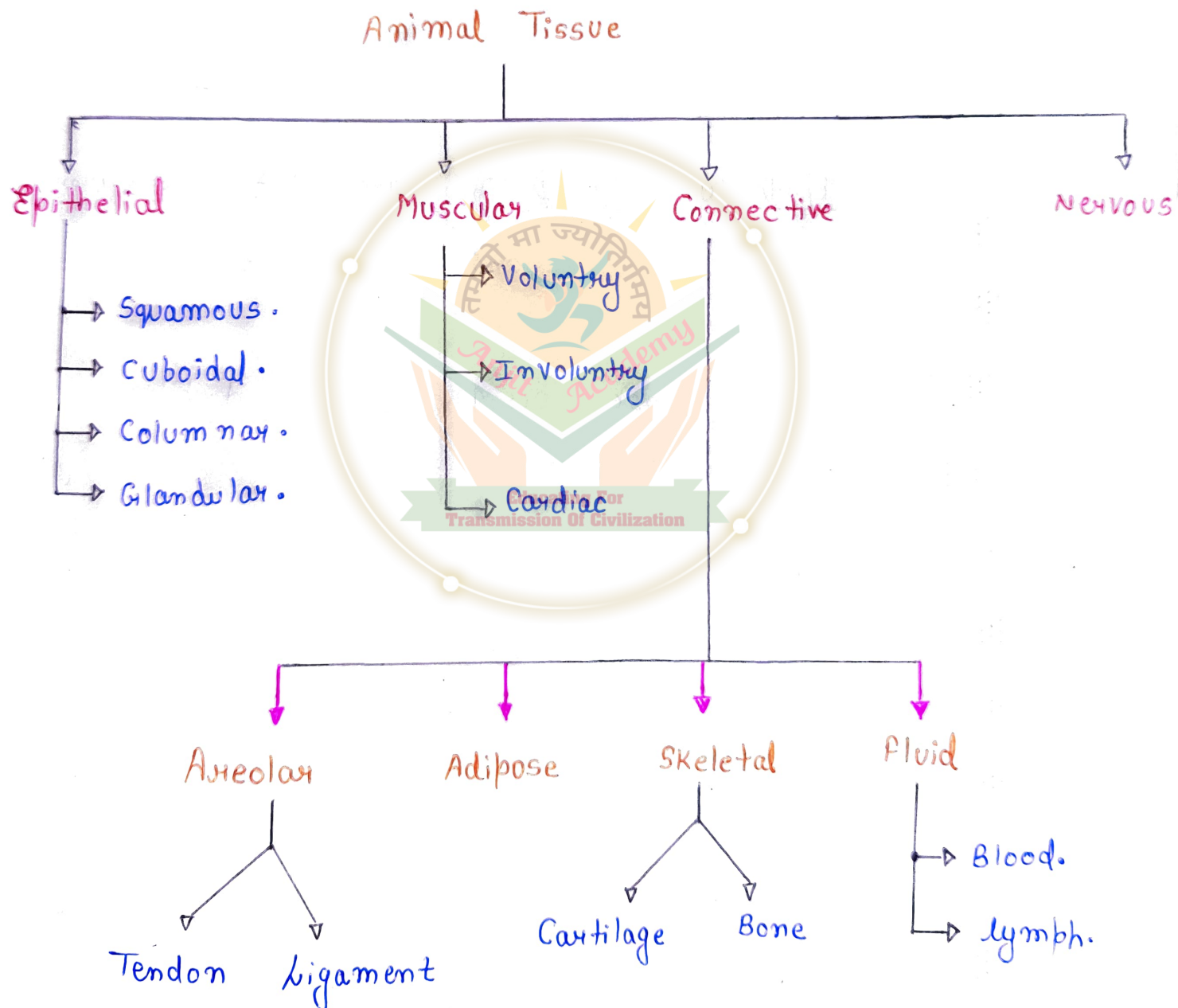


Tissue :- Group of cells which has similar struc.
but specific funcⁿ.



1) Epithelial Tissue :- Epithelium.

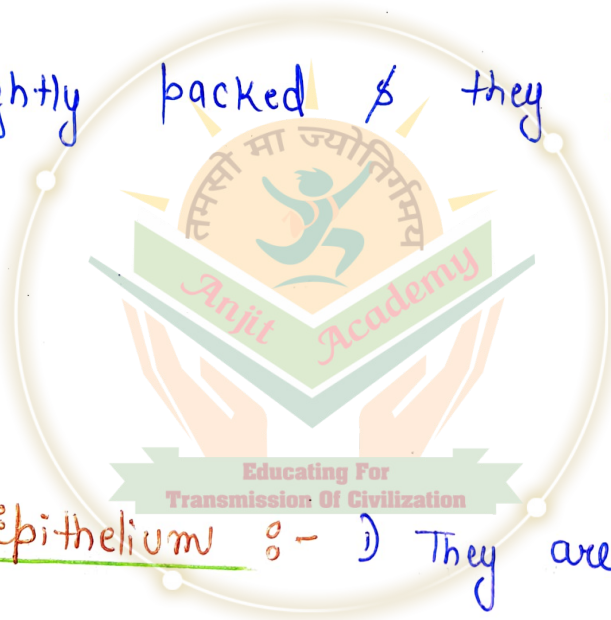
- a) They are simplest tissue.
- b) Act as a protective tissue of the animal body.
- * c) They are tightly packed & they form a continuous sheet.

