**Mid-Term Assignment**

**Course Title: Human Physiology II**

**Rad 2nd semester section A**

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**Note:**

* **Attempt all questions, all questions carry equal marks.**
* **Answer Briefly and to the point, avoid un-necessary details**

**Q1:** (A) A post stroke patient come to clinic, during examination you found that patient is unable to speak nor understand, what you are talking (Global Aphasia), in such case which lobes of brain could be involved?

Explain that lobes and write down its function.

ANSWER:

During examination we found that stroke paitent is unable to speak nor understand , what we are talking . After examination we found that theirtemporal and frontal lobe is affected .

Their are 4 lobes of cerebrum . cerebrum is the largest part of human brain . Involved intellectual function such as memory, attention, awarness, thought , language and consciousness.

# FRONTAL LOBE :

The frontal lobe is the largest lobe of all 4 major lobe . frontal lobe is located near forehead . if the person frontal lobe is affected they face difficulty in job and relationship means their personality is affected and they face many problems.

## FUNCTION :

Following are the function of frontal lobe are given as under .

Problem solving

Working memory [ short term memory ]

Impulsive behaviour

Planning [ predicting the future]

Monitoring [ evaluting a situation ]

Speech [language expression]

Control various motor movement of the body

Sustained attention keeping eyes on target

# TEMPORAL LOBE :

Located beneath the lateral fissure on both cerebral hemispheres

### FUNCTION:

Involved in processing audiotory signals.[ receives sensory informatiom such as sound ]

Preception,memory,speech,emotions ,comprehension and vision .

(B) A post stroke patient come to clinic, during examination you found that patient have difficulty in walking including problem with balance and also have tremor. Which part of brain could be involved in this patient? Explain that part and write down its function.

# CEREBELLUM:

The term cerebellum is derived from latin word which means small brain . The cerebellum is located behind top part of brain stem where the spinal cord meets the brain and is made of two hemispheres. It is the 2nd largest part of the brain. Plays an important role in motor control .integration , regulation and coordination of motion.

3 pairs of fiber bundles attaches it to brainstem [ cerebellar peduncles]

SUPERIOR PEDUNCLES:

Superior peduncles connected to the upper pons.

MIDDLE PEDUNCLES:

Connected lateral aspect of the pons .

INFERIOR PEDUNCLES:

Beneath middle peduncles and cooect to dorsal lateral surface to upper medulla .

# CEREBELLUM LOBES:

Cerebellum contain three lobes .

ANTERIOR LOBE :

Anterior lobe get information from spinal cord

POSTERIOR LOBE :

Posterior lobe is the largest lobe get information from cortex.

FLOCCULONODULAR LOBE :

Get information from vestibuli [inner ear]

Vermis is present in between two lobes .

Their are 3 lobes which get information from different parts. Receive information from sensory and regulates motor movement responsible for voluntary movement.

**Q 2:**(A) During assessment of post stroke patient, you found that patient have sensory loss over skin of forehead, eye lids and nose as well as teeth of upper jaw, moreover also have motor loss in mylohyoid muscle and in anterior belly of digastric. Which cranial nerve involve in this patient?

Write down function and its different component.

# TRIGEMINAL NERVE:

Trigrminal nerve is one of the most important cranial nerve and have both sensory and motor component .

### TRIGEMINAL NERVE:

Trigeminal nerve arise from pons 🡪trigeminal ganglia and have three branches

1.OPTHALMIC BRANCH : [ sensory ]

Supply to the forehead ,eyelid , scarf and nose [upper nose]

2.MANDIBULAR BRANCH :[ motor + sensory]

Motor nerve Supply to the

1.muscle of mastication.

Temporalis

Masseter

Medial pteriygoid

Lateral pteriygoid

2.anterior belly of digastric muscle

3.mylohyoid muscle

SENSORY nerve :

Supply to skin [check] ,TMJ temporal mandibular joint , interior part of the tongue [2/3] . lower jaw .

3.MAXILLARY NERVE:

Supply to skin of maxilla ,upper jaw[teeth].

(B) Post stroke patient come to clinic, during assessment you found that patient have lost general and taste sensation in posterior 1/3 of tongue. Which cranial nerve involve?

Write down its function and components.

# GLOSSOPHARYNGEAL NERVE:

Mixed nerve 🡪 both sensory and motor nerve .

MOTOR NERVE :

Stylophyragous muscle .

