

YAKEEN NEET 2.0

2026

STRUCTURAL ORGANISATION IN ANIMALS

ZOOLOGY

Lecture – 06

By- SAMAPTI MAM





Topics to be covered

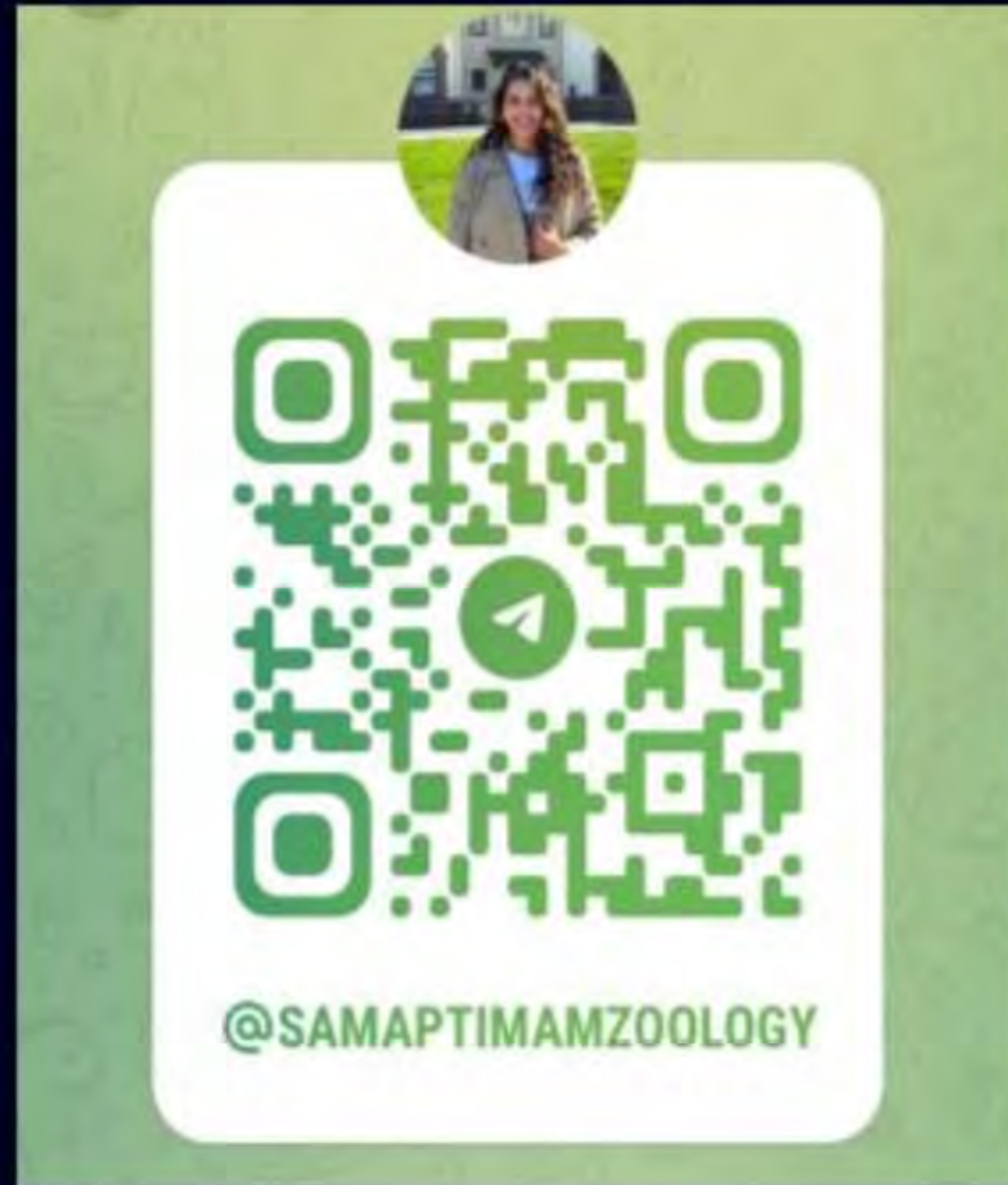
1

CONNECTIVE TISSUE PART-02

2

3

4

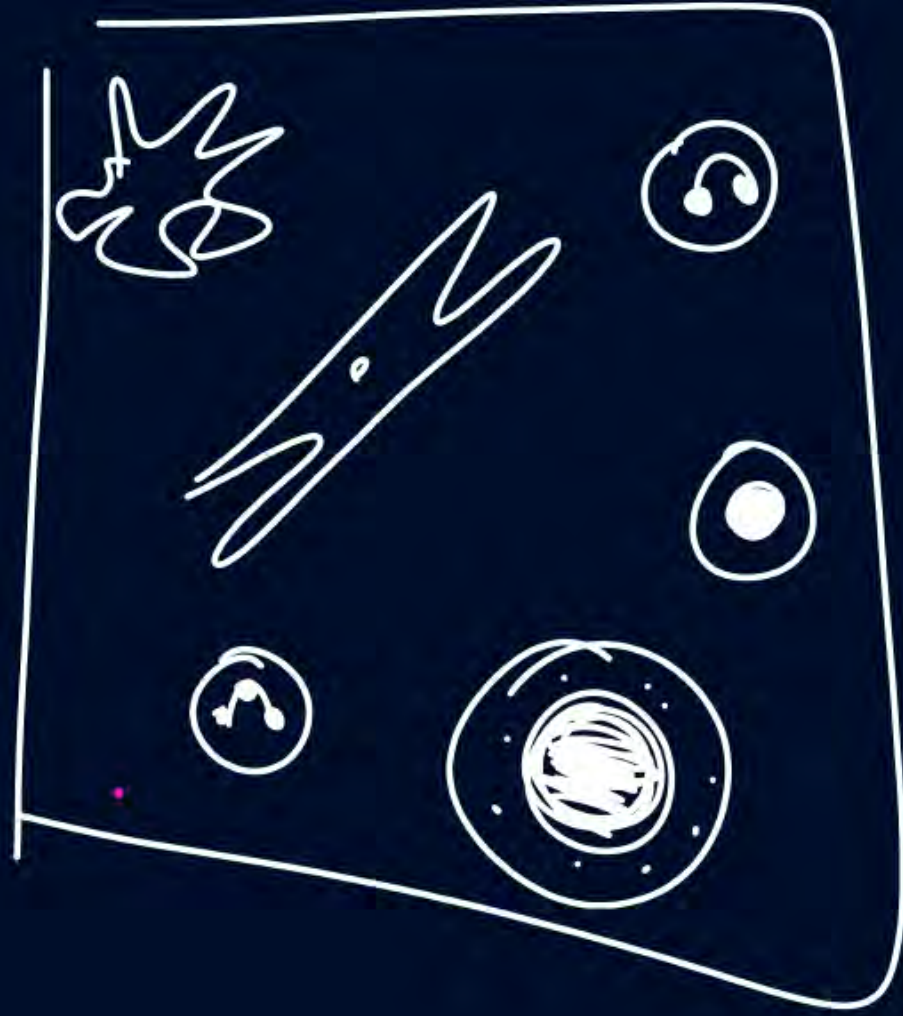


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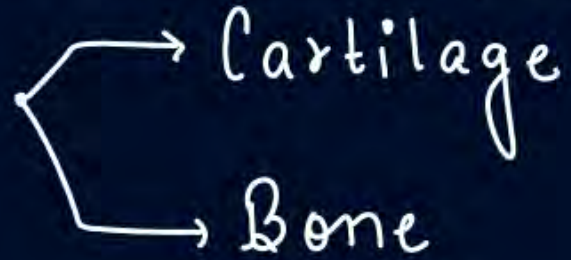
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A



3) SPECIALISED C.T:

① SKELETAL C.T:

- Basic framework of Body (Skeletal system)
- Matrix: SOLID