Types :-

A) Squamous Epithelium :- 1) They are flat, Ir-regular and thin shaped cells.

2) Present in Mouth, Nose, Oesophagus (food-pipe) and Pericardium etc.

3) This tissue provide protects from Mechanical injury, Entry of germs.



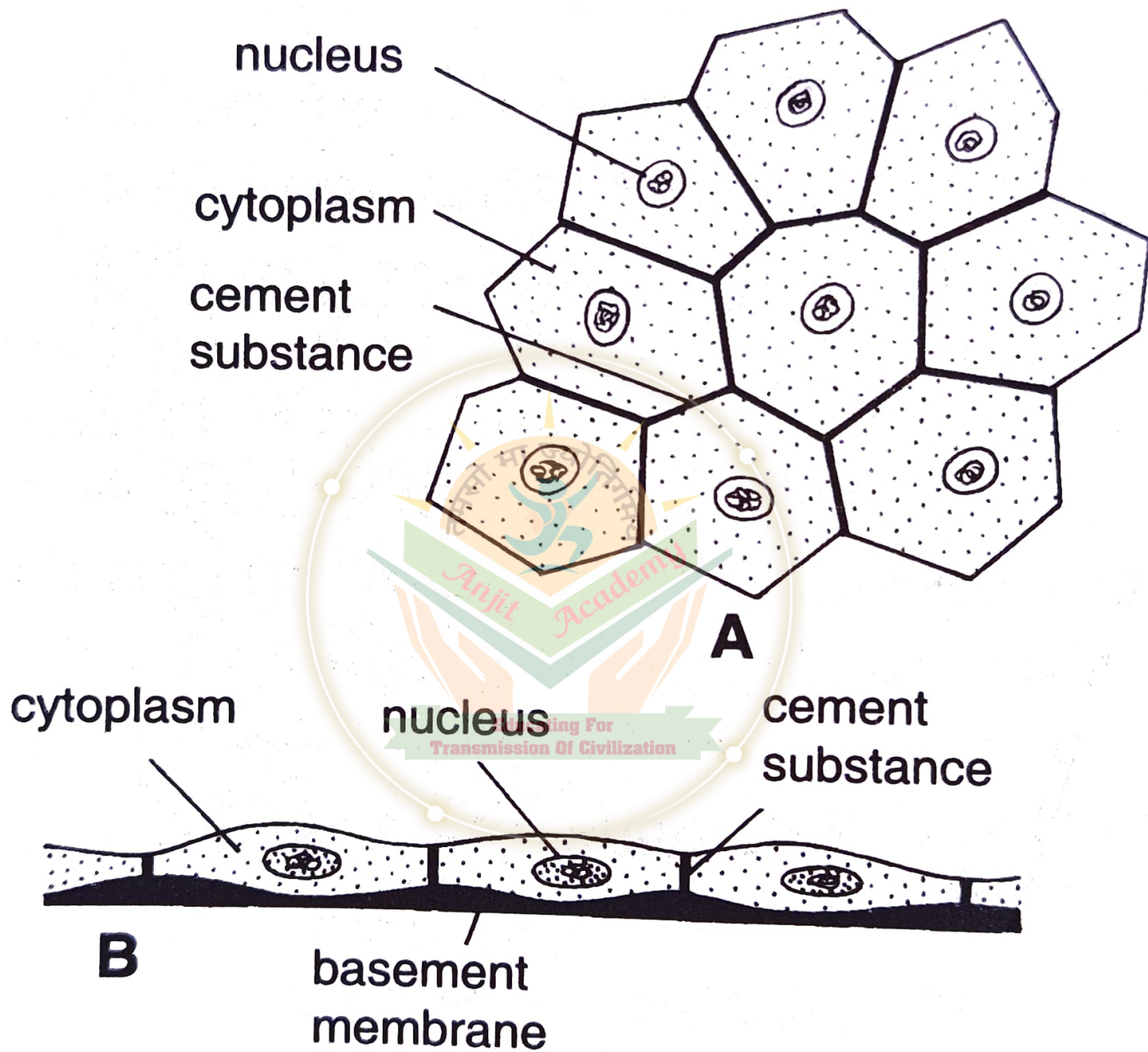


Figure 3.21. Squamous epithelium.

B.) Cuboidal Epithelium :- 1.) They are cube like struc.

* 2.) Square in surface but the free surface appear Hexagonal.

* 3.) Present in Kidney tubules, thyroid, & glands (Salivary, sweat, pancreas)

4.) It helps in absorption, excretion & secretion.

