Q11 – Knee Joint

Definition Note

> The knee joint is a synovial, modified hinge joint between the femur, tibia, and patella. It is the largest and one of the most complex joints of the body, designed to permit flexion, extension, and a small degree of rotation.

Type of Joint

The knee joint is a synovial joint of modified hinge (bicondylar) type.

Articular Surfaces

The knee joint includes tibiofemoral and patellofemoral articulations. The medial and lateral condyles of femur articulate with corresponding tibial condyles, while the patella articulates with the patellar surface of femur. All articular surfaces are covered with hyaline cartilage.

Ligaments of Knee Joint

Extracapsular ligaments include patellar ligament, medial collateral ligament, lateral collateral ligament, oblique popliteal ligament, and arcuate popliteal ligament. Intracapsular ligaments include anterior cruciate ligament, posterior cruciate ligament, medial meniscus, and lateral meniscus.

Menisci

The medial meniscus is C-shaped and less mobile, while the lateral meniscus is nearly circular and more mobile. Menisci improve joint congruency, absorb shock, and enhance stability.

Movements

The movements of the knee joint include flexion, extension, and slight medial and lateral rotation when the knee is flexed.

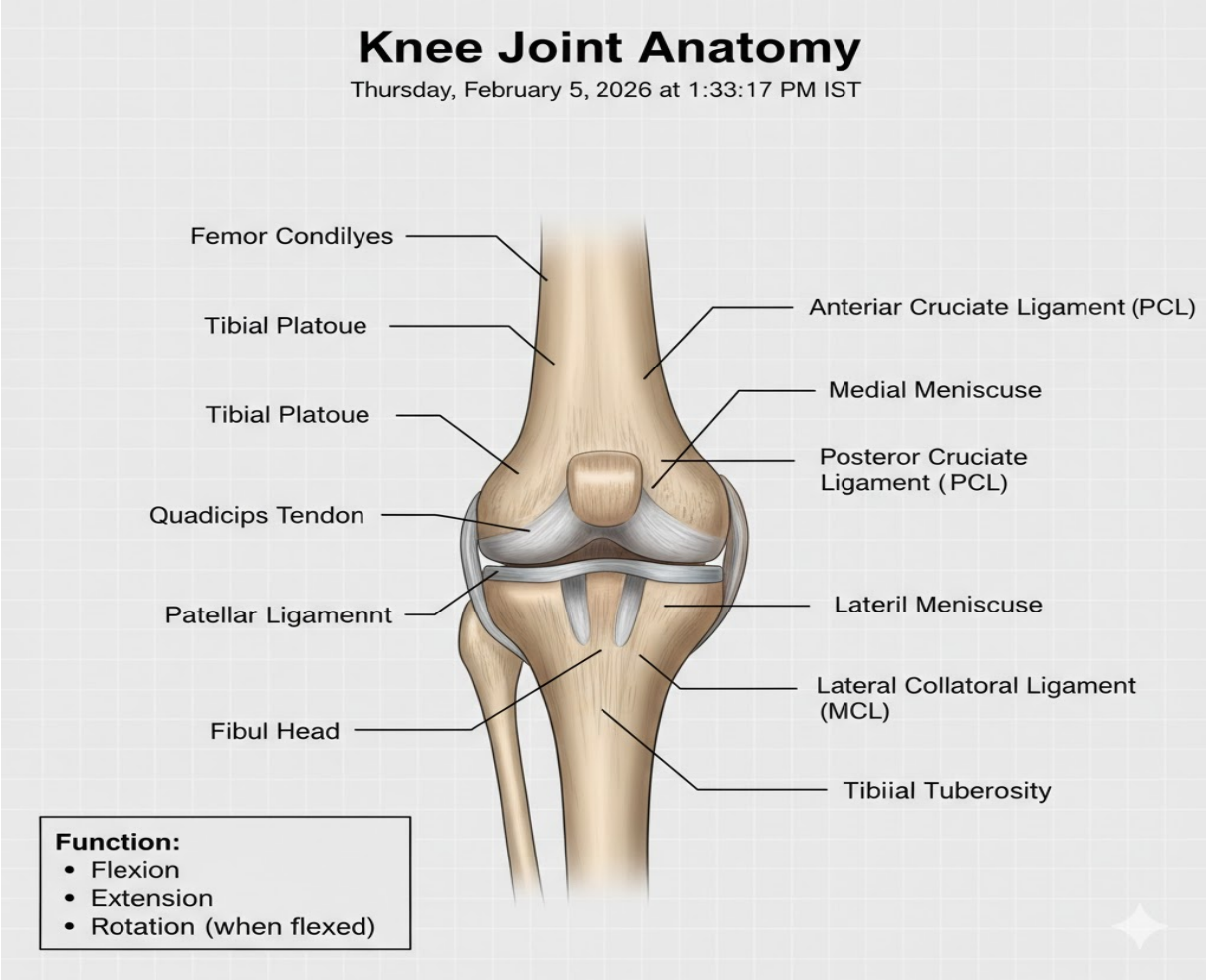
Blood and Nerve Supply

The knee joint is supplied by genicular branches of the popliteal artery. Nerve supply is provided by femoral, tibial, common fibular, and obturator nerves, following Hilton’s law.

Applied Anatomy

Meniscal tears and cruciate ligament injuries are common sports injuries. Anterior cruciate ligament injury presents with positive anterior drawer test, while posterior cruciate ligament injury presents with posterior drawer test. Osteoarthritis commonly affects the knee joint.

Labeled Diagram – Knee Joint



Conclusion: The knee joint is a strong yet complex joint essential for weight bearing and locomotion. Its ligaments, menisci, and muscular support provide stability while allowing mobility.