

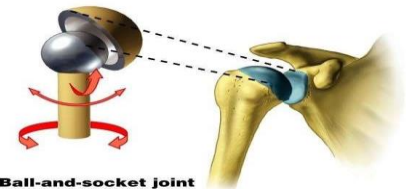
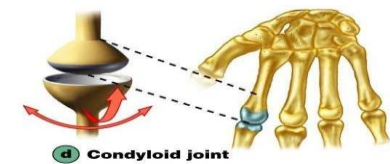
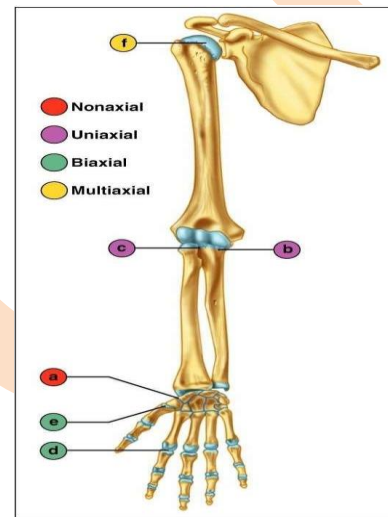
HUMAN ANATOMY AND PHYSIOLOGY-I, BP-101(T)

UNIT-II (Integumentary system)

CLASS-10

TOPIC – Types of Joint Movements and its Articulation

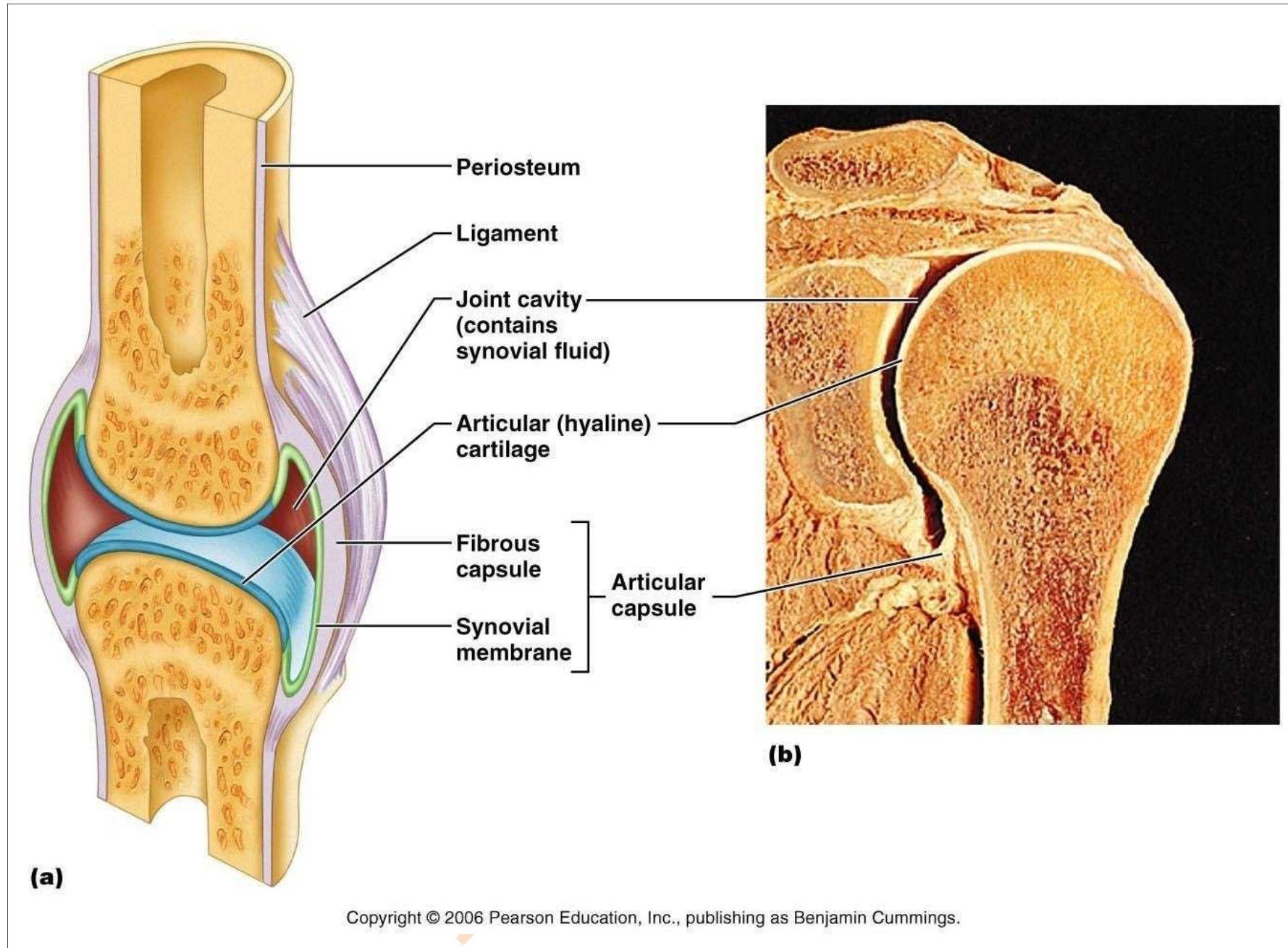
- **condyloid** = allows all movements except rotation(e.g. between metacarpals amid proximal phalanges).
- **saddle** = allows all movements except rotation (e.g. between carpals and metacarpals).
- **ball - and - socket** =allows all movements (e.g. shoulder joint and hip joint).