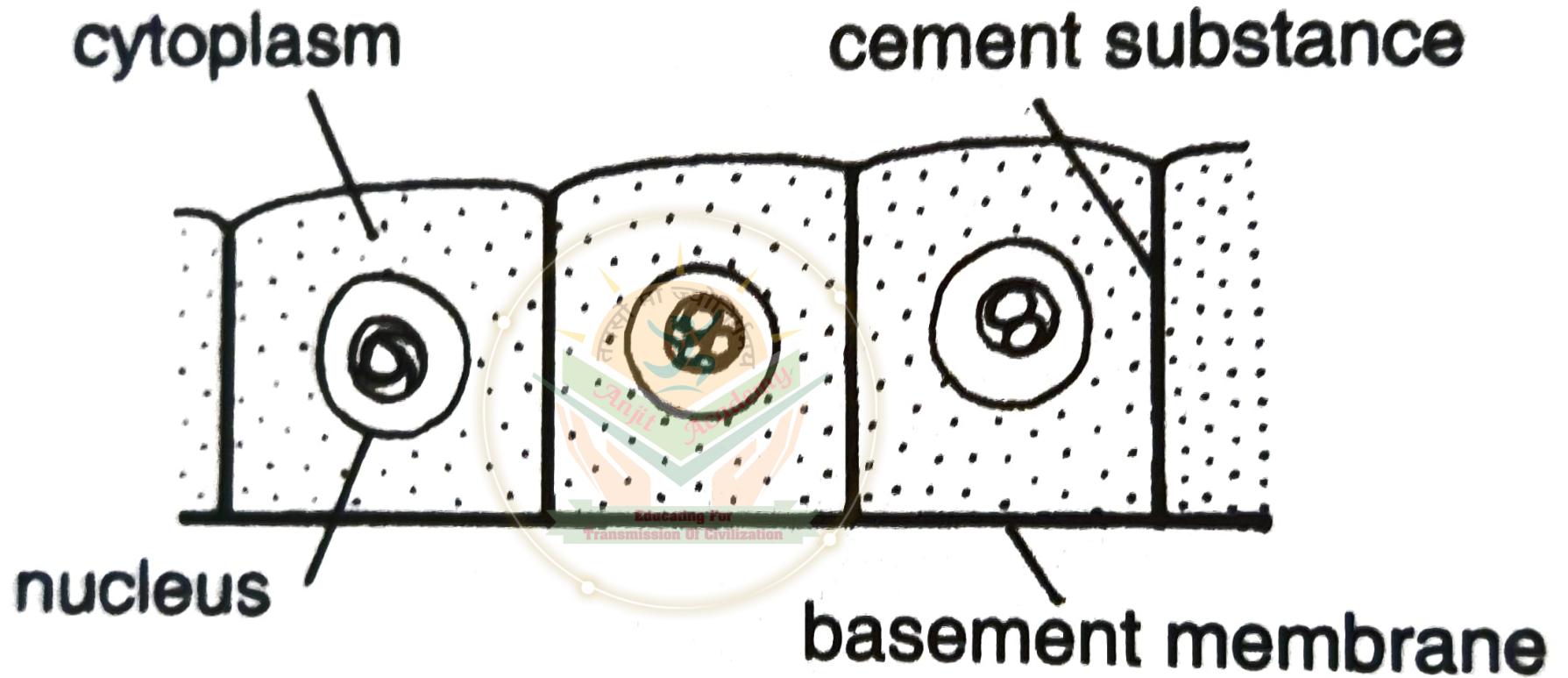


Figure 3.23. Cuboidal epithelium.

c) Columnar Epithelium :- 1) They are Column like
Struc.

* 2) Present in the Stomach, Small Intestine.

3) Its main funcⁿ is absorption & secretion.