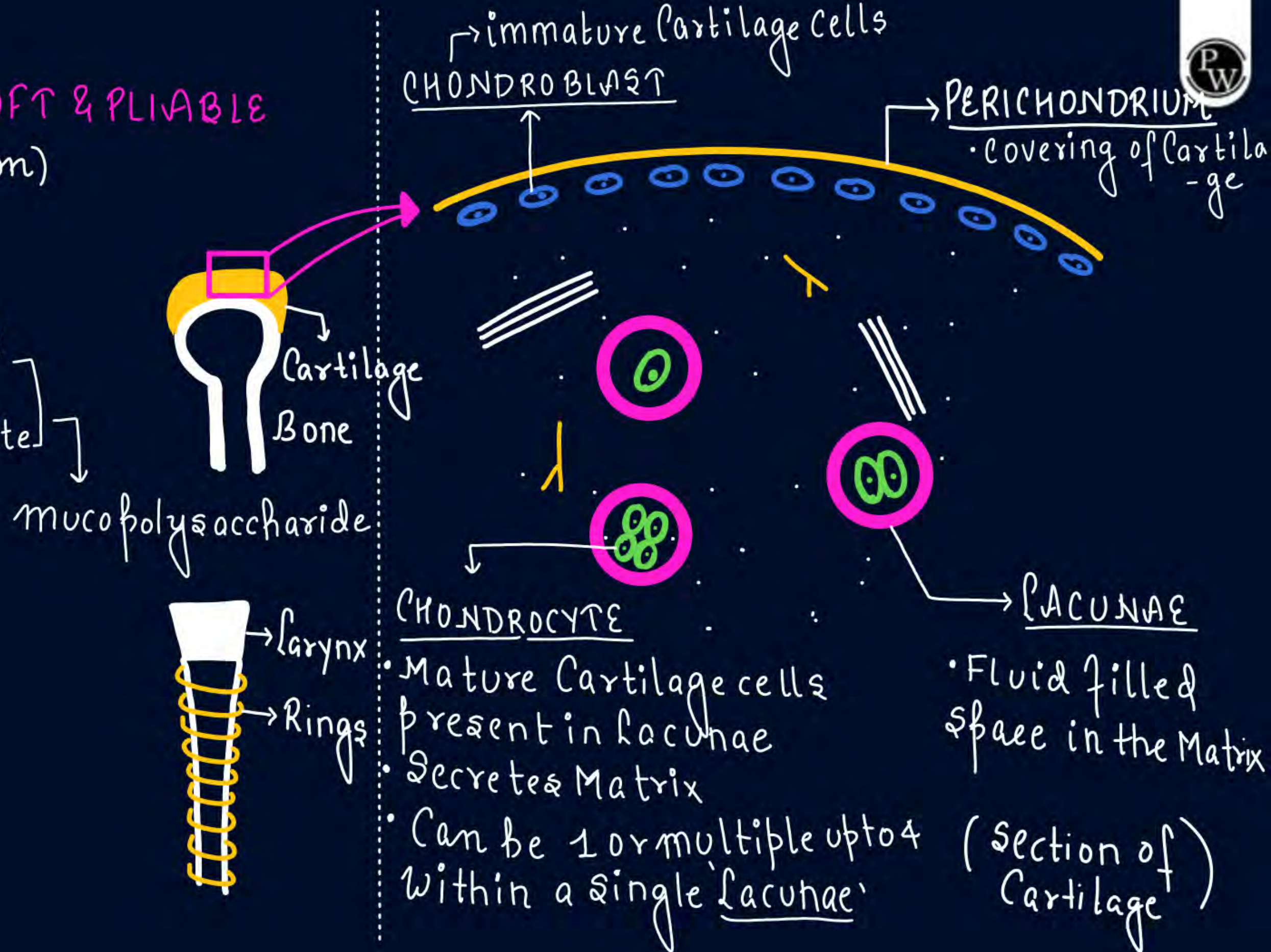
CARTILAGE:

- Matrix: **SOLID, SOFT & PLIABLE**
(resists Compression)

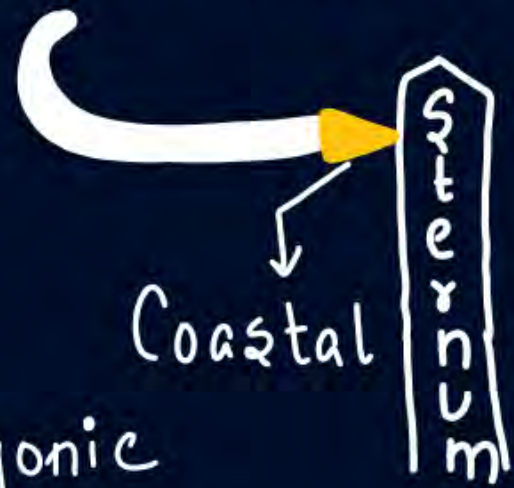
- Matrix →
Hyaluronic acid
+
Chondroitin sulfate

Examples:

- 1) Outer ear joints
- 2) Tip of Nose
- 3) Nasal septum
- 4) Tracheal rings
- 5) Larynx



- 6) Intervertebral disc (b/w 2 Vertebrae) ←
7) Intercostal/Coastal Cartilage
↓
Attaches Ribs with Sternum
8) Limbs & Hands



Note Most of the
Cartilage of the embryonic
stage is replaced by bone in
Adults.

