

**Final-Term Assignment/Paper (spring -020)**

**Human Anatomy-II**

**BS Radiology Sec-A 2<sup>nd</sup> Semester)**

**Instructor: Dr. M.Jaffar**

**Time: 6-hours (9am-3pm)**

**Max**

**Marks: 50**

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

Q2. Define the following (10).

- (a) Endocrine gland
- (b) Exocrine gland
- (c) Thalamus
- (d) femoral triangle

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

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

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

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**QN.1.**

# **Ans. Anterior compartment of thigh muscul**

- The muscles in the anterior compartment of the thigh are innervated by the femoral nerve (L2-L4), and as a general rule, act to extend the leg at the knee joint. There are three major muscles in the anterior thigh – the pectineus, sartorius and quadriceps femoris. In addition to these, the end of the iliopsoas muscle passes into the anterior compartment.

## **Sartorius**

**Origin:** Anterior superior iliac spine

**Insertion:** Medial side of superior tibia, via pes anserinus

**Action:** flex thigh at hip & flex leg at knee

## **Rectus femoris**

**Origin-** anterior inferior iliac spine, margin of acetabulum

**Insertion.** patella and tibial tuberosity via the patellar ligament

**Action-** extends knee, flexes thigh

**Quadriceps.** femoris (also called the quadriceps extensor, quadriceps or quads) is a large muscle group that includes the four prevailing muscles on the front of the thigh.

**Origin.** Combined rectus femoris and vastus muscles

**Insertion.** Tibial tuberosity

**Actions.** Knee extension; Hip flexion (Rectus femoris only)

# Posterior compartment of the leg muscle

In the lower leg there are 4 compartments, the anterior (A), lateral (L), deep posterior (DP) and superficial posterior (SP).

**Muscle.** gastrocnemius

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

**Insertion.** Calcaneum

**Action.** plantar flexes (flexes) foot; flexes knee

**Muscle.** plantaris

**Origin.** lateral supracondylar ridge of femur

**Insertion.** calcaneum

**Action.** plantar flexes foot; flexes knee

**Muscle.** soleus

**Origin.** shafts of tibia and fibula

**Insertion.** calcaneum

**Action.** with gastrocnemius, a powerful plantar flexor of ankle; main propulsive force in walking and running

## QN.2.

**Ans. Endocrine gland:** A gland that secretes a substance (a hormone) into the bloodstream. The endocrine glands are "glands of internal secretion." They include the

hypothalamus, pituitary gland, pineal gland, thyroid, parathyroid glands, etc.

**Exocrine gland:** A gland that secretes a substance out through a duct. The exocrine glands include the salivary glands, sweat glands and glands within the gastrointestinal tract. The exocrine glands are the "glands of external secretion."

**Thalamus** is a large egg-shaped mass of grey matter present in the diencephalon, a part of the forebrain. The thalamus is involved in sensory as well as motor functions of the brain. It is the part of the brain where the sensory information from all over the body converges and is then sent to various areas of the cortex.

**femoral triangle.** is a hollow region located in the super-medial part of the anterior thigh. It is an easily accessible area through which multiple neurovascular structures pass through. It is also known as "*scarpa's triangle*" and "*femoral trigone*."

## QN.3

**Ans. extraocular muscles** (EOM) are responsible for controlling the movements of the eyeball and upper eyelid. These muscles are also known as the extrinsic eye muscles, distinguishing them from intrinsic eye muscles which are responsible for controlling the movement of the iris.

**voluntary muscle.**

**1. Four Recti** .Superior, Inferior, Medial and Lateral

**2. Two Obliques** - Superior & Inferior

**3. Elevator of upper eyelid** - Levator palpebrae superioris

## **Involuntary Muscles:**

**1. Superior tarsal muscle.** Deeper part of levator palpebrae superioris

**2. Inferior tarsal muscle**

**3. Orbicularis muscle**

## **QN.4**

**Ans. arches of the foot.** 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.

## **Functions of arches :**

- 1) It causes distribution of body weight in foot. Weight transmitted to foot half to calcaneus and half part to heads of five metatarsals. Then anterior part divides weight into six equal parts two for great toe and one each for second to fifth metatarsal heads.
- 2) Segmented lever formed by small bones helps in propulsive action.
- 3) Concave plantar aspect protect vessels and nerves of foot.
- 4) Arches make foot pliable on uneven ground

## QN.5

**And.** The **cerebrum** makes up a large portion of the brain. It is what people refer to when they describe someone as left- or right-brained. The cerebrum is home to many smaller structures that regulate numerous core functions in the entirety of the human body. The outer layer of the cerebrum, the cerebral cortex, is referred to as “the hub of thought” and is integral to cognitive function. Two hemispheres make up the whole of the cerebrum, the left, and right hemisphere. The two regions are connected by the corpus callosum. Cerebral Lobes Aside from the left and right hemispheres, the cerebrum can be categorized into four distinct lobes: the frontal, parietal, temporal and occipital lobes.

## Lobes and it's function

### Frontal lobe

**Function:** control of voluntary movement, involved in attention, short term memory tasks, motivation, planning

### Parietal lobe

**Function:** integrates proprioceptive and mechanoreceptive stimuli, involved in language processing

### Occipital lobe

**Function:** center for visual processing

### Temporal lobe

**Function:** decoding sensory input into derived meanings for retention of visual memory and language comprehension

### Insular lobe

**Function:** processing and integration of taste sensation, visceral and pain sensation and vestibular functions

**Limbic lobe**

**Function:** modulation of emotions, modulation of visceral and autonomic functions, learning, memory

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