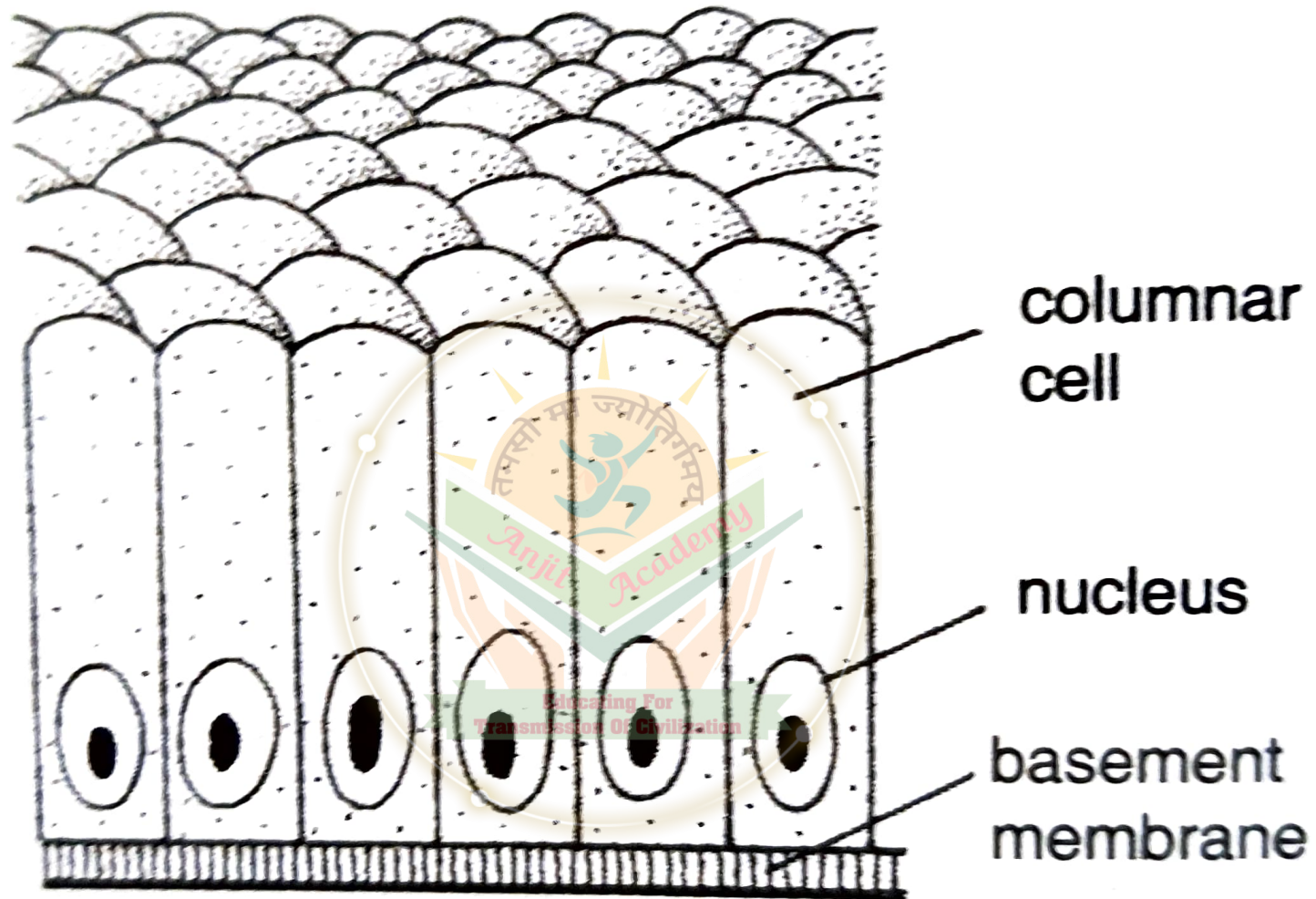
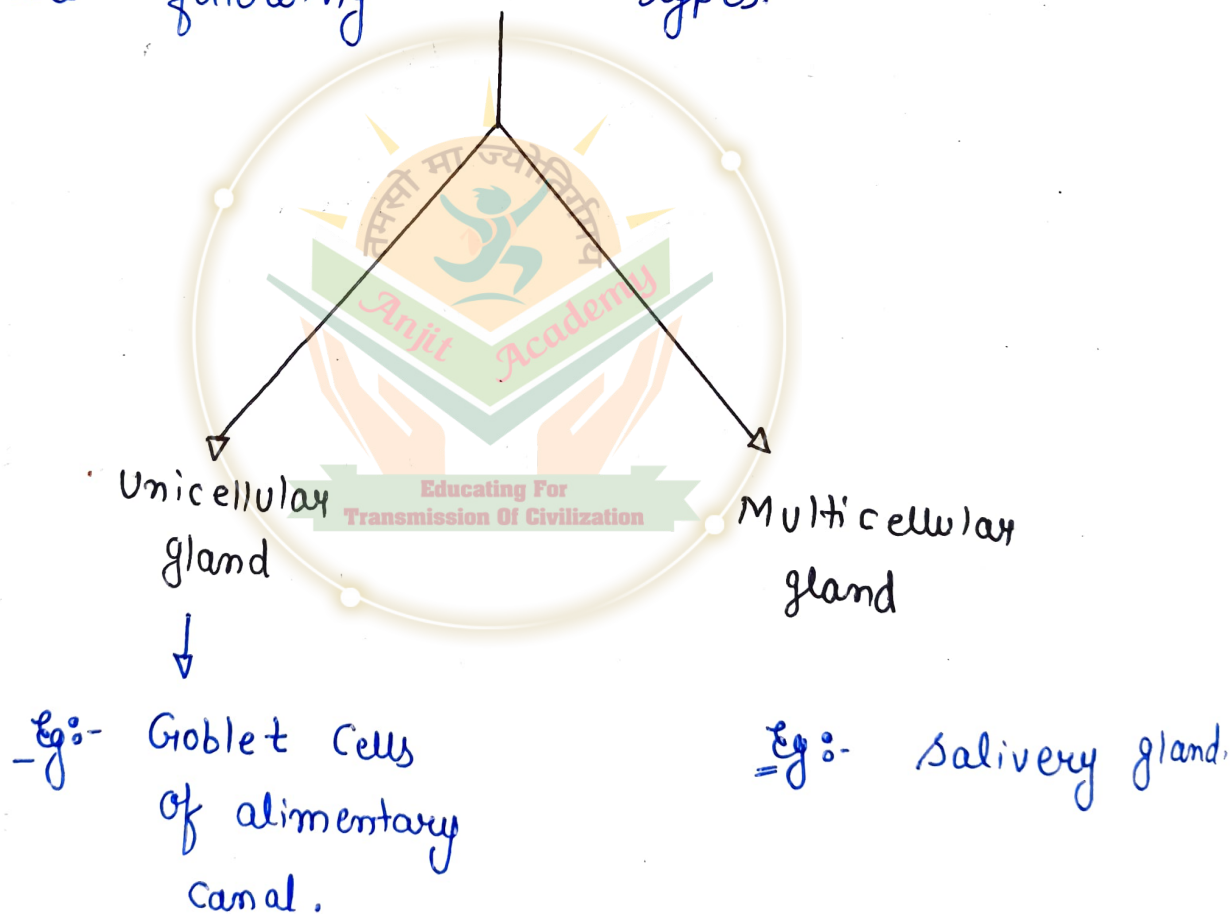


Figure 3.24. Columnar epithelium.

d.) Glandular Epithelium :- 1.) The Columnar epithelium is often modified to form glands, which secrete chemicals.