(ii) BONES:

- Matrix is SOLID but HARD & NON-PLIABLE

due to Calcium Salts

- Collagen fibres only

MATRIX

Organic

- 10-30%
- 'Ossein' protein

Inorganic

- 70-90%
- Calcium salts: Calcium Carbonate, Ca Phosphate etc
(max)

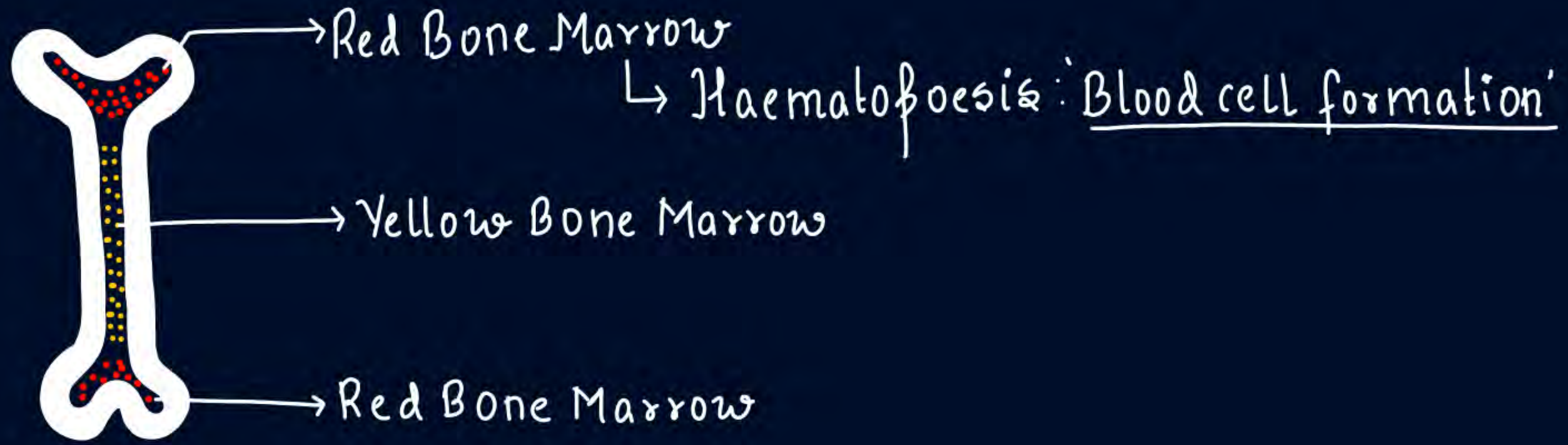
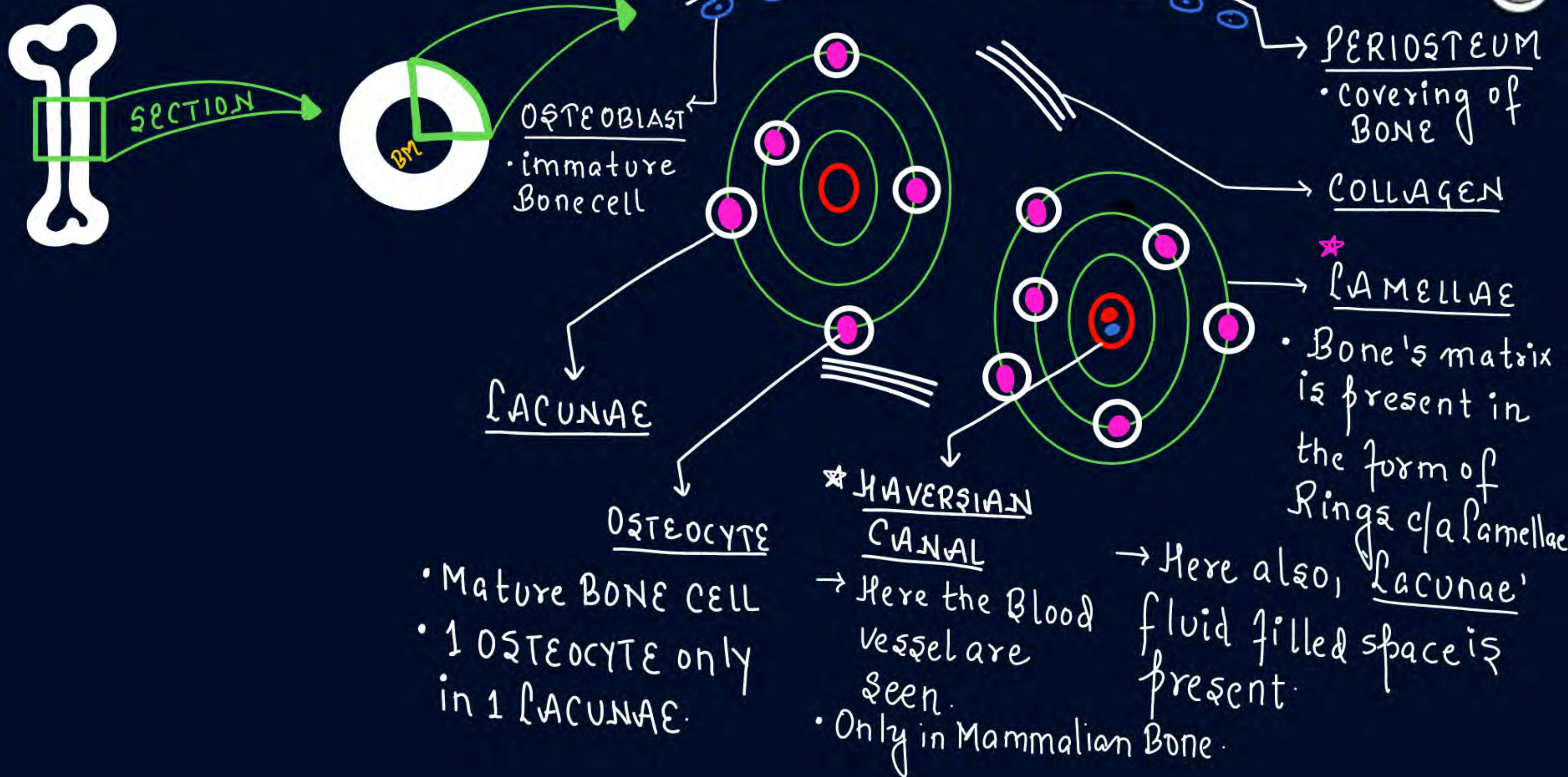
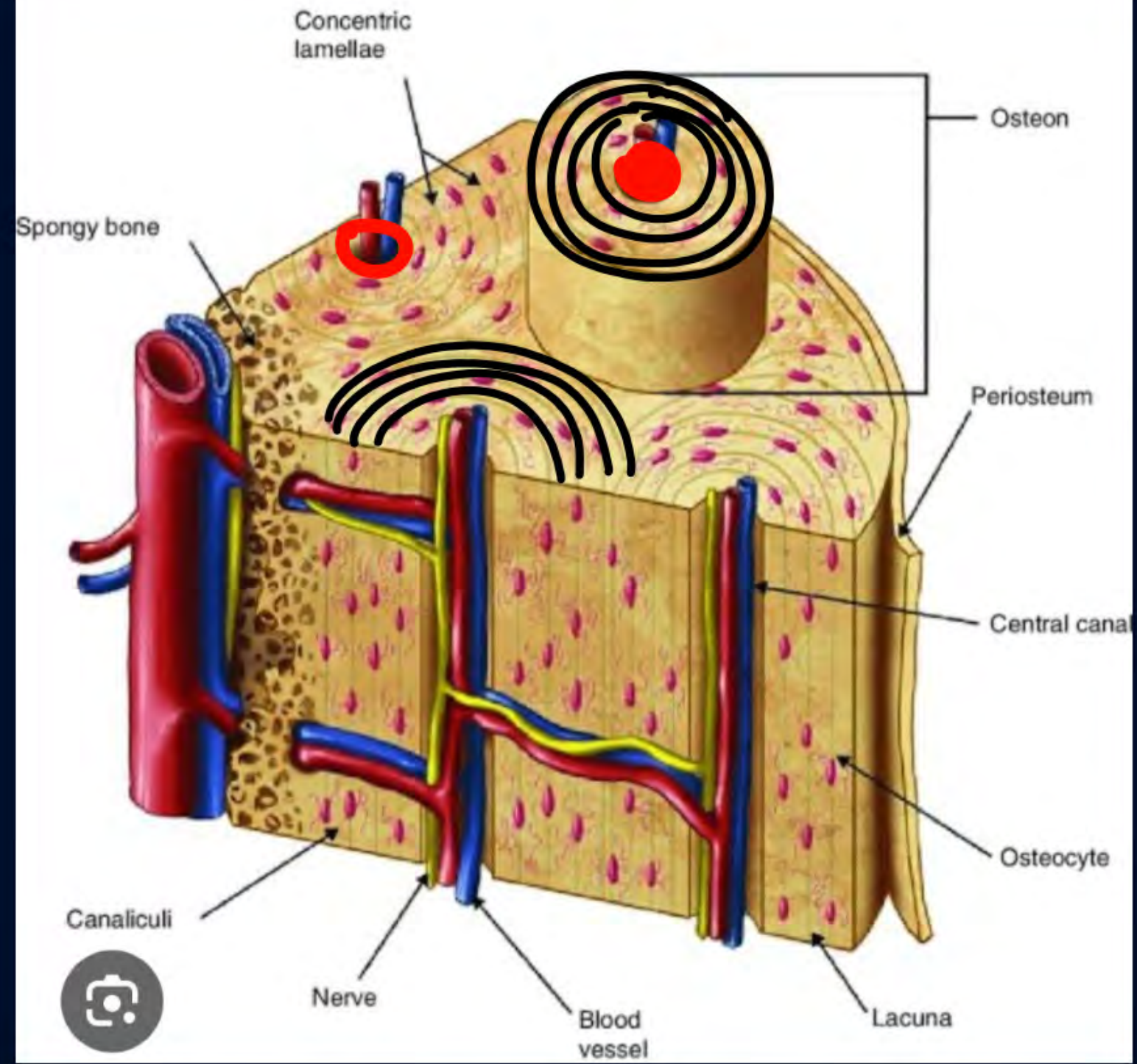
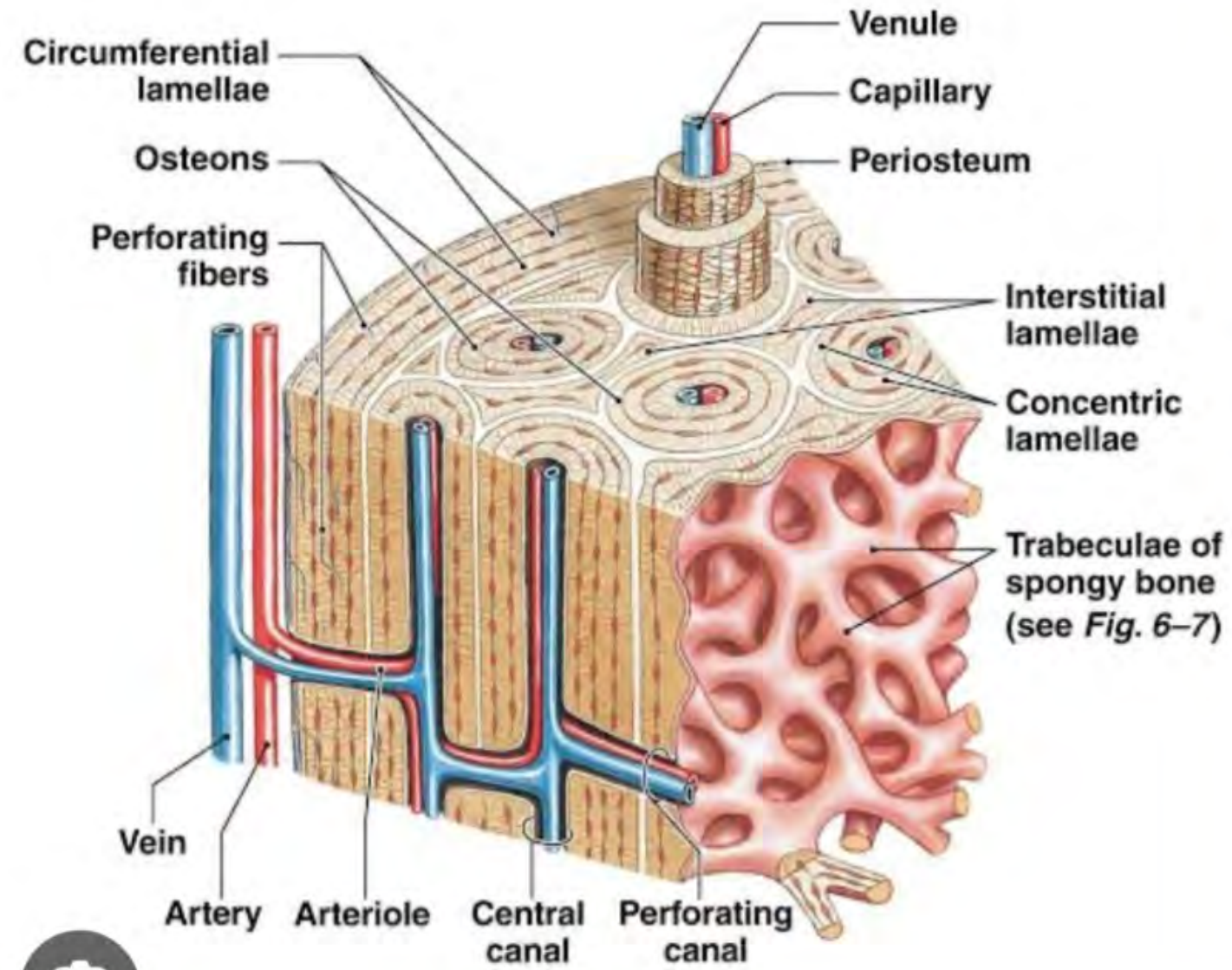


