 – post central gyrus. (order is important)

Primary site of personality are the frontal pole. There is no number. Site for frontal lobotomy. Moniz, a Portuguese Dr won a Nobel prize for this in 1949.

Associative Areas - Many of the primary areas have associative areas as well. These are areas that modify/temper/interpret the primary areas. (4s for example suppresses 4.)

11.0 Identify meningeal layers by description 3 q's

- **Dura mater** (tough mother) - made of tough connective tissue. Attached to/intermixed with the inner layer of the skull (endosteum).
- **Arachnoid mater** (Spider mother) - very thin, filament like connective tissue.
- **Pia Mater** (tender mother) - very thin, capillary rich (good blood supply) attached directly to the material of the brain. Follows the gyrus and sulci.

12.0 Located and give functions of menigeal spaces 2 q's

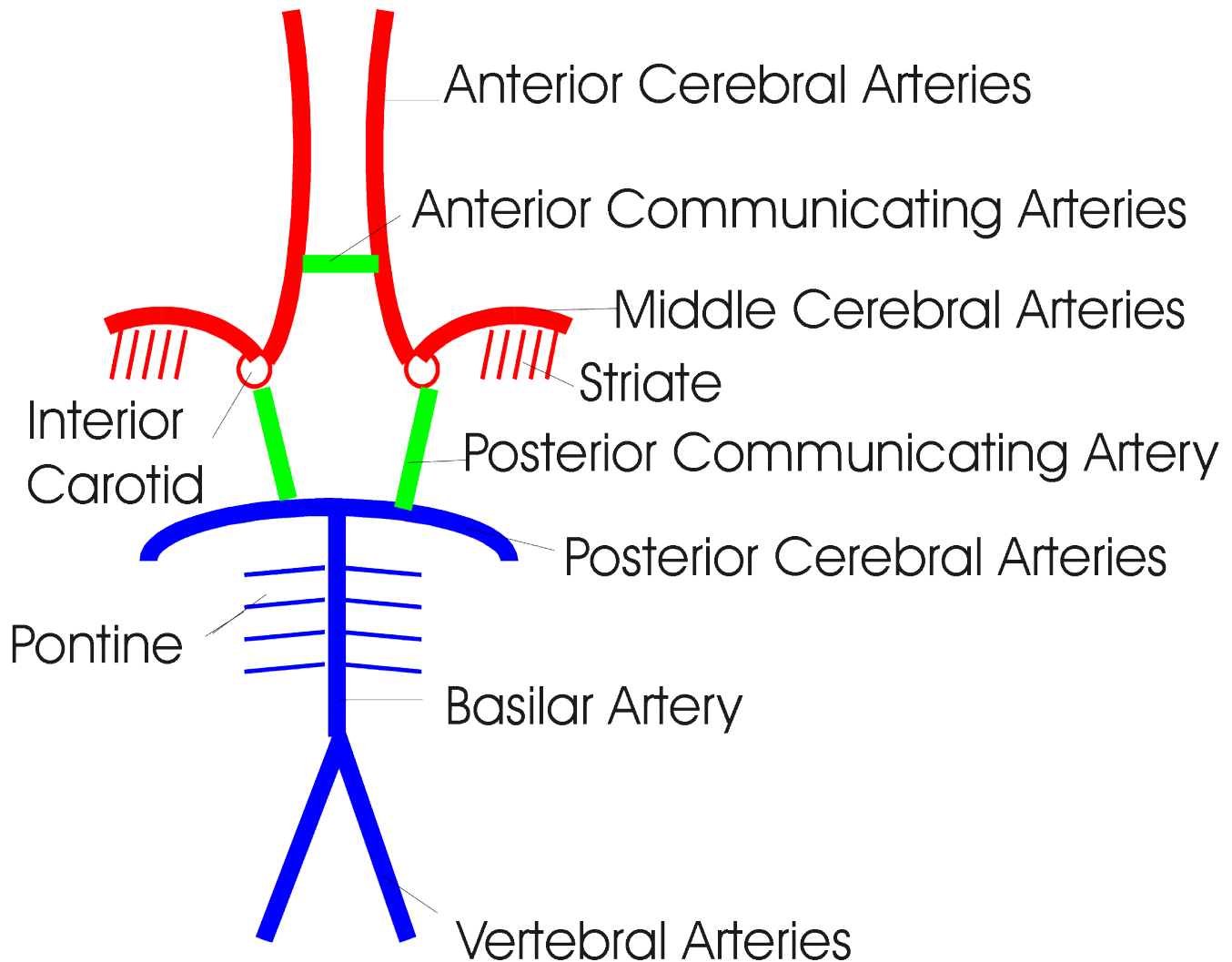
- **Epidural space** – between the outer bone and dura mater. (in a few places where the dura has pulled away from the bone. These are sinuses. They are spaces for large veins.
- **Sub-dural space** – between the dura mater and arachnoid. Has a small amount of lubricant that keeps the archnoid and dura from sticking together. Not much space.
- **Sub-arachnoid space** – between the arachnoid and pia and is where you find CSF.
 - **Arachnoid trebeculations** – attach the arachnoid layer to the pia mater.

13.0 Function of dura mater extensions - 3q's

Where there are deep crevices, the dura will dip down into these areas and take on special names.

- Falx cerebri - separates the right and left cerebral hemispheres.
- Tentorium cerebelli - Separates the occipital lobe above, from the cerebellum below.
- Falx Cerebelli - separates the two cerebellums.

14.0 Diagram – label circle of Willis (5 q's)



15.0 Identify by description, location, function structures of ventricular system 5 q's

Names of the ventricles

- Right and left lateral ventricles – inside the right and left cerebral hemispheres
- Third ventricle – the third ventricle. Between the right and left diencephalon.
- Fourth Ventricle – fourth ventricle – lies inside the pons and medulla.

Names of the connections

- Inter-ventricular foramen of Monro – Connects the right and left lateral ventricles and the third ventricle.
- Cerebral aqueduct of Sylvius - Connects the 3rd and forth ventricle. (In the mid-brain)

Names of the structures that create CSF fluid

- Choroid plexus – found within all of the ventricles. It makes CSF.
- Ependimal Cell – does something with the CSF. (doesn't really produce it)

The CSF fills up the four ventricles and flows into the subarachnoid space of the meninges. It does this

through the fourth ventricle thru three wholes.

- Foramen of Magendie - middle space
- Foramina of Luschka – two lateral holes.

Other Notes:

- About 30ml/hours is produced.
- The subarchanoid space pressure is 74 to 150mm Hg
- **Arachnoid Granulation** – the region of the arachnoid around the superior saggital sinus where the excess CSF travels back into the blood stream.

16.0 Nerve supply to the tongue 4 q's

