**ANATOMY PAPER**

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**DEPARTMENT:RADIOLOGY**

Q1. Write anterior compartment of thigh and posterior compartment of leg muscles with origin, insertion and action. (10)

**Ans)LOWER LIMB**

**Function:**

* Locomotion
* Carry weight of entire erect body
* Support
* Points for mascular attachment

**COMPONENTS:**

* **Thigh:** femur
* **Knee:**patela
* **Leg:**tibia ( medial)

Fibula ( lateral)

* **Foot:** tarsals(7)

Metatarsal (5)

 Phalanges(14)

**ANTERIOR COMPARTMENT OF THIGH:**

**POSTERIOR COMPONENT OF LEG:**



**MUSCLES OF LEG :**

* **Anterior compartment:**

Dorsiflex ankle, invert foot, extend toes,

**Innervation :** deep fibular nerve

* **Lateral compartment:**

Plantarflex, evert foot

**Innervation:** superficial fibular nerve

* **Posterior compartment superficial and deep layers:**

Plantarflex foot , flex toes

**Innervation:**tibial nerve

**ANTERIOR COMPARTMENT:**

**Tibialis anterior:**

* **Origin:**tibia
* **Insertion** tarsals
* **Action:**dorsiflexion, foot inversion

**Extensor digitorum longus**

* **Origin** tibia and fibula
* **Insertion** pgalanges
* **Action** toe extension

**Extensor hallucis longus**

* **Origin:**fibula , interosseous membrane
* **Insertion:**big toe
* **Action:**extend big toe , dorsiflex foot
* All innervated by deep fibular nerve

**LATERAL COMPONENTS:**

**Fibularis(peroneus) longus**

* **Origin:** lateral fibula
* **Insertion:**5th metatarsal,tarsal

**Action:**plantarflex, evert foot

**FIBULARIS( PERONEUS)BREVIS:**

* **Origin:**distal fibula
* **Insertion:**proximal 5th metatarsal
* **Action:**plantarflex, evert foot
* All innervated by the superficial fibular nerve

**SUPERFICIAL POSTERIOR COMPARTMENT**

**Gastrocnemis(2heads)**

**Origin :** medial and lateral condyles of femur

**Insertion:**posterior calcaneus via Achilles tendon

**SOLEUS:**

**Origin:**tibia and fibula

**Insertion:**posterior calcaneus via Achilles tendon

**Action:**plantarflex foot

**Plantaris( variable)**

**Origin:**posterior femur

**Insertion:**posterior calcaneus via Achilles tendon

**Action:**plantarflex foot, week knee flexion

All innervation by the tibial nerve

**DEEP POSTERIOR COMPARTMENT:**

**Popkteus**

**Origin:**lateral condyle femur and lateral meniscus

**Insertion:**plantarflex

**Action:**flex and medially rotate leg

**Hexor digitorum longus**

**Origin:**tibia

**Insertion:**distal pgalanges of toe 2-5

**Action:**plantarflex and invert foot , flex toe

**Hexor hallucis longus**

**Origin:**fibula

**Insertion:**distal phalanx of hallax

**Action:**plantarflex and invert foot, flex toe

**Tibialis posterior**

**Origin:**tibia , fibula , and interosseous membrane

**Insertion:**tarsals and meta tarsals

**Action:**piantarflex and invert foot

All innervated by the tibial nerve

. Define the following (10).

1. Endocrine gland
2. Exocrine gland
3. Thalamus
4. femoral triangle

Ans) **ENDOCRINE SYSTEM**

**Definition:**

The endocrine system is a chemical messenger system comprising feedback loops of the hormones released by internal glands of an organism directly into the circulatory system, regulating distant target organs.

**Major endocrine glands:**

In [humans](https://en.m.wikipedia.org/wiki/Humans), the major [endocrine glands](https://en.m.wikipedia.org/wiki/Endocrine_gland) are the

* Thuroid gland
* [adrenal glands](https://en.m.wikipedia.org/wiki/Adrenal_gland).

**FUNCTION:**

The endocrine glands influence reproduction, metabolism, growth and many other functions.

**HORMONES SECREATED :**

* major hormones — luteinising hormone (LH), follicle-stimulating hormone (FSH), prolactin, growth hormone, thyroid stimulating hormone (TSH), oxytocin, anti-diuretic hormone (ADH), adrenocorticotrophic hormone (ACTH)
* influences — reproduction, growth, childbirth, breastfeeding, hormone regulation.

**EXOCRINE GLANDS:**

**Definition:**

**Exocrine glands** are **glands** that secrete substances onto an epithelial surface by way of a duct.

**Major endocrine gland:**

**Exocrine glands** include

* sweat,
* salivary,
* mammary,
* ceruminous
* , lacrimal,
* Sebaceous
* , prostate
* Mucous

**HORMONES SECREATED :**

* FSH
* GTnRH
* LH

**THALAMUS:**

**Definition:**

either of two masses of grey matter lying between the cerebral hemispheres on either side of the third ventricle, relaying sensory information and acting as a centre for pain perception.

