

Quiz 6

Cartilage and Bone

MCQs – X type (true or false):

1. Cartilage tissue:

- a. Has a rich blood supply.
- b. Develops from mesenchyme.
- c. Has ability for a quick regeneration.
- d. Has chondrocytes as precursor cells.
- e. Is solid and firm but pliable.

2. Hyaline cartilage matrix:

- a. Has collagen type II fibers.
- b. Does not calcify with age.
- c. Is lined by perichondrium except in articular cartilages.
- d. Is called territorial matrix in between isogenous groups.
- e. Is highly hydrated.

3. Elastic cartilage:

- a. Is found in intervertebral disks.
- b. Has no perichondrium.
- c. Returns to its original shape after deformation.
- d. Prevents bone to bone contact.
- e. Does not calcify with age.

4. Fibrocartilage:

- a. Has no perichondrium.
- b. Is found in the meniscus of the knee joint.
- c. It does not calcify with age.
- d. Have chondrocytes organized in rows.
- e. Is glossy in the living state.

5. Chondrocytes:

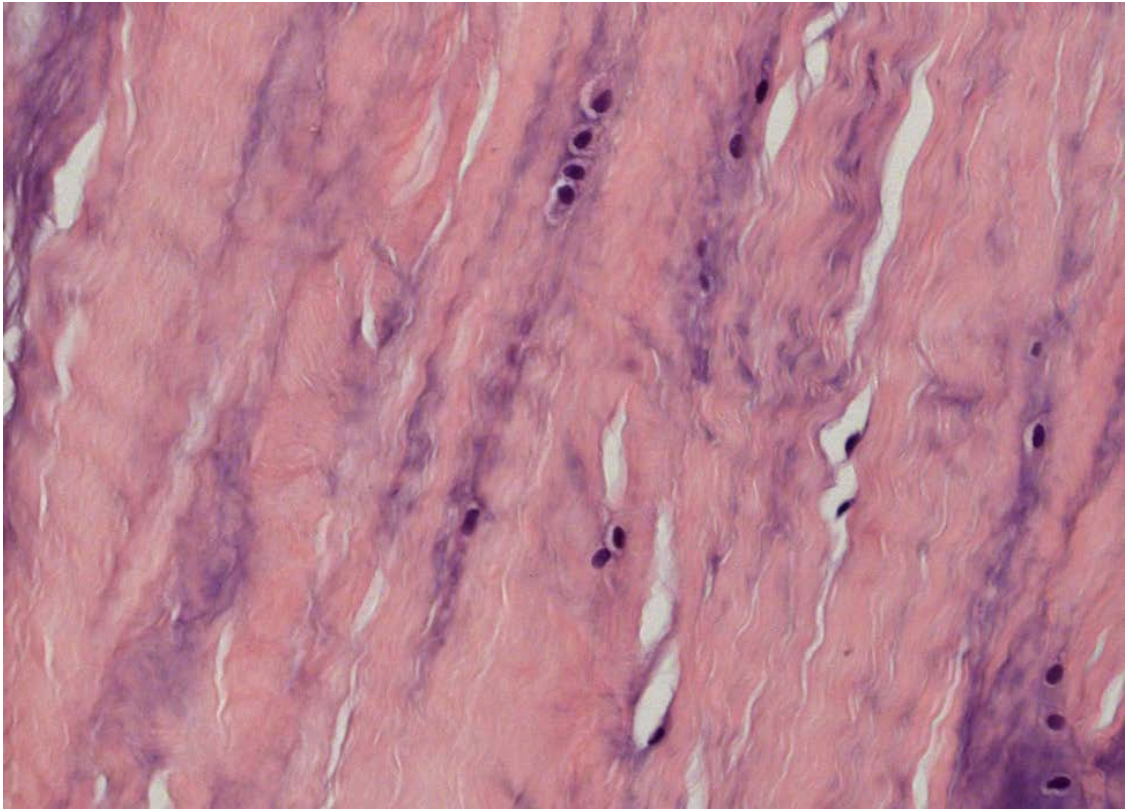
- a. Synthesize extra cellular matrix.
- b. Are precursors of chondroblasts.
- c. Are housed in lacunae.
- d. Mitotic divisions are responsible for interstitial growth.
- e. Derive from fibroblasts.

