

SECTION A.

NOTE: Highlight the correct option of the given MCQs from section A. attempt all 3 questions from section B.

1. Out of the following bony landmarks to which the Ligamentum teres attached?
 - A. intertrochanteric line
 - B. trochanteric crest
 - C. Fovea capitis
 - D. Greater trochanter
2. Neck of the femur connects the head of the femur with the shaft. It is cylindrical, projecting in a superior and medial direction. It is set at an angle of _____ degrees to the shaft.
 - A. 156
 - B. 170
 - C. 135
 - D. 101
3. The proximal area of the femur forms the hip joint with the acetabulum of the pelvis. It consists of a head and neck, and two bony processes the greater and lesser trochanters. There are also two bony ridges connecting the two trochanters; the intertrochanteric line anteriorly and the trochanteric crest posteriorly. Out of all these proximal bony landmarks which one is the most lateral palpable bony landmark?
 - A. Greater trochanter
 - B. Lesser trochanter
 - C. The intertrochanteric line
 - D. Trochanteric crest.
4. _____ is the site of attachment for iliopsoas muscle.
 - A. Greater trochanter
 - B. Lesser trochanter
 - C. The intertrochanteric line
 - D. Trochanteric crest.
5. Neck of femur fractures are increasingly common and tend to be sustained by the elderly population as a result of low energy falls in the presence of osteoporotic bone. Classically, the distal fragment is pulled upwards and _____.
 - A. Medially rotated
 - B. Externally rotated
 - C. No rotation occurs
 - D. None of the above
6. Regarding neck of the femur fracture the medial femoral circumflex artery can be damage in _____.
 - A. Intracapsular fracture
 - B. Shaft fracture
 - C. Extracapsular fracture
 - D. Femoral epicondylar fracture
7. The shaft of the femur descends in slight _____ for stability.
 - A. Lateral direction
 - B. Medial direction
 - C. Posterior direction
 - D. Diagonal direction
8. Mr. A met with an accident and his right femur broke at 3 different places. The cut was a clean break and the four pieces were put back together in their original place. What kind of fracture did he have?
 - A. Contusion
 - B. Hairline Fracture
 - C. Multiple Fracture
 - D. Simple Fracture
9. A closed femoral shaft fracture can result in _____ blood loss.
 - A. 10-15ml
 - B. 100-150ml
 - C. 1000-1500ml
 - D. 10000-15000ml
10. Which of the following is the medial bone of lower leg?
 - A. Patella
 - B. Fibula
 - C. Tibia
 - D. Medial cuboid
11. The shaft of the tibia is prism-shaped, with _____.
 - A. One border and one surface
 - B. Two borders and one surface
 - C. Three borders and two surfaces
 - D. Three borders and three surfaces
12. The calcaneus is often fractured as a result of _____.

- A. Distraction
- B. Axial loading
- C. Walking
- D. Setting

13. The depth of the acetabulum is raised by the _____

- A. Fovea captious
- B. Capsule of hip joint
- C. acetabular labrum
- D. ischial Bursae

14. The most powerful ligament of hip joint is?

- A. Iliofemoral ligament
- B. Pubofemoral ligament.
- C. Ischiofemoral ligament.
- D. Transverse acetabular ligament

15. The hip joint is supplied by the branches of the following arteries EXCEPT:

- A. Medial circumflex femoral artery.
- B. Lateral circumflex femoral artery.
- C. Radial artery.
- D. Superior gluteal artery.

Section B

Q:1 Describe Hip joint anatomy. (your answer should cover these headings, (**Articular surfaces of hip joint, Ligaments of joint, Stability of hip joint, Blood and nerve supply**)).

Ans: Hip Joint:

It is a ball

and socket joint, where the head of the femur act as ball and the acetabulum as socket.

It is the biggest ball and socket joint.

Articular surfaces:

- The head of the femur articulates with the horse shoe-shaped acetabulum of the hip bone to create the hip joint:
- The head of the femur is covered with hyaline cartilage with the exception of the small pit as the fovea capitis for ligamentum Terris.
- The lunate surface of the acetabulum is articular and is covered by articular cartilage.
- The depth of the acetabulum is raised by the acetabular labrum.

