**Name : Fahad sherin  
ID : 16816   
Department : Dpt   
Semester : 2nd  
Assignment : biomechanics   
Submitted to : sir shahzeb**

**Question no 1:  
Explain “ biomechanics of articular cartilage” ?  
Articular cartilage :** Articular cartilage is the smooth white tissue that cover the ends of bones where they come together to form joints . Healthy cartilage in our joints make it easier to move . It allow the bone to glide over each other with very little friction . Articular cartilage can be demage by injury or normal wear and tear . Articular cartilage covers bones surface within the joint capsule .

**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 .

**Types of cartilage :**There are three types of articular cartilage.  
1 : hyaline: most common found in ribs , nose , larynx , treachea , is a precuror of bone .  
2: fibro: is found in inverteberal discs , joints capsule ligaments.   
3: Elastic : is found in the external ear , epiglottis and larynx.

**Location of articular cartilage :**Articular cartilage is found only in diarthroidal joints ( synovial joints ) and is comprised of hyaline cartilage a particularly smooth types of cartilage which allows for easy articulation , increased weight distribution and shock absorption .

**Water :**   
Water is the most abundant component of articular cartilage contributing upto 80 % of its wet weight. Approximatly 30 % of these water is associated with the intrafibrillar space with in the collagen . The water flow through the cartilage and across the articular surface help to transport and distribute nutrient to chondrocytes in the addition to providing lubrication.   
**Summary :** Articular cartilage is a highly specialised connective tissue of diarthroidal joints. Its principles function is to provide a smooth lubricated surface for articulation and to facilities the transmissions of load with a low frictional coefficient.  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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 .  
**Factor that effact the biomechanical properties of ligaments And tendons**  
 Maturation and aging . Pregnancy and postpartum period . Mobilization and immobilization. Diabetes mellitus . Steroids . Non steroidal anti – inflammatory drugs . Hemodialysis . Grafts  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_