Short answer questions

1. Compare appositional and interstitial growths. (4 marks)
2. Identify and discuss the three staining types of extracellular matrix of the hyaline cartilage H&E slides. (4 marks)
3. Explain the significance of the hyaline cartilage at epiphyseal plates and articular surfaces of synovial joints. (2 marks)

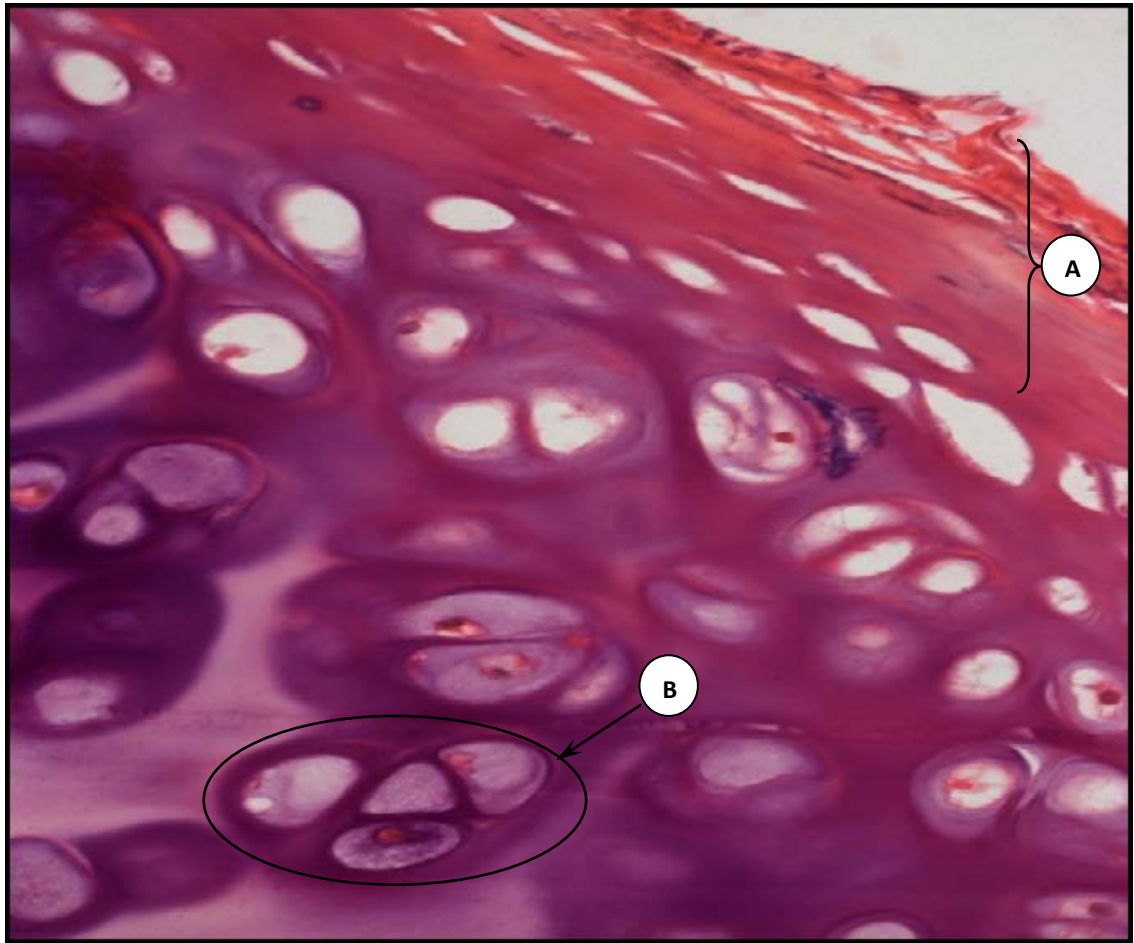
Spotters

1.



- a) Give two diagnostic criteria and identify the tissue in this photomicrograph. (3 marks)
- b) Specify one region in which this tissue could be found. (1 mark)

2.