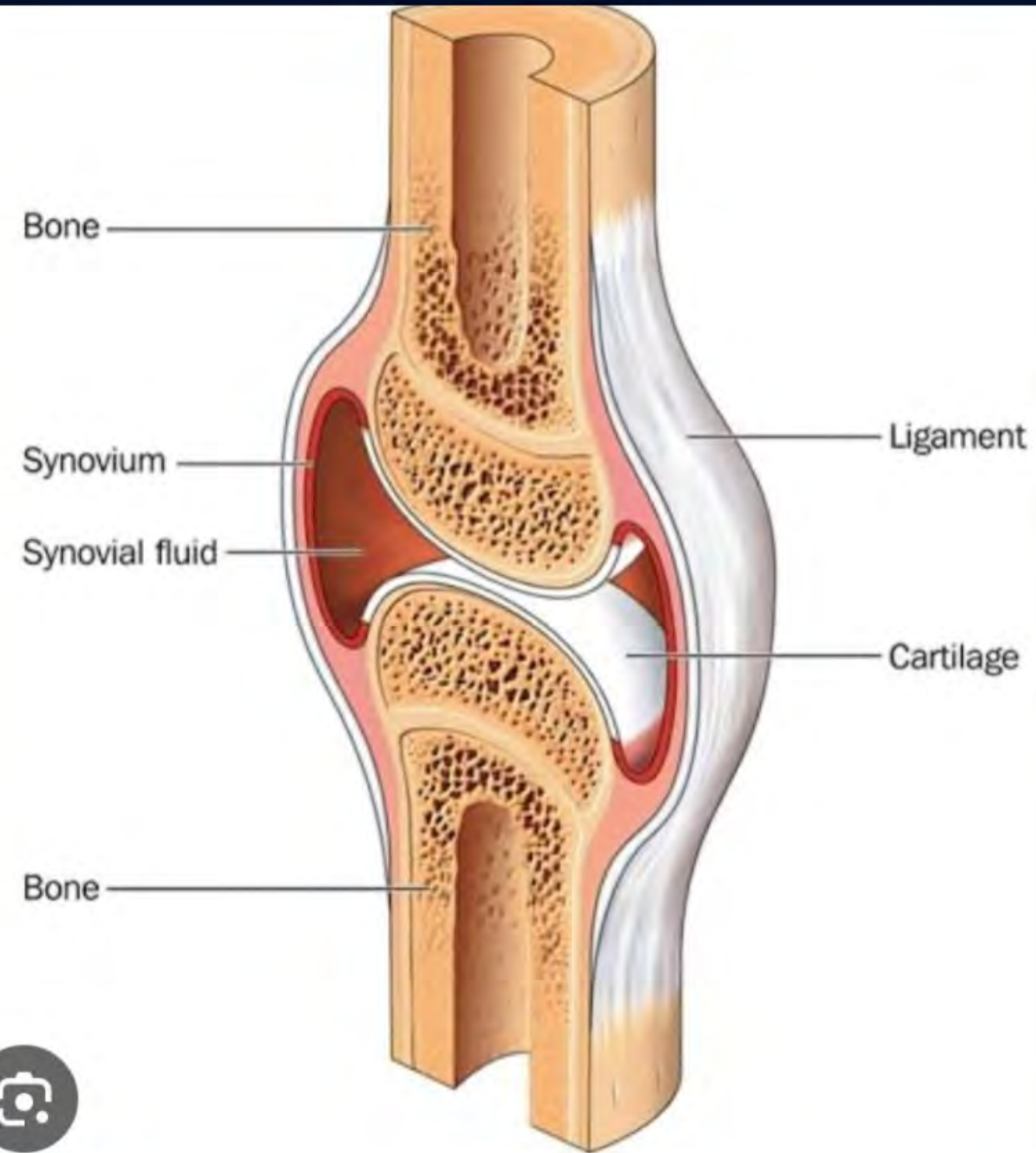
fig: Long Bone

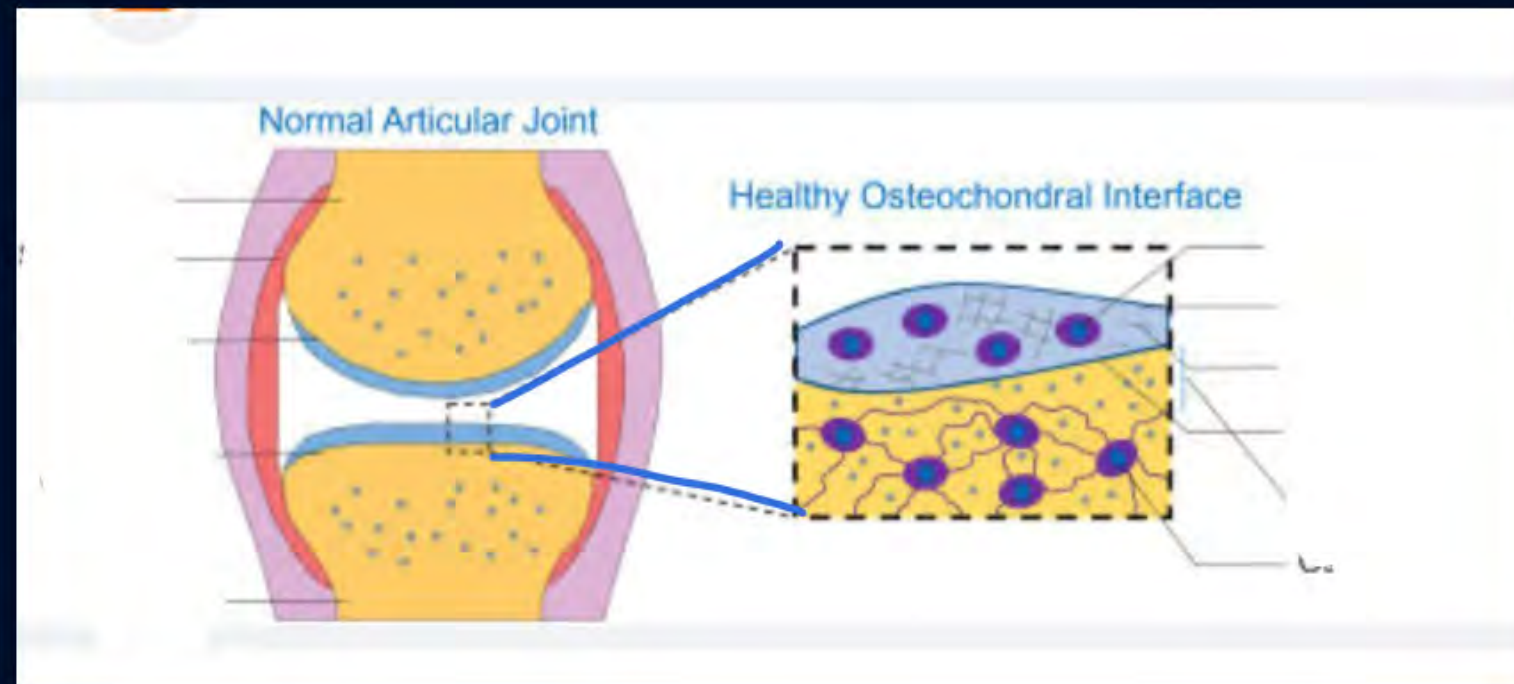
Section of Bone:











Eg of Bones:

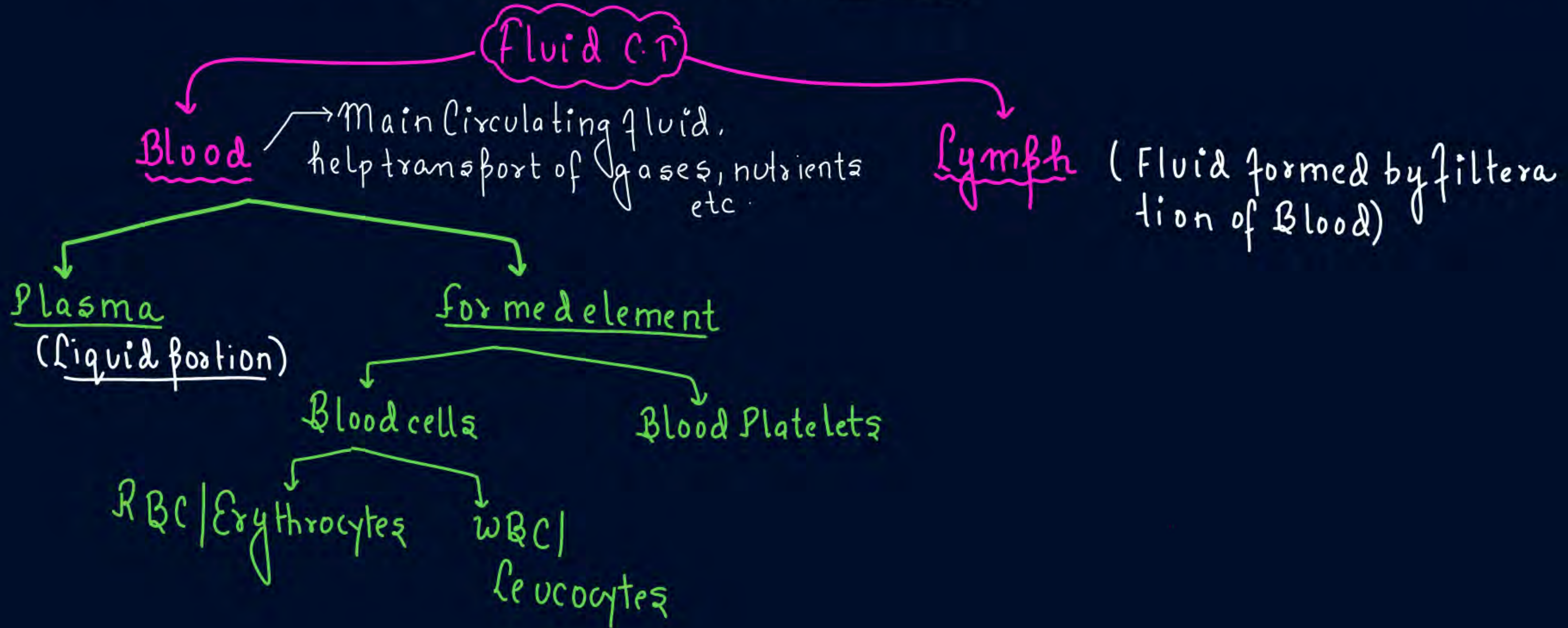
- Limb Bone, Ribcage, Vertebrae, Cranium etc

function:

- Protection of SOFTER ORGANS : Rib cage: Lungs
Cranium: Brain
- Some Bones are site of
Blood cell Production.

(ii) Fluid C.T.:

- Matrix: FLUID & cells donot secrete FIBRE

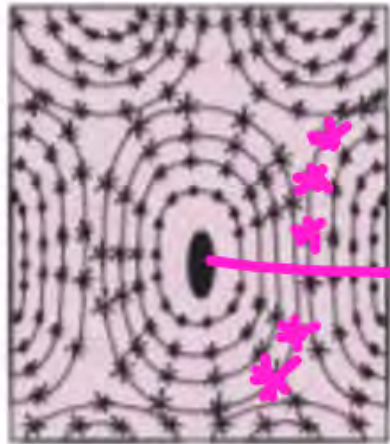




(a)

Collagen fibers

Cartilage cell
(chondrocyte)



(b)

B



RBC



Platelets



WBC

(c)

bones and blood are various types of **specialised connective tissues**.