2.) They are following two types.



→ Permanent Tissue :- Tissue that has Completed its growth and differentiation and is usually incapable for division.

1) Simple permanent Tissue :- ^① These tissue are Composed of cells which are structurally and functionally similar.

② These tissues are all made of one type of cells.

**:- SPT are following "3" types.

- 
- a) Parenchyma.
 - b) Collenchyma.
 - c) Sclerenchyma.

Trick word :-

- 1) Gr. word,
- 2) Shape.
- 3) Inter-Cellular space.
- 4) Living/Non-living
- 5) Occurance
- 6) Funcⁿ

Characters	Parenchyma	Collenchyma	Sclerenchyma
1) Gr. word	Parya = beside enchyma = in-filling	Koilos = glue	Sclerous = Hard
2) Shape	Isodiametric Spherical	Elongated	Polygonal
3) Inter Cellular Space	Present	Absent	Absent
4) Living/ non living	Living	Living	Dead/ non-living
5) Occurrence	Present in stem, roots, leaves, flowers, fruits	below the epidermis	Covering of seeds
6) Func ⁿ .	Packing & food Storage.	Provide mechanical support.	Protection.

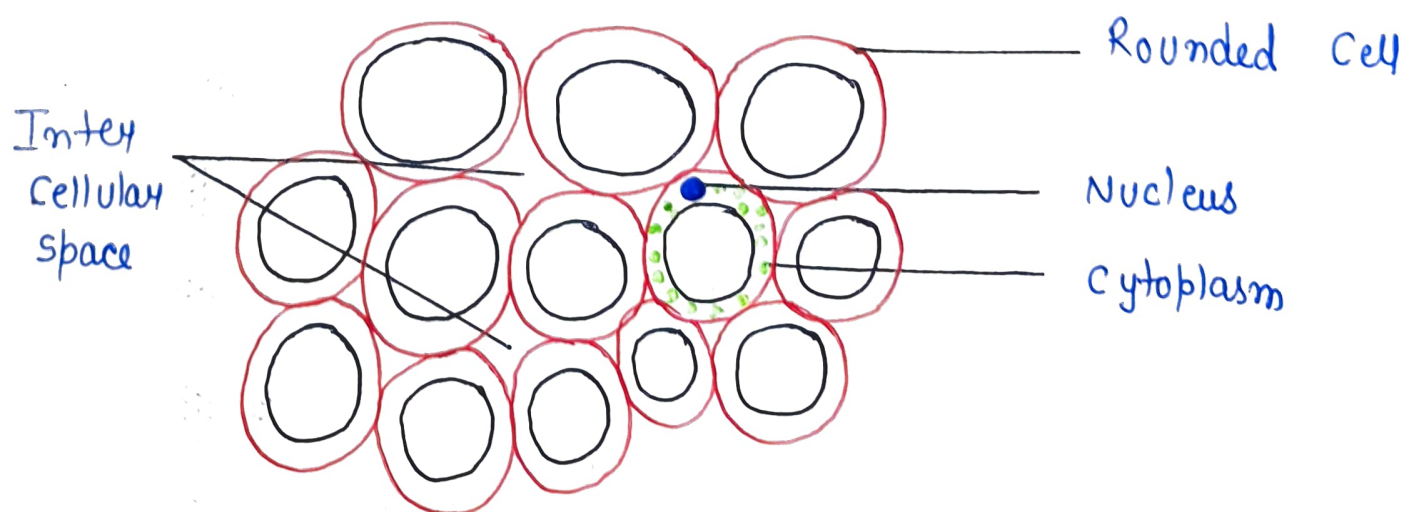


Fig:- Parenchyma tissue.