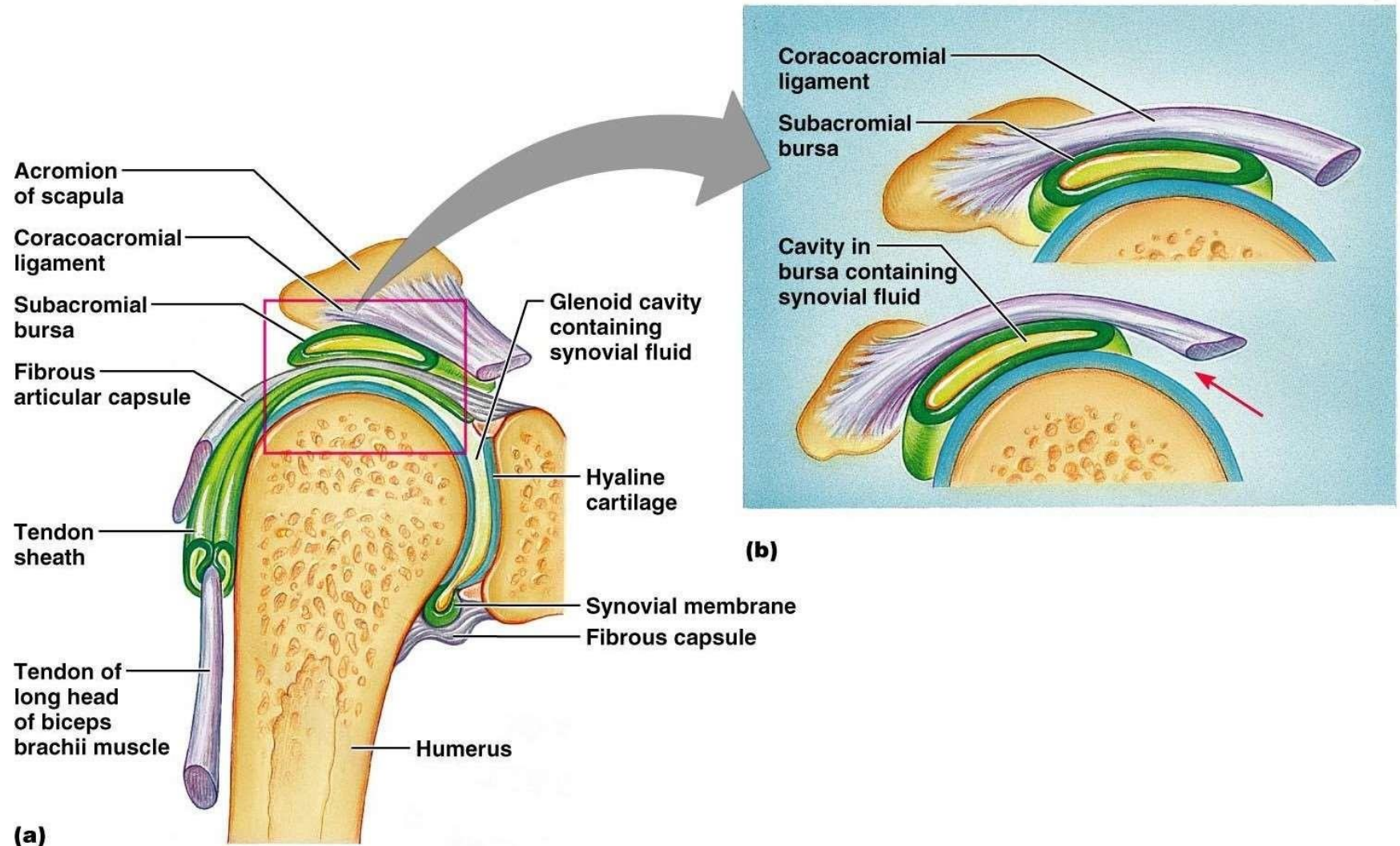
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Synovial Joints