The intercellular material of **cartilage** is **solid** and **pliable** and resists compression. Cells of this tissue (chondrocytes) are enclosed in small cavities within the matrix secreted by them (Figure 7.6a). Most of the cartilages in vertebrate embryos are replaced by bones in adults. Cartilage is present in the tip of nose, outer ear joints, between adjacent bones of the vertebral column, limbs and hands in adults.

Bones have a hard and non-pliable ground substance rich in calcium salts and collagen fibres which give bone its strength (Figure 7.6b). It is the main tissue that provides structural frame to the body. Bones support and protect softer tissues and organs. The bone cells (**osteocytes**) are present in the spaces called **lacunae**. Limb bones, such as the long bones of the legs, serve weight-bearing functions. They also interact with skeletal muscles attached to them to bring about movements. The bone marrow in some bones is the site of production of blood cells.

Blood is a fluid connective tissue containing plasma, red blood cells (RBC), white blood cells (WBC) and platelets (Figure 7.6c). It is the main circulating fluid that helps in the transport of various substances. You will learn more about blood in Chapters 17 and 18.

Muscular Tissue



- Muscles : Mesodermal origin (except iris, ciliary muscle : ECTODERMAL)
- 40-50% Weight of Body: Muscles
- 639 muscles.

Properties of Muscles:

- 1) Contractibility: Muscles can 'SHORTEN' in response to Stimuli.
- 2) Excitability: Muscles responds towards Stimuli.
- 3) Elasticity: Muscles return back to their original relaxed state.
- 4) Extensibility: Muscles can be stretched/lengthened.

H.W discussion

Find the correct statement

- (A) ✓ Areolar tissue is a loose connective tissue
- (B) ~~Tendon is a specialized connective tissue~~
- (C) Cartilage is a loose connective tissue
- (D) Adipose tissue is a dense connective tissue

(F)

Dense

Q-2

(1)

Out of the given tissues, how many are types of connective tissues.

Adipose, ✓ bones, ✓ skeletal, ✓ dense irregular, simple ~~squamous~~, ✓ areolar.

↓
connective
Tissue

Q-2

(4)

- (A) Two
- (B) Four
- (C) Six
- ✓ (D) Five

The cells of areolar tissue that secrete fibres are

- (A) Mast cells (B) Macrophages
(C) Fibroblasts (D) Chondrocytes

Q-3
3

Given below is the diagrammatic sketch of a type of connective tissue.



	Part-A	Part-B	Part-C	Part-D
(1)	Macro-phage	Fibroblast	Collagen fibres	Mast cells
(2)	Mast cell	Macro-Phage	Fibroblast	Collagen fibres
(3)	Macro-phage	Collagen fibres	Fibroblast	Mast cell
(4)	Mast cell	Collagen fibres	Fibroblast	Macro-phage

Identify the parts labelled **A**, **B**, **C** and **D**, and select the **correct** option.

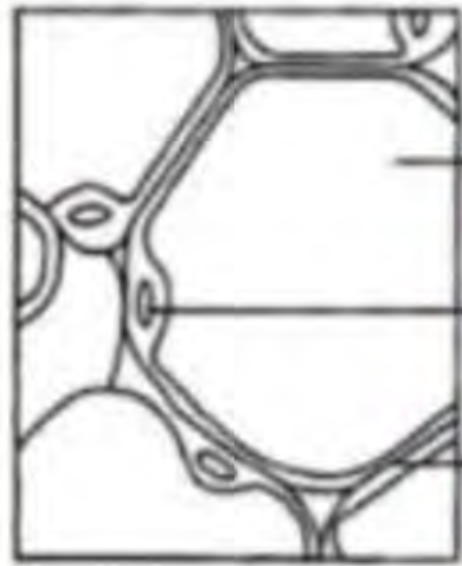
(A) (1)

(B) (2)

(C) (3)

(D) (4)

Identify A, B and C in the given diagram of adipose tissue



A Fat
B Nucleus
C PM

- (A) A-Cytoplasm, B-Nucleus, C-Cell wall
- (B) A-Fat storage area, B-Mast cell, C-Plasma membrane
- (C) A-Cell fluid, B-Collagen fibres, C-Plasmalemma
- (D) A-Fat storage area, B-Nucleus, C-Plasma membrane

Q-5
/ 4

In the following questions, a statement of

STATEMENT 1-Adipose tissues are specialised to store fats. (T)

STATEMENT 2-The extra nutrients, which are not used immediately by the body get converted into fats. (T)

1. Statement I is correct but Statement II is incorrect.
2. Statement I is incorrect but Statement II is correct.
3. Both Statement I and Statement II are correct.
4. Both Statement I and Statement II are incorrect.

Q-6 (3)

Directions: In the question two statements are given as statement and statement-II.
Mark the correct choice as:

Statement-I: Epithelial tissues are specialized for linking and connecting other tissues/organs. X

Statement-II: Tendon and ligament are the types of dense irregular ^{Reg} connective tissues. X

(A) Both Statement-I and Statement-II are correct.

(B) Both Statement-I and Statement-II are incorrect.

(C) Statement-I is correct & Statement-II is incorrect.

(D) Statement-I is incorrect & Statement-II is incorrect.

Q-7
B



Homework

- REVISE CLAASNOTES / ZOOLOGY MED EASY

MODULE HW

PRARAMBH EXERCISE 1-21-24

PRABAL EXERCISE 2-18

PARIKSHIT EX 3- 1,4-7,9,10,11,12

Ncert catalyst (HW)

QUESTION

Given below are two statements.

Statement I: Bones have a hard and non-pliable ground substance rich in calcium salts and elastic fibres.

Statement II: cartilage is the main tissue that provides structural frame to the body.

In the light of the above statements, choose the most appropriate answer from the options given below.

- 1 Statement I is correct but Statement II is incorrect.
- 2 Statement I is incorrect but Statement II is correct.
- 3 Both Statement I and Statement II are correct.
- 4 Both Statement I and Statement II are incorrect.

The only connective tissue without fibres is

- (a) areolar connective tissue
- (b) bone
- (c) cartilage
- (d) blood

Assertion (A): Bone is stronger than cartilage.

Reason(R): Bone matrix is hardened by calcium salts.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation
- C. A is true but R is false
- D. A is false but R is true

STATEMENT 1- Matrix is present in the form of rings in bones called lacunae .