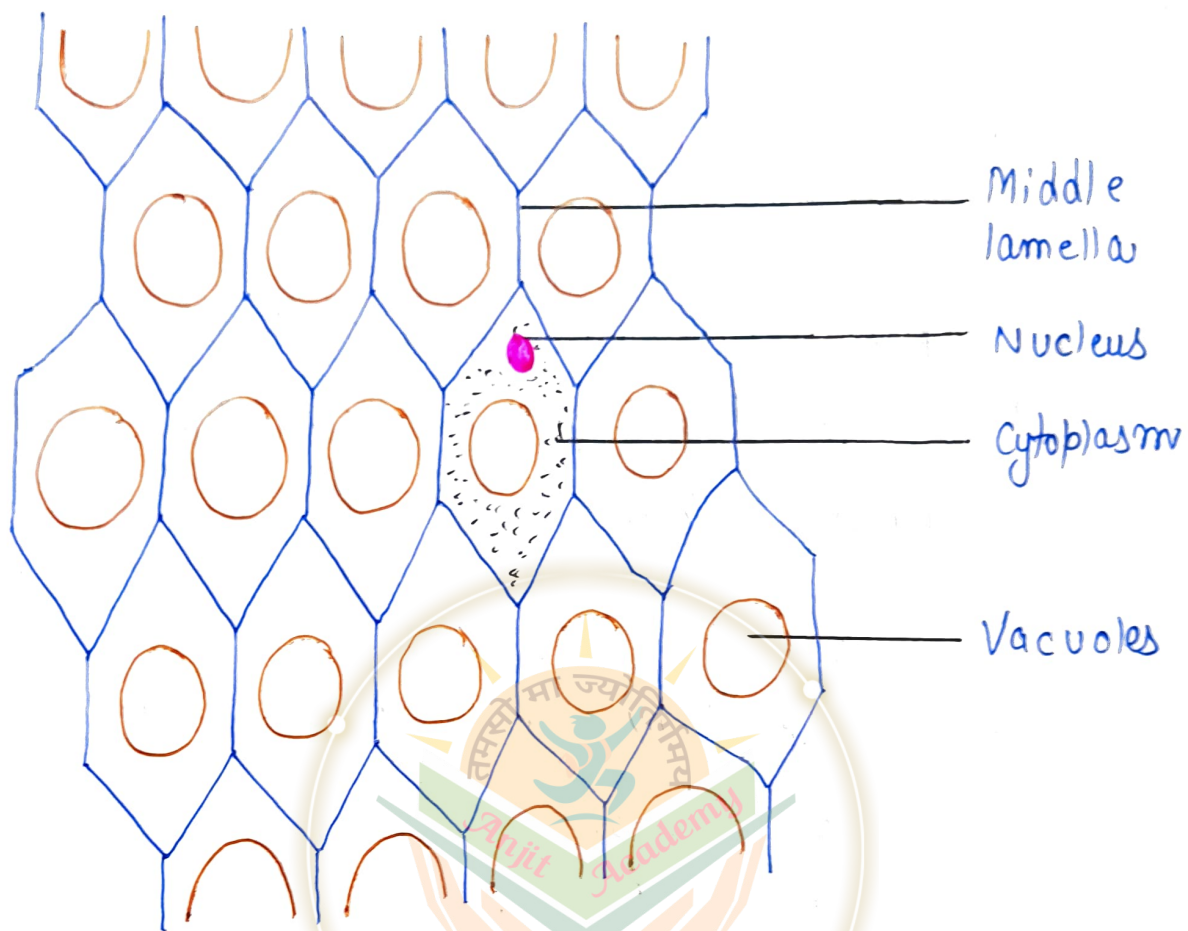


Fig :- Collenchyma tissue

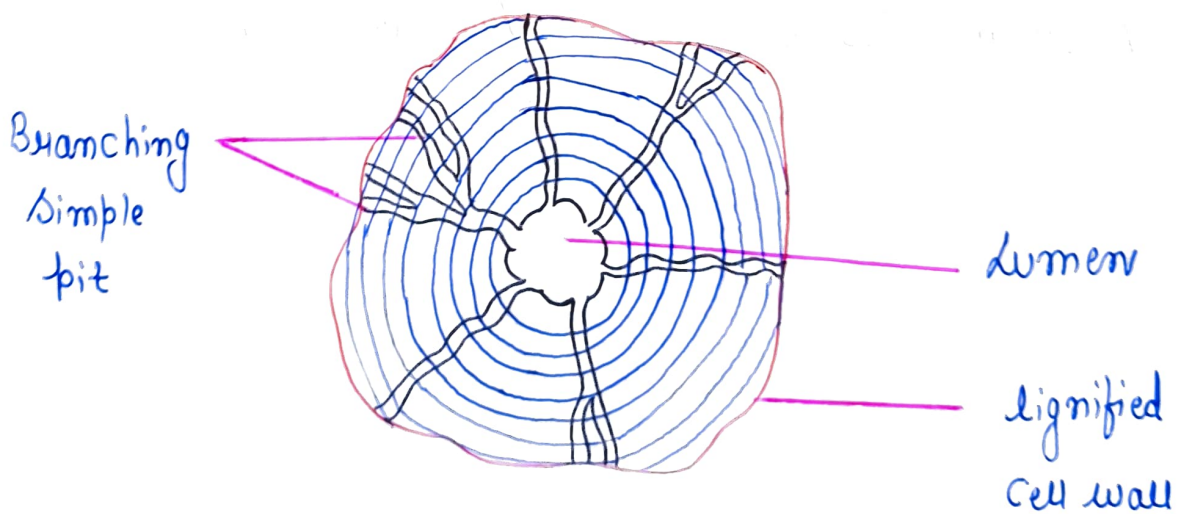


Fig :- Sclerenchyma tissue.

2) Complex permanent Tissues →

a) The Complex tissues are consist of more than one type of cells having a common origin.

* b) xylem & phloem constitute the complex tissue in plants.

c) Both together (xylem & phloem) are called as -
Vascular tissues . & Vascular Bundles.

Xylem

- 1) Gr. word $\rightarrow$ xylos = wood.
- * 2) xylem is composed of cells of four different types $\rightarrow$

- Tracheids.
- Vessels.
- xylem parenchyma.
- xylem fibre.