Ligaments of hip joint:

As noted above, the stability of the hip joint is directly related to its muscles and ligaments. The most notable ligaments in the hip joint are:

- **Iliofemoral ligament**, which connects the pelvis to the femur at the front of the joint. It keeps the hip from hyper-extension
- **Pubofemoral ligament**, which attaches the most forward part of the pelvis known as the pubis to the femur
- **Ischiofemoral ligament**, which attaches to the ischium (the lowest part of the pelvis) and between the two trochanters of the femur.

Labrum

The labrum is a circular layer of cartilage which surrounds the outer part of the acetabulum effectively making the socket deeper to provide more stability for the joint. Labrum tears are not an uncommon hip injury.

Stability of hip joint:

The primary function of the hip joint is to **weight-bear**. There are a number of factors that act to increase stability of the joint.

The first structure is the **acetabulum**. It is deep, and encompasses nearly all of the head of the femur. This decreases the probability of the head slipping out of the acetabulum (dislocation).

There is a horseshoe shaped fibrocartilaginous ring around the acetabulum which increases its depth, known as the **acetabular labrum**. The increase in depth provides a larger articular surface, further improving the stability of the joint.

The iliofemoral, pubofemoral and ischiofemoral ligaments are very strong, and along with the thickened joint capsule, provide a large degree of stability. These ligaments have a unique **spiral orientation**; this causes them to become tighter when the joint is extended.

In addition, the muscles and ligaments work in a reciprocal fashion at the hip joint:

- **Anteriorly**, where the ligaments are strongest, the medial flexors (located anteriorly) are fewer and weaker.
- **Posteriorly**, where the ligaments are weakest, the medial rotators are greater in number and stronger – they effectively ‘pull’ the head of the femur into the acetabulum

Blood and nerve supply of the hip joint:

The arterial supply to the hip joint is largely via the medial and lateral circumflex femoral arteries – branches of the profunda femoris artery (deep femoral artery). They anastomose at the base of the femoral neck to form a ring, from which smaller arteries arise to supply the hip joint itself.

The medial circumflex femoral artery is responsible for the majority of the arterial supply (the lateral circumflex femoral artery has to penetrate through the thick iliofemoral ligament). Damage to the medial circumflex femoral artery can result in avascular necrosis of the femoral head.

The artery to head of femur and the superior/inferior gluteal arteries provide some additional supply.

The hip joint is innervated primarily by the sciatic, femoral and obturator nerves. These same nerves innervate the knee, which explains why pain can be referred to the knee from the hip and vice versa

Q:2 Explain the following in detail.

a) Cruciate ligaments

b) Menisci

Ans: a)Cruciate ligaments:

The four main ligaments in the knee connect the femur (thighbone) to the tibia (shin bone), and include the following:

- **Anterior cruciate ligament (ACL)** - The ligament, located in the center of the knee, that controls rotation and forward movement of the tibia (shin bone).
- **Posterior cruciate ligament (PCL)** - The ligament, located in the center of the knee, that controls backward movement of the tibia (shin bone).
- **Medial collateral ligament (MCL)** - The ligament that gives stability to the inner knee.
- **Lateral collateral ligament (LCL)** - The ligament that gives stability to the outer knee

b)Minisci:

A meniscus is a piece of cartilage found where two bones meet (joint space). Menisci (plural of meniscus) protect and cushion the joint surface and bone ends. In the knee, the crescent-shaped menisci are positioned between the ends of the upper (femur) and lower (tibia) leg bones. The menisci protect the joint surface and absorb the shock produced by activities such as walking, running, and jumping.

Q:3 Write down a comprehensive note on medial and lateral ligaments of ankle joint

Ans: Medial and lateral ligaments of ankle joint :

There are two main sets of ligaments, which originate from each malleolus.

Medial Ligament

The **medial ligament** (or deltoid ligament) is attached to the medial malleolus (a bony prominence projecting from the medial aspect of the distal tibia).

It consists of four ligaments, which fan out from the malleolus, attaching to the talus, calcaneus and navicular bones. The primary action of the medial ligament is to resist **over-eversion** of the foot.

Lateral Ligament

The **lateral ligament** originates from the lateral malleolus (a bony prominence projecting from the lateral aspect of the distal fibula).

It resists over-inversion of the foot, and is comprised of three distinct and separate ligaments:

- **Anterior talofibular** – spans between the lateral malleolus and lateral aspect of the talus.
- **Posterior talofibular** – spans between the lateral malleolus and the posterior aspect of the talus.
- **Calcaneofibular** – spans between the lateral malleolus and the calcaneus.