- Have **5** distinguishing features
 1. **Articular cartilage** – glassy – smooth articular cartilage covers the opposing bone surface. It resists wear and minimizes friction.
 2. **Joint cavity** – space that is filled with Synovial fluid. Synovial membrane – covers all the surface within the joint capsule and secretes synovial fluid.
 3. **Articular capsule** – the joint cavity is enclosed by a double – layered articular capsule.
 4. **Synovial fluid** – a slippery fluid that occupies all free spaces within the joint capsule.
 5. **Reinforcing ligaments** – are reinforced by a number of ligaments.



- Some synovial joints such as hip and knee have fatty pads between the fibrous capsule and the bone
- Some have discs or wedges of fibrocartilage separating the articular surface of bones (e.g. meniscus of knee)
- Some synovial joints have **bursa** which is a fluid-filled sac containing the synovial fluid.
- **Ligament:** a sheet of strong fibrous connective tissue connecting the articular ends of bones, binding them together and facilitating or limiting motion.
- **Tendon:** Fibrous connective tissue that attaches muscle to bone.



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Articulations (Joints)

Introduction:

A joint, also known as an **articulation**, is a location where two or more bones meet. Most joints contain a single articulation. Each articulation contains the **names of two bones** (or sockets). For example, the hip joint is known as the **acetabulofemoral joint** since it is where the acetabulum ("acetabulo-") of a coxal bone articulates with the head of the femur ("-femoral"). Another example is the shoulder joint, which is known as the **glenohumeral joint** since it is where the glenoid cavity ("gleno-") of the scapula articulates with the head of the humerus ("-humeral").

Some joints have more than one articulation (where more than two bones articulate with each other). These include the knee and the elbow joints. The knee includes articulation between the femur and tibia (**tibiofemoral joint**) and the femur and patella (**patellofemoral joint**). The elbow joint has three articulations: the **humeroradial joint** (articulation of the humerus and radius), the **humeroulnar joint** (articulation of the humerus and ulna), and the **proximal radioulnar joint** (the proximal articulation of the radius and the ulna).

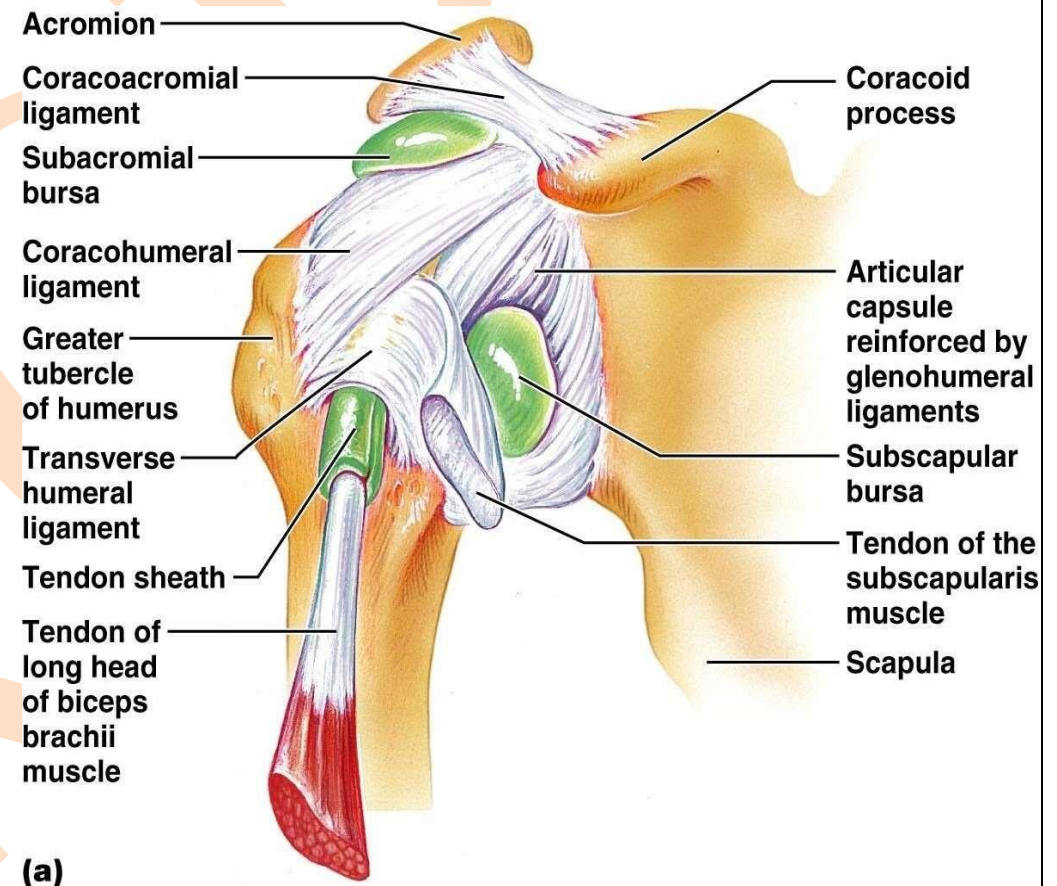
Articulations vary in the amounts of movement they allow as well as their structures. Joints are classified based on function, the amount of movement they allow, into three categories: **synarthrosis**, **amphiarthrosis**, and **diarthrosis**.