- * 3) Except xylem parenchyma, all other xylem elements are dead cells.

a) Tracheids :- 1) They are elongated, tube like cells with thick & lignified walls with tapering ends.

b) Vessel :- 1) It's long cylindrical tube-like structure.

2) Vessels made ^{up} of many cells called -
Vessel members.

3) Vessel members are interconnected through perforations in their common walls.

c) Xylem parenchyma :- ¹⁾ They are living cells & thin walled.

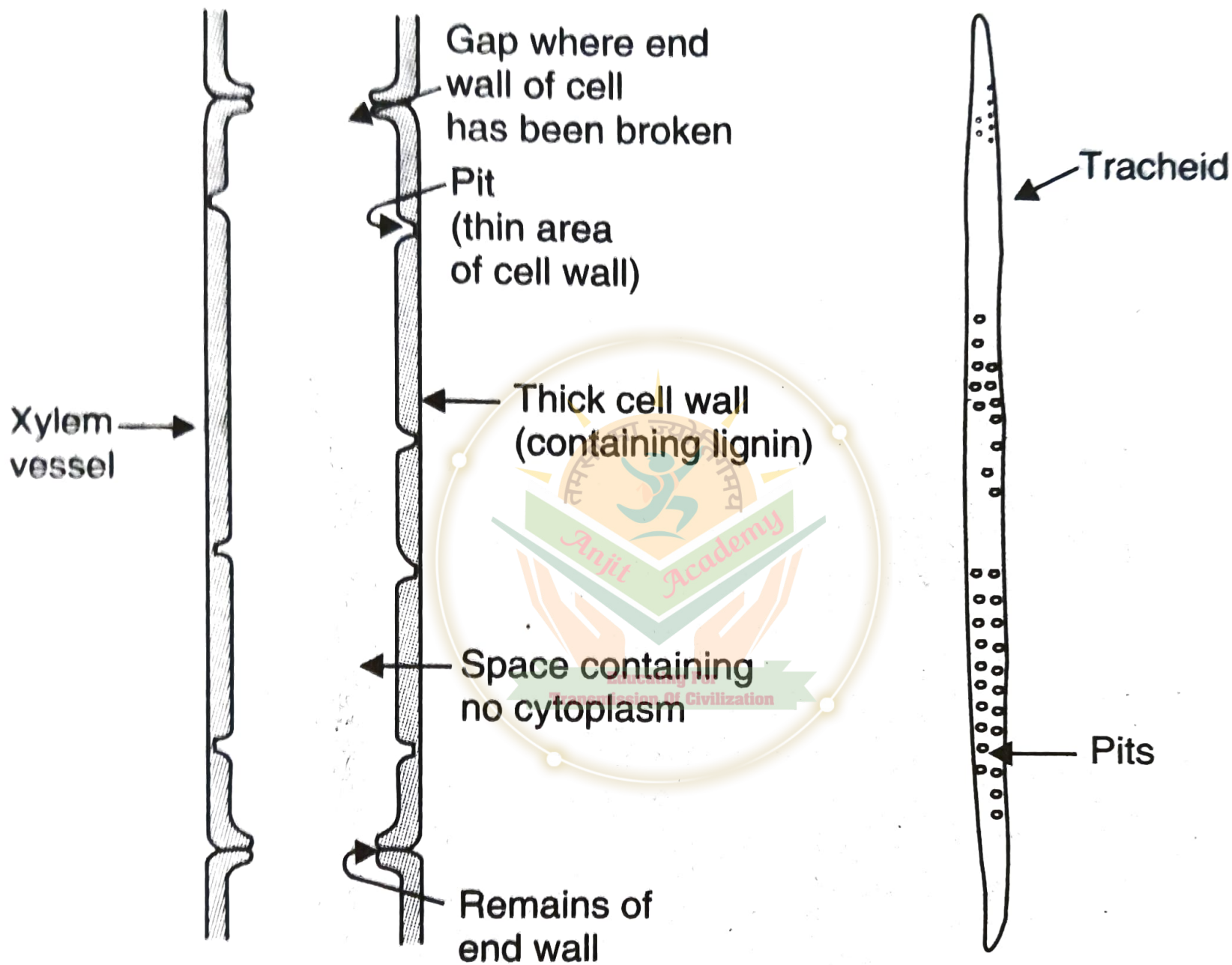
2) They are made up of → Cellulose.

* 3) Helps in stores of food and lateral conducⁿ of water.

funcⁿ :-

1) The main funcⁿ of Xylem is to carry water & Minerals.

2) They gives mechanical strength to the plant body.



(a) Xylem vessel

(b) Tracheid

Figure 72. The structure of xylem vessels and tracheids.

Phloem

1) Gr. word $\rightarrow$ Phloos = bark.

2) Phloem is composed of following four elements or cells.

a) Sieve tubes

b) Companion cells.

c) Phloem parenchyma.

d) Phloem fibre.

* 3) Except phloem fibre, all phloem cells are living cells.

a) Sieve tubes :- 1) They are long, tube like structures, thin walled cells.

