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Q No 1

Ans:-

Structure of Eyes:-

Definition:-

The eye or the  
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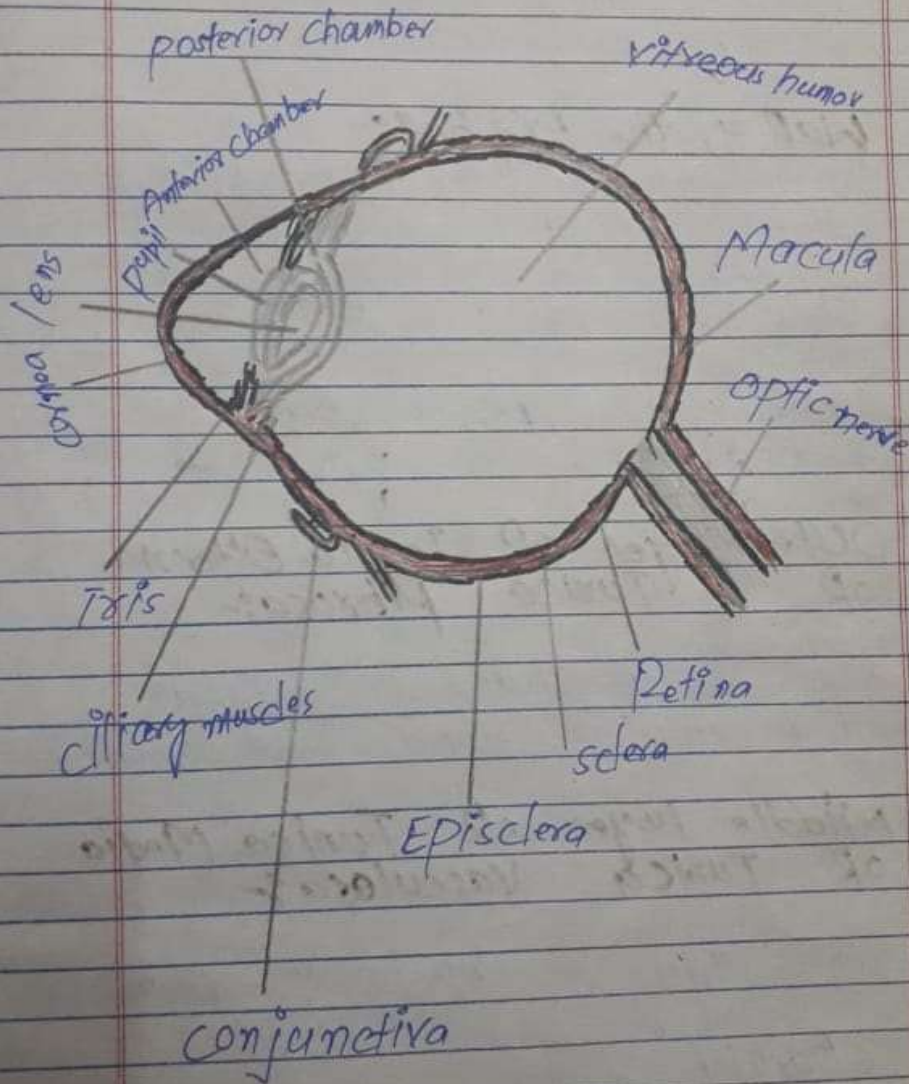
- organ of sight is situated in the orbital cavity of the skull.
- It is well protected by bony walls of the orbit.
  - Orbit also contains muscles of eye ball, their nerve, blood vessels and lacrimal gland.
  - Each eye ball is similar to a camera and which produces images.
  - The eye has a number of components. These components included but not limited to cornea, iris, pupil, lens, retina, macula, optic nerve, choroid and vitreous.
- The lens is the transparent structure inside the eye that focus light rays onto the retina.

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# Structure of EYES



P.T.O



### Structure of the Eye ball :-

1. Wall of Eye ball
2. Light transmitting media or refractive media.

### Wall of the Eye ball :-

- \* Outer layer (Fibrous coat) Sclera and Cornea.
- \* Middle layer (Vascular coat): Choroid, ciliary Body and Iris.
- \* Inner layer (Nervous coat): Retina.

### Outer layer OR Tunica Externa OR Tunica Fibrosa :-

This gives shape of eyeball and contains sclera and cornea.

### Middle layer OR Tunica Media OR Tunica Vasculosa :-

This layer comprises of three structures :-

- Choroid
- Ciliary body
- Iris

The choroid, ciliary body and iris together form the

The Uveal tract.  
This layer contains blood vessels pupil is the small opening in front of it.