**Location:**

The **thalamus** is a paired structure of gray matter **located** in the forebrain which is superior to the midbrain, near the center of the brain, with nerve fibers projecting out to the cerebral cortex in all directions.

**Function:**

The thalamus is composed of different nuclei that each serve a unique role, ranging from relaying sensory and **motor** signals, as well as regulation of consciousness and alertness.

**Femoral triangle:**

**Definition:**

The **femoral triangle** (of Scarpa) is an anatomical region of the upper inner human thigh. It is a subfascial space which in living people appears as a triangular depression inferior to the inguinal ligament when the thigh is flexed, abducted and laterally rotated.

**LOCATION:**

**Femoral triangle**. The **femoral triangle** is a wedge-shaped area formed by a depression between the muscles of the thigh. It is **located** on the medial aspect of the proximal thigh. It is the region of the passage of the main blood vessels between the pelvis and the lower limb, as well as a large nerve supplying the thigh.

**Function:**

The **femoral triangle** contains some of the major neurovascular structures of the lower limb. Its contents (lateral to medial) are: **Femoral** nerve - Innervates the anterior compartment of the thigh, and provides sensory branches for the leg and foot.

Q3. Write the Extraocular muscles. Enlist both voluntary and involuntary. (10)

ANS)**EXTRAOCULAR MUSCLES:**

**Definition:**

The **extraocular muscles** are located within the orbit, but are extrinsic and separate from the eyeball itself. They act to control the movements of the **eyeball** and the **superior**

**Funtion:**

Functionally, they can be divided into two groups:

* **Responsible for eye movement**– Recti and oblique muscles.
* **Responsible for superior eyelid movement**– Levator palpebrae superioris

|  |  |
| --- | --- |
| **INVOLUNTARY**  | **VOLUNTARY**  |
| * Superior tarsal or Muller's muscles
 | * Superior rectus
 |
| * Inferior tarsal muscle
 | * Inferior rectus
* Medial rectus
* Lateral rectus
* Superior oblique
* Inferior oblique
* Levator palpebrae superioris
 |
|  |  |

Q4. Describe the arches of foot and functions of arches. (10)

**ARCHES OF FOOT**

**Definition:**

Anatomical terminology. The **arches** of the **foot**, formed by the tarsal and metatarsal bones, strengthened by ligaments and tendons, allow the **foot** to support the weight of the body in the erect posture with the least weight

. They are categorized as

* Longitudinal
* transverse **arches**.

**Longitudinal arches:**

The longitudinal arches of the foot can be divided into medial and lateral arches.

**TRANSVERSE ARCHES:**

Supporting **arch** which runs across the vault from side to side, dividing the bays. it usually projects down from the surface of the vault. Compare with **transverse** rib

 **ARCHES OF FOOT:**

* Bone of the foot are arranged to form three strong arches
* Arches are fully developed by the age of 12 or 13
* Two longitudinal arches ( lateral and medial)
* One transverse

**Function:**

Arches help the foot support and distribute the weight of the body and provide leverage during walking

Q5. Write a note on cerebrum, its lobes and functions. (10)

**CEREBRUM :**

* It is the largest part of the brain
* The principal and the most anterior part of the brain in vertebrates

**LOCATION:**

* The cerebrum is located in the upper part of the cranial cavity , which is a space inside the top of the skull

**HEMISPHERE:**

* It consists of two hemispheres, left and right
* The two hemispheres are divided by a fissure
* The hemispheres communicate through corpus callosum

**Lobes:**

The cerebrum is divided into five lobes:

**FRONTAL LOBE**

* Most anterior position of the cerebrum
* Also called ‘ motor cortex'

**LOCATION:**

Upper forehead

**FUNCTION:**

* Controls motor function
* Personality
* Speech
* Control movement
* Control planning
* Control emotions
* Control reasoning
* And problem solving

**PARIETAL LOBE:**

* **I**t is the most superior part of the cerebrum
* Also known as ‘ sensory cortex'

**FUNCTION:**

* ITS function is to receive and interpret nerve impulses from sensory receptors
* Interpretation of language
* Receive sensory information from the skin like touch , temperature , pain , pressure

**OCCIPITAL LOBE:**

* IT IS THE MOST posterior part of the cerebrum
* Also known as ‘ vision cortex'
* **FUNCTION:**
* Receive input from eyes
* Control vision
* **TEMPORAL LOBE:**
* It is the left and right lateral portion of the cerebrum
* Also called as auditory cortex
* **FUNCTION:**
* Control hearing
* And smell
* **FUNCTION OF cerebrum**
* It determine the intelligence of a being
* It helps in movement
* It controls speech
* It is responsible for sensory processing
* It performs higher function like interpreting touch ,vision, hearing
* Controls emotions