Shoulder Joint

- Ball and Socket joint
- Ligaments:
 - a) **Coracohumeral** ligament – connects the coracoid process of scapula to the greater tubercle of the humerus.
 - b) **Glenohumeral** ligament – extend from the edge of glenoid cavity to lesser tubercle of humerus
 - c) **Transverse humeral** ligament – runs between the lesser and the greater tubercles.
 - d) **Coracoacromial** ligament.
 - d) **Glenoid labrum** – attaches along the margin of glenoid cavity.

Shoulder Joint

- **Rotator cuff:** muscles that encircle the shoulder joint.
- made up of 4 muscles:
- subscapularis
- supraspinatus
- infraspinatus
- teres minor



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Elbow joint

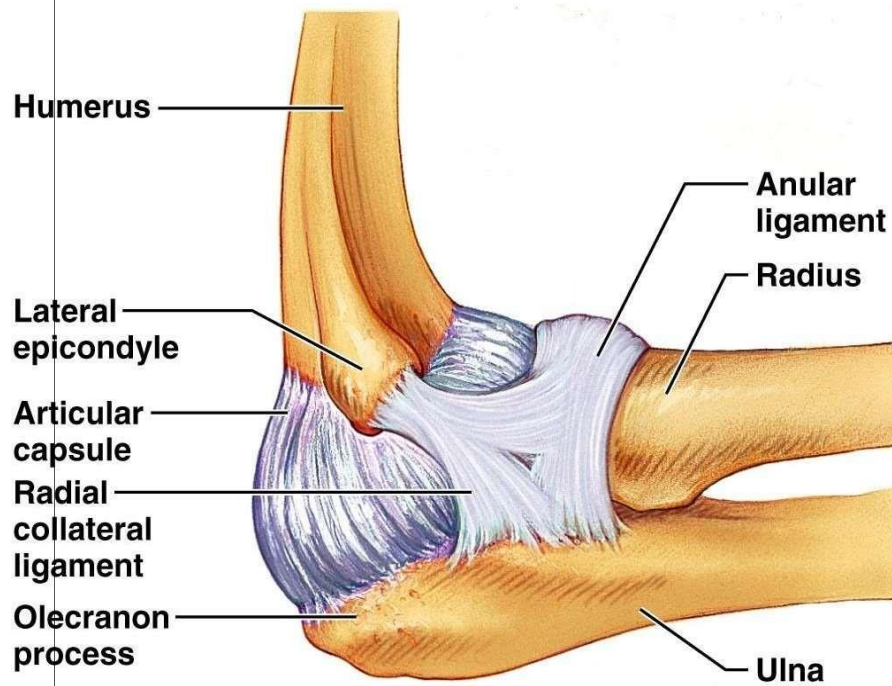
- Hinge joint
- ligaments:

Annular ligament: surrounds the head of radius, and attaches to the trochlear notch of ulna