STATEMENT 2- Osteocytes can be multiple in one lacunae

- 1 . Statement I is correct but Statement II is incorrect.
2. Statement I is incorrect but Statement II is correct.
3. Both Statement I and Statement II are correct.
4. Both Statement I and Statement II are incorrect.

Assertion (A): Cartilage provides flexibility to body structures.

Reason (R): Cartilage has a SOFT and pliable matrix

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation
- C. A is true but R is false
- D. A is false but R is true

STATEMENT 1- Bone cells are embedded in a hard matrix of calcium and phosphorus.

STATEMENT 2- These minerals provide flexibility to the bone.

1. Statement I is correct but Statement II is incorrect.
2. Statement I is incorrect but Statement II is correct.
3. Both Statement I and Statement II are correct.
4. Both Statement I and Statement II are incorrect.

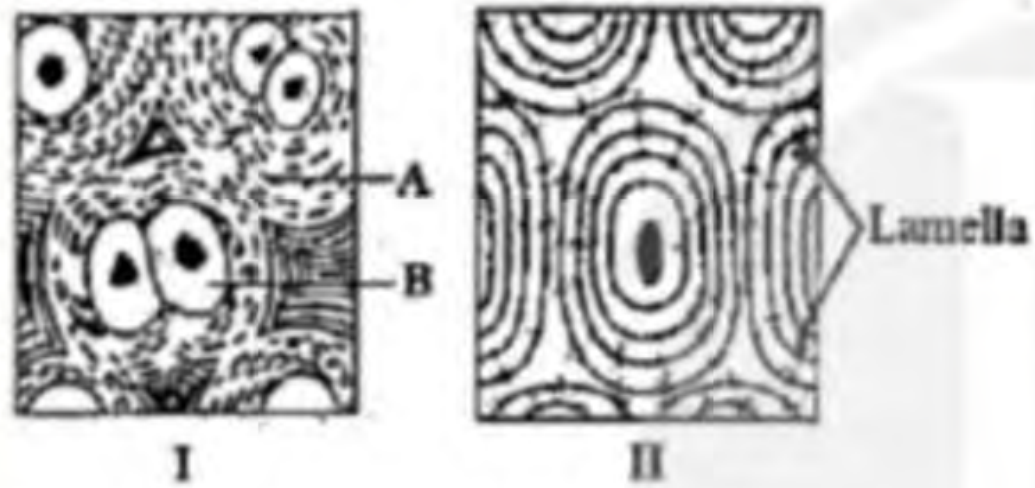
1. Which of the following statements is/are not correct regarding connective tissues.

- (i) They are most abundant and widely distributed in the body of complex animals.
- (ii) They connect and support other tissues.
- (iii) They include diverse tissues such as bones, cartilage, tendons, adipose and other loose connective tissues.
- (iv) They form the internal and external lining of many organs.
- (v) In all connective tissues except blood, the cells secrete fibres of structural proteins like collagen and elastin.

Which of the above statements are incorrect?

- (A) (iv) only
- (B) (v) only
- (C) i and ii only
- (D) iii and v only

Refer to the diagram given below:



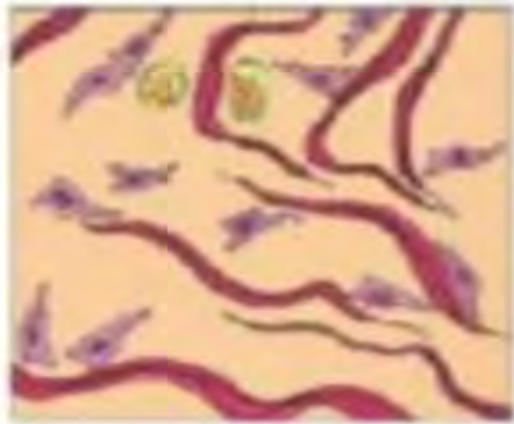
Which of the following is the correct identification of **A**, **B**, **I** and **II**.

- (A) I-Cartilage, II-Bone, A-Collagen fibres, B-Chondrocyte
- (B) I-Cartilage, II-Bone, A-Collagen fibres, B-Chondroblast
- (C) I-Bone, II-Cartilage, A-Microtubules, B-Osteoblast
- (D) I-Bone, II-Cartilage, A-Collagen fibres, B-Osteoblast

Read the following statements

- (a) Ground substance is hard and non-pliable
- (b) Rich in collagen fibres and calcium salts
- (c) Main tissue that provides a structural frame to the body

Identify the tissue on the basis of given characteristics and choose the correct option from the given diagrams



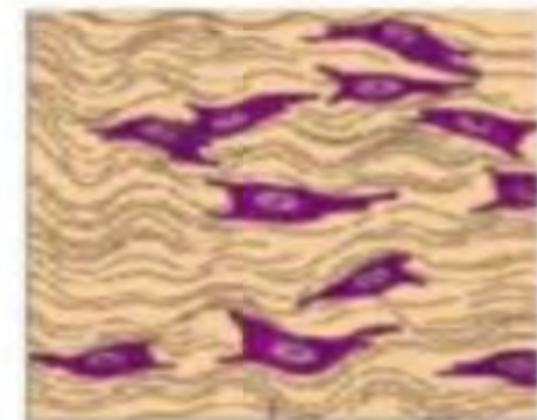
(A)



(B)



(C)



(D)

Read the following statements and answer the question.

- (i) They have a hard and non-pliable ground substance rich in calcium salts and collagen fibres.
- (ii) They provide support and protection for softer tissues and organs.
- (iii) Osteocytes are present in the spaces called lacunae.
- (iv) They also interact with skeletal muscles attached to them to bring about movements.

Which of the following type of tissue is being described by above statements?

- (A) Cartilage
- (B) Bone
- (C) Blood
- (D) Neurons

QUESTION

Given below are two statements.

Statement I: Cartilage is a specialised connective tissue.

Statement II: The intercellular material of cartilage is solid and pliable and resists compression.

In the light of the above statements, choose the most appropriate answer from the options given below.

- 1 Statement I is correct but Statement II is incorrect.
- 2 Statement I is incorrect but Statement II is correct.
- 3 Both Statement I and Statement II are correct.
- 4 Both Statement I and Statement II are incorrect.

Choose correct option which have all right statement for bones.

- (A) Bones have a hard and non-pliable ground substance.
- (B) Matrix of bone is rich in calcium salt and free from collagen fibres.
- (C) Bone marrow in some bones is the site of production of blood cells.
- (D) Bone is a type of specialised connective tissue.

(A) A, B and C

(B) A, C and D

(C) A and D only

(D) All of these

Samapti Sinha Mahapatra

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