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**Department: Radiology 2nd semester**

**Section: A**

**Subject: Physiology ||**

**Paper: Mid-Term**

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 **Marks: 30**

**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.

Ans: Part (A)

1. Frontal Lobes :

* The frontal lobes are located in the front of the brain.
* It is large in size.
* The right hemisphere of the frontal lobes controls the left part of the body.
* Also most common place for brain injury to occur.

Function :

* It has many functions, such as
* Memory
* Speaking
* Emotional expressions
* Problem solving
* And it is the center of planning, body movement control etc.
* And most common disease ( Depression) which is caused by a stroke in the medial part of the frontal lobe.

2. Temporal lobes:

* The temporal lobes are located on the side of the brain just behind the ears

and extended both sides of the brain.

* Part of temporal lobe called Hippocampus, which plays an important role

In memory.

* It is also a part of the cerebrum.

Function:

* Its function are
* Vision
* Memory
* Sensory input
* Emotion
* Comprehension and language

Global aphasia :

* Global aphasia is a disorder caused by demage parts of brain that control language.
* The global aphasia patients often can’t read and write
* Common causes of global aphasia are, such as
* Stroke
* Brain trauma
* And cognitive ability lost

(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.

Ans: Part (B)

Cerebellum :

* Cerebellum is located behind the top of the brain stem (where the spinal cord meets

the brain) and is made up of two right and left Hemispheres.

* Cerebellum is called small brain.
* And largest part of hind brain.
* It is about the size of baseball
* It regulates and coordinates muscular activity.

Function:

* Cerebellum contains 50% percent of the brain neurons.
* Cerebellum receives information from sensory system of the spinal cord and other

parts of the brain.

* Coordinates voluntary movements.
* Walking
* Standing
* Motoric activities

**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.

Ans: Part (A)

Trigeminal Nerve:

* Trigeminal nerve is the fifth (5th) cranial nerve simply CN5.
* It is also the largest cranial nerve and is the great sensory nerve of the head and face,

and the motor nerve of the muscles.

Function:

* It supplies sensation,
* To the face
* Moucus membrane
* Multiple sclerosis
* Auto immune disease
* Attack tissues
* Fatty substances
* Motor nerve for the muscles of mastication
* And other structures of the head.

Components:

* The components of the trigeminal nerve are
* Opthalmic (abbreviated as CN V1) General sensory component.
* Maxillary (abbreviated CN V2) General sensory component.
* Mandibular (abbreviated CN V3) both General sensory and brachial motor component.

(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.

Ans: Part (B)

Glasophryngeal Nerve:

* Glasophryngeal nerve is the ninth (9th) cranial nerve simply CN9.
* Exist in the brain stem of sides of upper medulla.
* It is originated from medulla oblongata.

Medulla oblongata:

* Medulla oblongata connects our brain and our spinal cord with sensory nerves and motor fibers.

Function:

* Breathing
* Heart
* Swollowing
* Sneezing
* Fore brain= midbrain
* Nerve demage that cause neurons problems.

Components:

* Components of trigeminal nerves are
* Contains both afferent sensory and efferent motor components.
* Sensory, efferent motor and parasympathetic fibers, branches consist of tympanin, tonsillar, stylopharyngeal and carotid sinus nerve.

Function:

* Provides test sensation to the posterior 1/3 of the tongue,with its lingual branch.
* It receives general somatic sensory fiber (ventral trigeminothalmic tract) from the tonsils, the pharynx, the middle ear.

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

Ans: Accommodation of Eye.

* Accommodation is the mechanism by which the eye changes refractive power by altering the shape of lens in order to focus at variable distances.
* The accommodation of eye is not the same for all animals.

Types of accommodation:

* Tonic accommodation
* Proximal accommodation
* Reflex accommodation
* Convergence – accommodation

Relation with lens of eye:

 Focus on near object:

* The lens becomes thicker, this allows the light rays to refract (bends) more strongly.

Focus on a distant object:

* To focus on a distant object the lens is pulled thin, this allows the light rays to refract slightly.

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

Ans:

 Stimulus of light through eye ball reach to the brain:

* When focused light is projected onto the retina, it stimulates the rods and cones. The retina then sends nerve signals are sent through the back of the eye to the optic nerve. The optic nerve carries these signals to the brains, which interprets them as visual images.

Inside the eye:

* Posterior chamber, Anterior chamber, Pupils, Lens, Retina, Optic nerve, Macula, Cornea, Iris, Ciliary, Muscle, Conjunctiva, Episclera. And sclera (which is called white of the eye).

Explanation:

* Cornea:Light enters the eye through cornea.
* Pupil: After passing light through cornea, light travels the pupil.
* Iris: Iris circular colored area of the eye sorrounds the pupil. Iris work allows more light to the eye. Behind the iris sits the lens by changing its shape, the lens focuses light onto the retina.
* Retina: The retina contains the cells that sense light and the blood vessels that nourish them.
* Macula: The small area and most sensitive part, which has millions of tightly placed photoreceptors.
* Optic Nerve: Photoreceptor are bundled together to form the optic nerve.
* There are two main types of photoreceptor cones and rods.
* Cones: Cones are responsible for sharp, detailed central vision and color vision.
* Rods: Rods are responsible for night and peripheral vision. Rods are grouped mainly the peripheral area of the retina.
* Eyeballs is divided into two sections, which is filled with fluid such as, Anterior segment and Posterior segment.
* Anterior segment: It is front section extends from the inside of the cornea to the front surface of the lens. It is filled with fluid called the aqueous hammer.
* Aqueous Hammer: Which nourishes the internal structures.
* Posterior segment: Back section which is extends from the back surface of the lens to the retina. It contains a jelly like fluid called vetrious hammer.

 The End