Inner layer (OR) Tunica Interna  
(OR) Tunica Nervosa (OR)  
Retina:-

Retina is the ~~white~~ light sensitive membrane

Sclera and Cornea:-

- Sclera or the white of the eye forms the outer most layer of the eyeball.
- > The anterior one sixth part of the Sclera is transparent and is known as Cornea.
  - > The cornea is described as the window of the eye.
  - > light rays pass through the cornea to reach the retina.

\* Function of Sclera:-  
Provides protection to the delicate structure within the eye.



- \* It resists intravascular pressure.
- \* It maintain shape of the eye ball.
- \* The smooth external surfaces allow easy eye movement.

### Choroid:-

Choroid is a thin pigmented membrane of dark brown in color which is situated in between sclera (externally) and retina (internally)

### Ciliary body:-

Ciliary body is the continuation of choroid consisting of smooth muscle fibres the ciliary muscle.

- Ciliary body contains suspensory ligament for attaching lens in position.
- The ciliary muscles help in accommodation by adjusting the thickness of lens.

### Iris:-

- The iris is the pigmented membrane surrounding the pupil.

- It arises from the margin of ciliary body and forms a dark centred opening called pupil.
- The space between cornea (in front) and the lens (behind) is the anterior segment.
- It is again divided into two parts by the iris.
- The space between the iris and cornea is the anterior chamber.
- The space between iris and lens is posterior chamber.
- They are filled with a clear fluid, the aqueous humor.

### Retina:-

- Retina is the inner most layer of the eye ball.
- It is a thin delicate layer continuous posteriorly with optic nerve.
- The outer surface of Retina, formed by pigment cells, is attached to choroid.
- Its inner surface is contact with the hyaloid membrane.
- The small area of retina where the optic nerve leaves



The eye is the optic disc.

### Retina Three parts:-

- Optic
- Ciliary
- Iridial

- \* The optic parts contains nervous tissue and it is sensitive to light.
- \* It extends from the optic disc to the ciliary body.
- \* When a non nervous & non sensitive layer covers the ciliary body and iris is called ciliary iridial part of retina.

### Blood Supply:-

- \* Arterial blood is supplied by branches of ophthalmic artery (ciliary arteries and central retinal artery)
- \* Venous drainage a number of veins including the central retinal vein.

### Light Transmitting Media

### OR Refractive Media:-

- Aqueous humor
- Vitreous humor



→ Lens

### Aqueous Humor:-

Aqueous humor is a colorless fluid fills the space between cornea and lens.

→ It is secreted by capillaries of ciliary process.

### Vitreous Humor:-

→ Vitreous humor or vitreous body is a colorless & transparent jelly-like substance which fills the posterior segment of the eye (behind the eye)

### Lens:-

- \* The lens of the eyeball is crystalline in nature.
- \* It is situated behind the pupil.

### Accessory organs of Eye:-

- \* Eyebrows
- \* Eyelids and Eyelashes
- \* Lacrimal Apparatus
- \* conjunctive.

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Functions:-

- \* It helps to maintain Intraocular pressure and thus maintains the shape eyeball.
- \* It is rich in ascorbic acid glucose and amino acids and nourishes the cornea and lens.
- \* It helps to pressure the spherical shape of the eyeball and to support the retina.

Name the Foramina found in the base of skull:-

- Foramina Cecum
- Optic Foramen
- Foramen lacerum
- Foramen rotundum
- Foramen magnum
- Foramen ovale
- Jugular Foramen
- Internal acoustic meatus



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- Mastoid Foramen
- Sphenoidal emissary Foramen
- Foramen Spinosum
- Cribriform plate olfactory (CNI)
- Optic canal
- Optic n (CNII)
- Superior orbital fissure
- oculomotor n (CNIII)
- Trochlear n (CNIV)
- Ophthalmic n (CNV<sub>1</sub>)
- Abducens n (CNVI)
- Foramen rotundum
- Maxillary n (CNV<sub>2</sub>)
- Foramen ovale
- Mandibular n (CNV<sub>3</sub>)
- Internal acoustic meatus
- Facial n (CNVII)
- Vestibulocochlear n (CNVIII)
- Jugular foramen
- Glossopharyngeal n (CNIX)
- Vagus n (CNX)
- Accessory n (CNXI)
- Hypoglossal Canal
- Hypoglossal n (CNXII)

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Q No 2

Ans:-

Names of the muscles of the medial ~~part~~ fascial compartment of thigh

With their origin and insertion:-

1:- Adductor magnus:-

The adductor magnus is the largest muscle in the medial compartment. It lies posteriorly to the other muscles.

Origin:-

Inferior ramus of pubis, ramus of ischium, ischial tuberosity.

Insertion:-

Posterior surface of shaft of femur, adductor tubercle of femur.