- a) Which type(s) of growth occurs in this tissue? (1 mark)
- b) Identify A. (1 mark)
- c) Identify the collection of cells indicated by B. Be specific. (1 mark)
- d) Give an example of where one might find this tissue in the human body. (1 mark)

MCQs – X type (true or false):

1. Osteoblasts:

- a. Produce unmineralized bone matrix.
- b. Are derived from mononuclear hemopoietic progenitor cells.
- c. Are housed in lacunae.
- d. May be responsible for calcification of bone.
- e. Give rise to osteocytes.

2. Osteoclasts:

- a. Are housed in Howship's lacunae.
- b. Give rise to osteoblasts.
- c. Are located at the site of a bone resorption.
- d. Are derived from osteoprogenitor cells.
- e. Are large multinucleated cells.

3. Osteocytes:

- a. Are located in the inner cellular layer of periosteum.
- b. Function in the maintenance of the bone matrix.
- c. Communicate with each other via gap junctions.
- d. Use canaliculi for bone synthesis.
- e. Are located in between concentric lamellae of the compact bone.

4. With regard to the bone tissue:

- a. Inner cellular periosteum has osteoprogenitor cells.
- b. Endosteum surrounds bone superficial surfaces.
- c. Cement line is a dark ring which surrounds Volkmann's canal.
- d. Interstitial lamellae are remnants of once existed concentric lamellae.
- e. Collagen type I fibers are the major organic matter component.

5. Cancellous (spongy) bone:

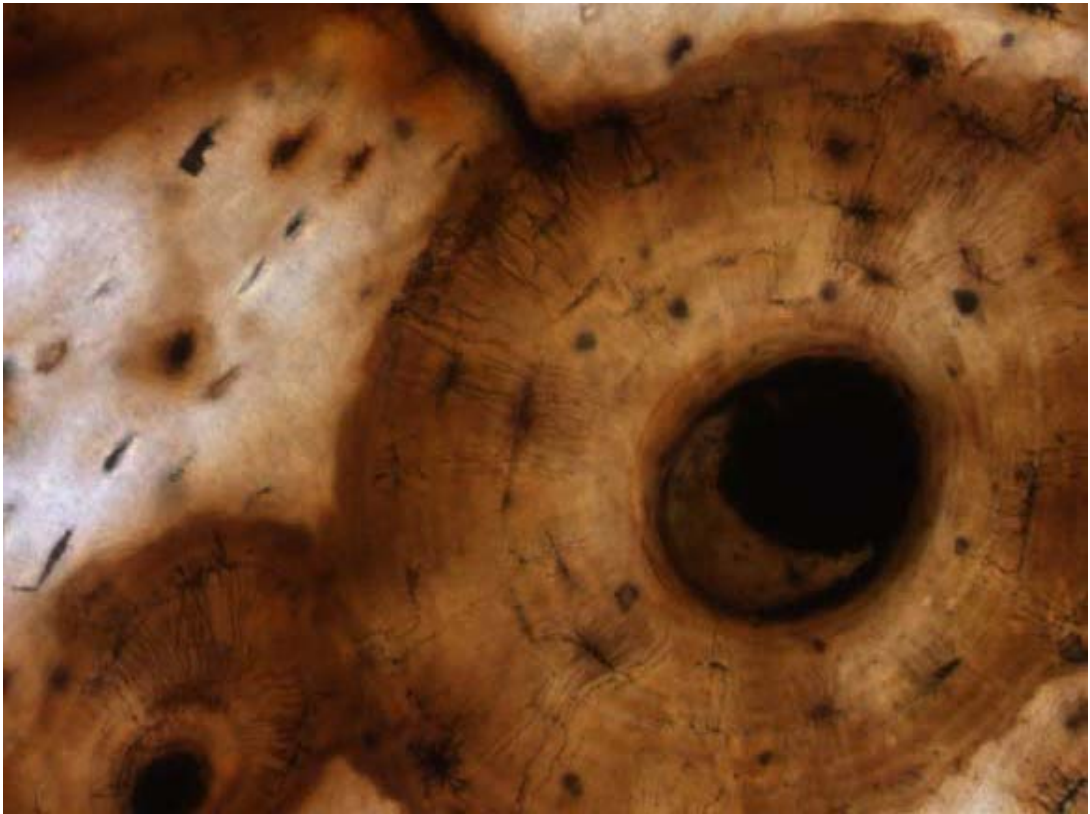
- a. Has non-lamellated matrix.
- b. Has bone marrow cavities which are lined by endosteum.
- c. Is avascular tissue.
- d. Has trabeculae which are the main structural units.
- e. Is found in bone areas that are not subject to great mechanical stress.