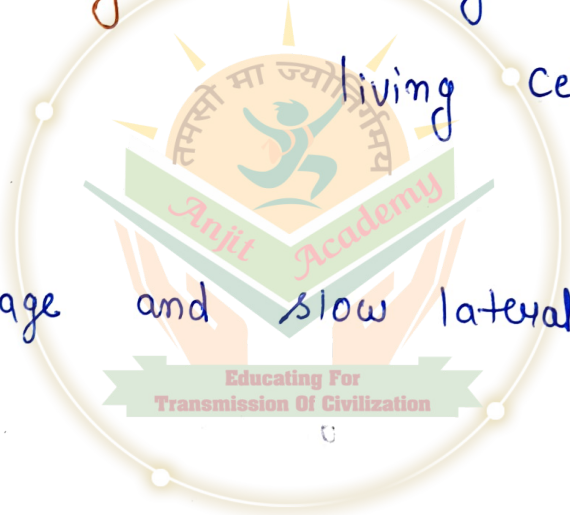
* 2) Their end walls are perforated in a sieve like manner to form the sieve plates.

b) Companion cells :- ① They are specialised parenchymatous cells.

② They are closely associated with Sieve tube Elements.

c) Phloem parenchyma :- ① They are thin walled, living cells.

* ② They store and slow lateral conducⁿ of food.



d) Ph. fibres :- ① They are made up of Sclerenchymatous cells.

* ② Absent in primary phloem, but present in secondary phloem.

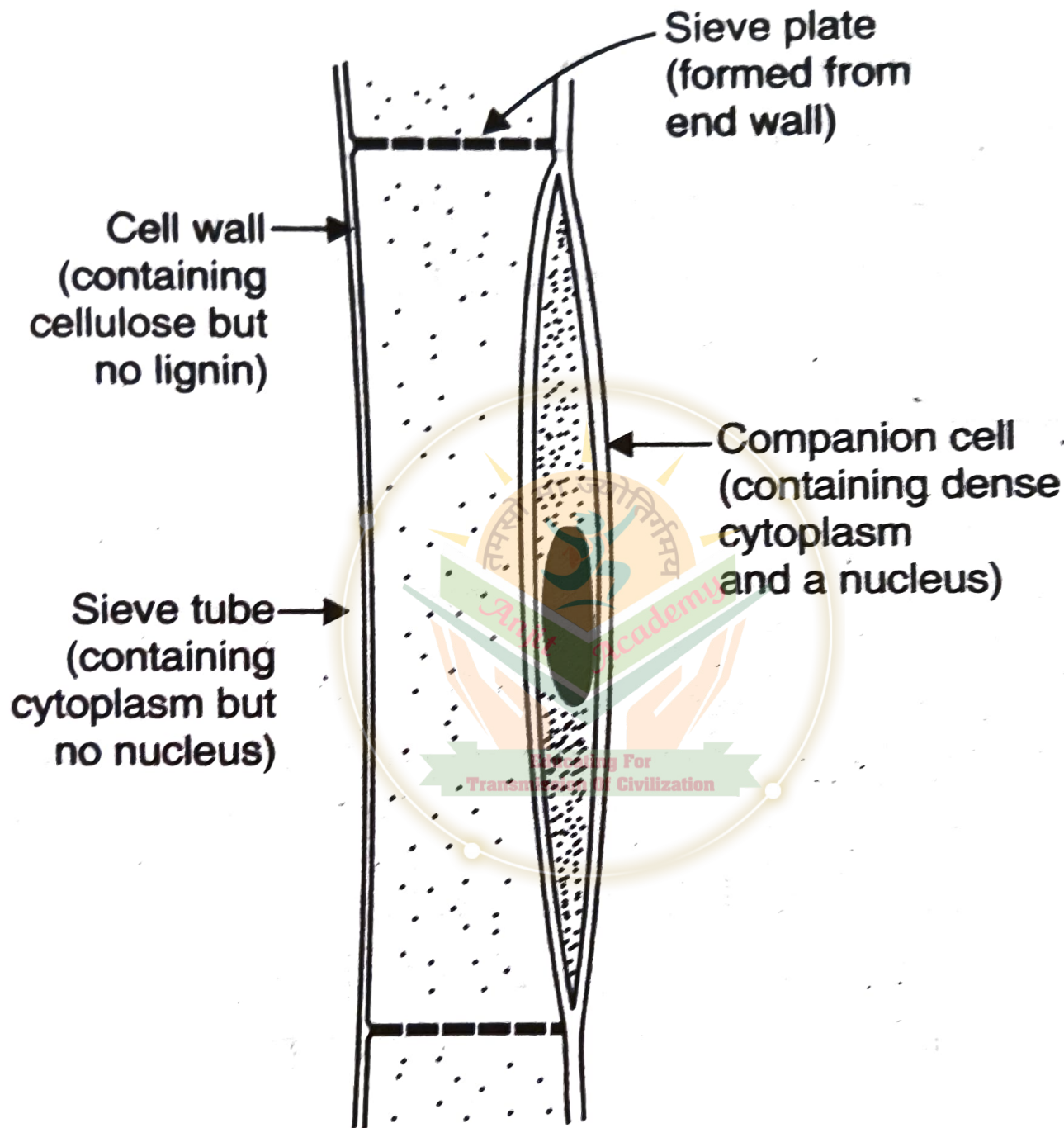


Figure 76. The structure of phloem (made of sieve tubes).