FUNCTION :

It help in swallowing supply to the supply to the stylophyrangeus muscle of pharynx .

SENSORY NERVE :

Supply to the posterior 1/3 part of the tongue [pain , taste etc].

Glossopharyngeal nerve responsible for general sensation along with the sensation are transmitted through

Lingual branches 🡪 responsible for sensation of tongue.

* Tonsilar branches involve in the sensation of tonsil
* Pharyngeal branches responsible for innervations to the muscle of pharynx .
* Tympanic plexus

Tubal branch of tympanic plexus being with it sensory information from pharyngotympanic tube 🡪 connect nasal pharynx and middle ear.

* The final area of general sensation received by glossopharyngeal nerve arises from the external ear known as communicating branch of the vagus nerve .

**Q3:** (A) What is accommodation in eye and explain its relation with lens of eye?

# ACCOMMODATION:

Accommodation is the optical power of eye in which the eye see objects clearly at different distance. This process is achieved by the lens changing its shape [eye curvature changes ].

### Accommodation relation with the lens of eye :

🡪Human eyeball [ BULBUS OCCILI] is approximately globe shaped with a diameter of about 24mm. It is slightly flattened from above downwords.

🡪Eyeball is made up of two segments. Anterior and posterior part .

🡪Normal vision range is 25cm to infinity .

🡪Radius is about 8mm. The light sensitive structure called retina .

🡪Eyeball is situated in bony cavity called orbital cavity also known as eye socket .eyeballs are attached to orbital cavity by the ocular muscle .

🡪The ocular structure involved in accommodation include the ciliary muscle , lens and pupil.

🡪PUPIL: which is located in the middle of eye. It is black in color and constricts to precent light rays . which diverged from touching the retina and causing blurred vision.

🡪LENS: of eyeball is crystalline in nature . it is situated behind the pupil. It is a biconvex in shape [both surface are shaped like the exterior of the circle ] , transparent and elastic structure. Lens refracts light rays and helps to focus the image of the object on retina.

The measurement changes in the lens structure during accommodation and aging .

Lens is formed of 3 layers.

1.capsule

2. anterior epithelium.

3.len substance .

🡪CILIARY MUSCLE:

The ciliary muscle is a smooth muscle that is shaped like a ring and it is located in the middle of eyes . it holds the lens with the suspensory ligaments and also adjust the optical power or shape of the lens during accommodation.

🡪During accommodation the cilliary muscle contract and moves the ciliary body anteriorly and deep to words the optic axis. All the musles work simultaneously and tension on the zonular ligaments is relaxed . when the lens releases tension .

🡪It increases its biconvexity and enables focusing on closer objects easier .the anterior lens curvature radius changes most during accommodation.

🡪Accommodation also leads to constriction of the pupil due to constriction of the sphincter papillae and convergent eye movement caused bt constriction of the medial . superior and inferior recti which are all innervated by the oculomotor nerve.

(B) How stimulus of light goes through eye ball and reach up to Brain? Explain in detail

ANSWER:

🡪As we know that vision depends on brain as much as on eye. The eye main job is to detect pattern of light then they work with brain to turn those pattern into images.

* Light rays bound of an object we are looking at lets suppose the object is dog to our eye then light enters to the outer part of the eye called cornea .
* It helps our eye focus the light to make things look Sharpe and clear then light ray pass to the pupil.
* Pupil is the dark round circle and the colored part of the eye called iris.
* It control how why the pupil is and how much light can pass into our eye .
* In bright light the iris narrows the pupil reducing the amount of light enter the eye .
* In dim light the iris wider the pupil to let in more light.
* All this happens automatically behind the iris lens is present.
* Which help focus the light coming in our eye. So we can see clearly
* When lens ,cornea , pupil all works together properly. They will focus light on the back of the eye. That’s important because lining the back of the eye is the retina .
* Which detect light and turn it in to electrical signals those signals eventually make way to the OPTIC NERVE .
* Which is like a cable connecting retina to brain .
* Retina helps to creates rough image but it sees the world upside down
* Its our brain that turn what we see right side up
* Also when we looking an object each eye gets a slightly different view of the world
* The brain combine that views and make them one picture.
* The brain also adds a lot of details to our vision like shape, movement and colors etc.
* Brain connect to the sense of sight. The sense of sight is considered to be one of the most complex of the five human senses.
* Nearly 70 percent of all the sensory receptor in your whole body are in the eyes.