2. Adductor longus:-

The Adductor longus is a large flat muscle.

It partially covers the adductor brevis and magnus.

origin:-

→ Body of pubis medial pubic tubercle.

Insertions:-

→ posterior surface of shaft of femur (linea aspera).

3. Adductor brevis:-

The adductor brevis is a short muscle, lying underneath the adductor longus.

origin:-

inferior ramus of pubis

Insertions:-

posterior surface of shaft of femur (linea aspera)

## 4. Gracilis:-

The Gracilis is the most superficial and medial of the muscles in this compartment.

## Origin:-

Inferior ramus of pubis, ramus of ischium.

## Insertion:-

Upper part of shaft of tibia on medial surface.

## 5. Obturator Externus:-

The Obturator externus is the outer surface.

## Origin:-

Outer surface of obturator foramen and pubic and ischial rami.

## Insertion:-

Medial surface of greater trochanter.

## 6. Pectineus:-

This is a

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flat & quadrilateral muscle.  
The pectineus is sometime included in this group, and some times excluded.



Q No 4

Ans:-

Sutures of skull:-

Cranial Sutures:-

The cranial sutures are are fibrous joints connecting the bones of the skull. The dense fibrous tissue that connects the sutures is made mostly out of collagen.

Anterior aspect of skull:-  
 ⇒ Frontonasal Suture:-

The frontonasal suture joints between the frontal bone and nasal bone.

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> **Frontozygomatic Suture:-**

Between the frontal bone and zygomatic bone.

> **Zygomaticomaxillary Suture:-**

Between the zygoma and the maxilla.

> **Intermaxillary joint:-**

The width of this joint is significantly increased during a maxillary expansion treatment.

> **Metopic Suture:-**

Is persistent childhood suture that runs down the midline of the frontal bone.

> **Posterior aspect of skull:-  
Sagittal Suture:-**

The joins the two parietal bones.

> **Lambdoid suture:-**

Between the parietal bone and occipital bone.

> **Lambda:-**

Convergence of the sagittal and lambdoid suture.

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Superior aspect of skull:-Coronal Suture:-

Between the frontal bone and the parietal bone.

Bregma:-

Convergence of the sagittal and coronal sutures.

Lateral aspect of skull:-Squamosal Suture:-

Between the parietal bone and temporal bone.

Sphenofrontal Suture:-

Between the frontal bone and sphenoid bone.

Sphenoparietal Suture:-

Between the sphenoid bone and parietal bone.

Occipitomastoid Suture:-

Between the occipital bone and mastoid process of the temporal bone.

Temporozygomatic Suture:-

Between the temporal bone

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and zygomatic bone.  
**Inferior aspect of Skull:-**

**Median palatine suture:-**

Between the horizontal plates of the palatines.

**Transverse palatine suture:-**

Between the palatine process of the maxillary bone and the palatine bone.

**Petro-occipital Sutures:-**

Between the occipital bone and petrous part of the temporal bone.

**Spheno-occipital suture:-**

Between the sphenoid bone and occipital bone.

**Petrosquamous suture:-**

Between the petrous and squamous part of the temporal bone.

**Petrotympanic suture:-**

Between the temporomandibular joint and the tympanic cavity.



## Trigeminal Nerve:-

The Trigeminal nerve (5th cranial nerve) is a nerve responsible for sensation in the face and motor function such as biting and chewing.

The trigeminal nerve is the largest and most complex of the 12th cranial nerve (CNs). It supplies sensation to the face, mucos membrane. And other structures of the head.

It is the motor nerve for the muscles of mastication and contains proprioceptive fibers.

- Its name complex of the cranial nerves.
- Its Name (Trigeminal = Tri or three and geminus ? or twin).

## Branches of trigeminal nerve:-

### 1. Ophthalmic:-

(V1 - sensory)

The ophthalmic nerve supplies the skin of the face head, the

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The upper eyelid, the conjunctiva, and the side of the nose down to and including tip.

→ Five branches of the nerve pass to the skin.

1. Lacrimal nerve
2. supraorbital nerve
3. Supratrochlear nerve
4. Infra trochlear nerve.
5. external nasal nerve.

## 2. Maxillary Nerve:-

(V<sub>2</sub> ? Sensory)

The maxillary nerve supplies the skin on the posterior part of the side of the nose, the lower eyelids, the cheek, the upper lip, and the lateral side of the orbital opening.

→ Three branches of the nerve pass to the skin.

1. Infra Orbital nerve
2. Zygomatico Facial nerve
3. Zygomatico temporal nerve

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3. Mandibular:-

(V3, motor and sensory)  
 The mandibular nerve supplies the skin of the lower lip, the lower part of the face, the temporal region, and part of the ~~face~~ <sup>ear</sup>: all side. It then passes upward to the side of the scalp.