Short answer questions

1. By means of a well labelled diagram explain the structural components of a Haversian system. (5 marks)
2. Discuss the significance of the bone canaliculi with regard to the nutrient supply.(3 marks)
3. Compare an osteoblast and osteoclasts. In your answer include the origin, morphology, location and function of these cells. (4 marks)

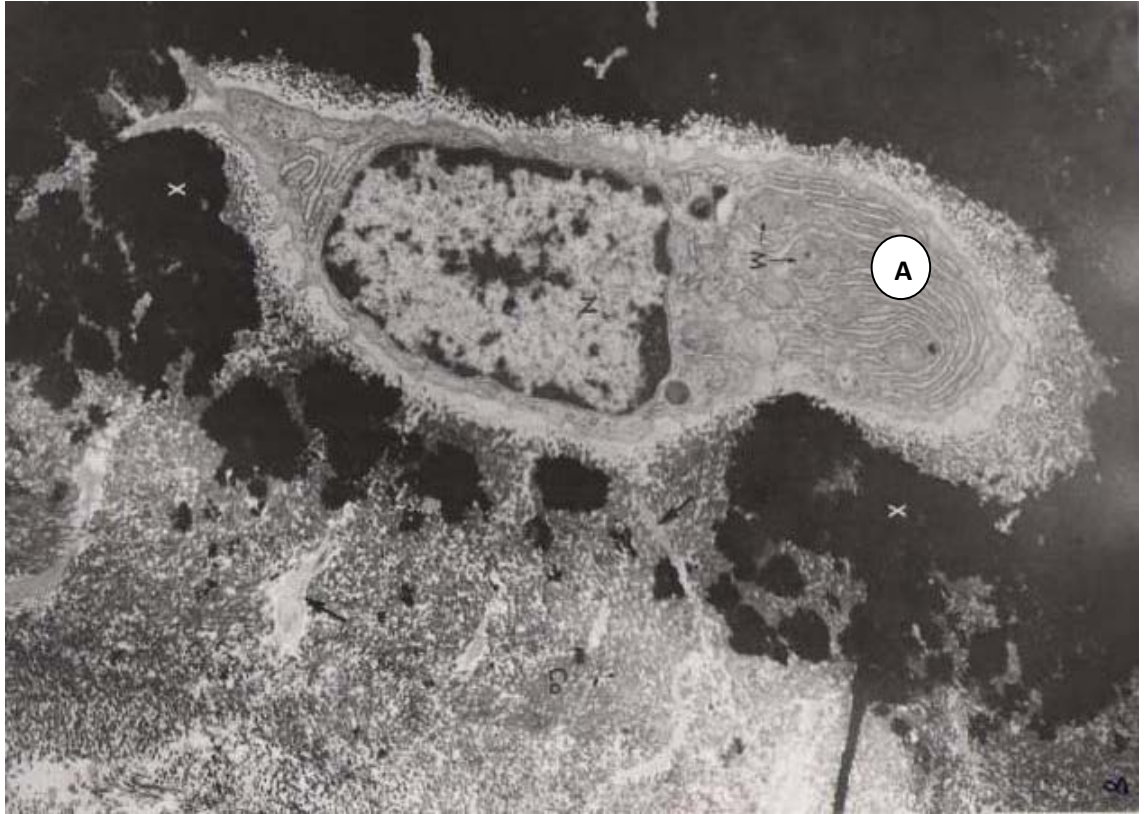
Spotters

1.



a) Give three diagnostic criteria and identify the tissue in the photomicrograph. (4 marks)

2.



- a) Identify the large cell seen in the micrograph. (1mark)
- b) Give the main function for this cell. (1 mark)
- c) Identify specifically the organelles labelled A. (1 mark)
- d) Identify specifically the tissue seen in the photomicrograph. (1 mark)

3.



- a) Identify specifically the encircled eosinophilic structure. (1mark)
- b) Identify the tissue which is the main component of the encircled structure (1 mark)
- c) Give two diagnostic criteria for this tissue. (2 marks)