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**Department : Dpt**

**Semester : 2nd**

**Assignment : biomechanics**

**Submitted to: sir shahzeb**

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**Question no 1:**

**Explain “ biomechanics of articular cartilage” ?**

**Articular cartilage :**

**Articularcartilage is a thin layer of specialize connective tissue with unique visoelastic properties. Its principles function is to be smooth lubricated surface for low friction articulation and to facilitate the transmission of loads to the underlyning subchondral bone .**

**Composition and structure :**

**Chondrocytes 10%**

**Collagen ( fibrus structure, procollegn polypeptide 10 -30%**

**Water +inorganic salt , glycoprotein, lipds 60- 87% .**

**Function of articular cartilage :**

**Distributes joints loads over a wide area decreasing the stresses sustained by the contacting joint surface .**

**. Allows relatives movement of the opposing joint surface with minimize friction and wear .**

 **. Despite common beliefs does not serve as a shock absorber .**

**. Very thin .**

**. Capacity negligible compared to muscle and bone .**

**. Surface roll or slide during motion.**

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**Question no 2:**

**Explain “biomechanics of tendons in ligaments”?**

**Tendons :**

**Tendons connect muscle to bone .**

**Tendon consist of bundles of collagenus fibers arrange in parallel they are arrange in this way to form cords which have great tensile strength .**

**Origin at muscle crosses at least one joint and insert in bone .**

**Ligaments :**

**Ligaments connect bone to bone .**

**Ligaments consists mostly bundle of elastic molecules formed into elastic fiber with some bundles of collagen .**

**Origin and insert in bone.**

**More elastic and flexible than tendons .**

**Offer less tensile strength.**

**Function :**

**Tendons :**

**Tendons carry tensil force from muscles to bones .**

**They carry compressive force when wrapped around bone like a pulley .**

**Proprioception**

**Secondary function storage of energy .**

**Ligaments :**

**Its maintains correct bone and joint geometry .**

**Ligaments + associated joints capsules combinly function passive joints stablizers .**

**Secondary function : propioception.**

**Mechanical properties of ligaments in tendons**

**Both are viscoelastic tissue**

**Both exhibit the non linear behavior .**

**Strength ( sustain highly load ) .**

**When load is applied enough it cause injury demage , dependent on rate and amount of load .**

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