Three branches of the nerve pass to the skin

1. Mental nerve
2. Buccal nerve
3. auriculo temporal nerve.



Q No 5

Ans:-

Spinal cord:-

The spinal cord is a long, thin, tubular structure made up of nervous tissue, which extends from

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the medulla oblongata in the brain stem to the lumbar region of the vertebral column. It encloses the central canal of the spinal cord, which contains cerebrospinal fluid. The brain and spinal together make up the central nervous system (CNS).

In humans the spinal cord begins at the occipital bone, passing through the foramen magnum and entering the spinal canal at the beginning of the cervical vertebrae. The spinal cord extends down to between the first and second lumbar vertebrae.

⇒ The spinal cord is tubular bundle of nervous tissue and supporting cells that extends from the brainstem to the lumbar vertebrae.

⇒ Together, the spinal cord and the brain form the central nervous system.

⇒ It extends from the foramen magnum at the base of the skull to the L1/L2 vertebra where

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It terminates as the conus medullaris.

## Spinal Cord Anatomy:-

The spinal cord is usually 40cm long and 20cm wide.

It forms a vital link between the brain and the body.

The spinal cord divided into five different parts:

- Sacral cord
- Lumbar cord
- Thoracic cord
- Cervical cord

Several spinal nerves emerges out of each segment of the spinal cord.

- Cervical - 3
- Lumbar - 5
- Thoracic - 12
- Sacral - 5
- Coccygeal - 2

It performs the primary processing of information as it carries sensory signs from all rest of the body.

to Central Nervous system.  
Nerve tissue consists of the grey and white matter spread across uniformly.

### Structure of Spinal cord:-

The spinal cord runs through a hollow case from the skull enclosed within the vertebral column. Spinal nerves arise from different of the vertebral column and are named accordingly to the regions.

1. Neck region
2. Chest region
3. Pelvic region
4. Abdominal region

Cross-section of spinal cord displays grey matter shaped like a butterfly, surrounded by a white matter.

### Grey Matter:-

It consists of the central canal at the centre and filled with a fluid called CSF. It mainly contains neurons and cells of the CNS.

### White Matter:-

Consists of a collection of axons permitting communication between different layers of CNS.



### Three layers:-

- Dura Matter
- Arachnoid Matter
- pia Matter

### Spinal cord

- Upper cervical
- Lower cervical
- Upper thoracic
- Lower thoracic
- Lumbar
- Sacral

### Corresponding

### Vertebral Body

Some as cord level.

+ 1

+ 2

+ 2 to 3 level

T<sub>10</sub> - T<sub>12</sub>

T<sub>12</sub> - L<sub>1</sub>

### Pharynx:-

### Pharynx:-

The pharynx is situated behind the nasal cavities, the mouth, and the larynx and may be divided into:

- Nasal
- Oral
- Laryngeal parts.

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### Shaped:-

The pharynx is funnel shaped, its upper, wider end lying under the skull and its lower, narrower end becoming continuous with the esophagus opposite the 6th cervical vertebra.

The pharynx has a musculomembranous wall, which is deficient anteriorly.

### Muscles of the pharynx:-

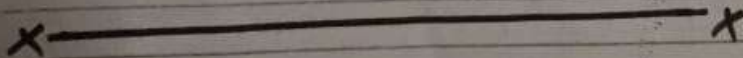
- stylopharyngeus.
- palatopharyngeus.
- salpingopharyngeus.

### Function:-

The pharynx chamber serves both respiratory and digestive functions.

### Three parts of pharynx:-

- Nasopharynx
- Oropharynx
- Laryngopharynx





Q No 3

Ans:-

### External Laryngeal Nerve

The external laryngeal nerve is the small external branch of superior laryngeal nerve.

- It descends on the larynx & beneath the Sternothyroid muscle to supply the cricothyroid muscle.

The external branch of the superior laryngeal nerve is susceptible to damage during thyroidectomy or cricothyrotomy, as it lies immediately deep to the superior thyroid artery.

The ability to produce pitched sounds is then impaired along with easy voice fatigability. Irritation of the internal laryngeal nerve results in uncontrolled coughing - usually as a result of food or water in the laryngo-pharynx.

The lesion of this branch (For example, during surgery) that seeks and anterior

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approach to the cervix is associated with a loss of the laryngeal reflex of cough and on elevate test of aspiration pneumonia.

### How to test the integrity of Facial Nerve:-

The facial nerve supplies motor branches to the muscles of facial expression. This nerve is therefore tested by asking the patient to raise up their nose head (raise their eyebrows), close their eyes and keep them closed against resistance puff out their cheeks and reveal their teeth.

X ————— X