Ulnar collateral ligament:

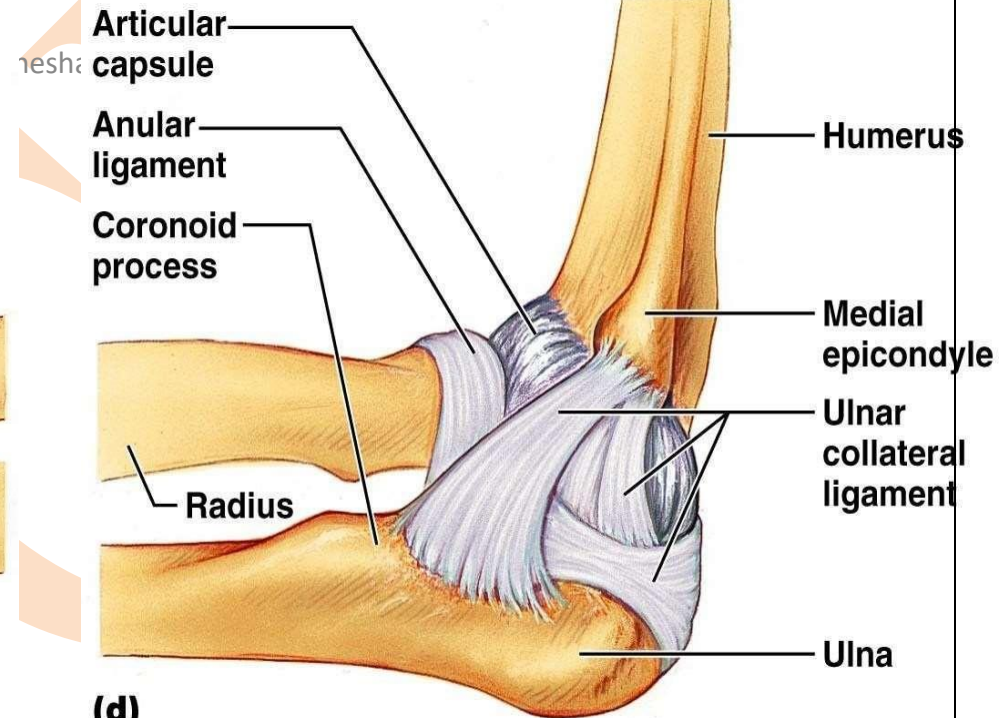
* Ant. end of ligament connects the medial epicondyle of humerus to the medial margin of the coronoid process of the ulna

- *Post. end – attaches the medial epicondyle of humerus to the olecranon process of the ulna.
- **Radial collateral ligament:** extends between lat. Epicondyle of humerus and the annular ligament of the radius.



(b)

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(d)

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Knee Joint

- largest synovial joint
- Hinge joint
- Ligaments – associated with joint capsule:

Patellar ligament – is continuation of the tendon of quadriceps femoris muscle; extends from patella to tibial tuberosity.

Oblique popliteal ligament – is continuation of the tendon of semi-membraneous muscle crossing the posterior knee joint. This ligament connects the lat. condyle of the femur to head of tibia.

Arcuate popliteal ligament – extends from lat. Condyle of femur to head of fibula.

Tibial collateral ligament (medial collateral ligament) - connects medial condyle of femur to the medial condyle of tibia.

- **Fibular collateral ligament** (lateral collateral ligament) – connects lateral condyle of femur to head of fibula.

IMPORTANT QUESTIONS:

2M QUESTIONS:

1. Define skin and its functions.
2. Enlist the layers of skin.
3. Define muscle tone
4. Differentiate osteoclast and osteoblast.
5. Define skeletal system and its functions.
6. Differentiate tendon and ligament.
7. Define muscle contraction.
8. Define neuromuscular junction
9. Explain largest and shortest bones of human body
10. Name the largest nerve of human body.
11. Define:
 1. Joint
 2. Synovial joint with examples.

5M QUESTIONS:

- 1) Explain the physiology of muscle contraction.
- 2) Write in details about structure and functions of skin.
- 3) Write a note on different types of joints.
- 4) Write features and functions of bones of axial and appendicular skeletal system.
- 5) Write in details about synovial joints and their function with the help of diagram.

10M QUESTIONS:

- 1) Write a note on different types of joints.
- 2) Write features and functions of bones of axial and appendicular skeletal system.
- 3) Write in details about synovial joints and their function with the help of diagram.