9th Class - Biology Key

1) D
2) D
3) B
4) A
5) A
6) C
7) C
8) D
9) D
10) C
11) D
12) D
13) A
14) D
15) A

16. Name the following

The answers for the following are:

i) Meristem located near the node: **Intercalary meristem**

ii) Tissue that allows bending of tendrils without breaking: **Collenchyma**

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17. Why do the cells of meristematic tissue lack vacuoles?

Answer: Meristematic cells lack vacuoles because they are actively dividing and have a high metabolic rate, requiring their cytoplasm to be dense and full of protoplasm. Vacuoles are typically used for storage and waste disposal, which are not primary functions of these rapidly dividing cells.

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18. Mention the different components of xylem and state one function of each.

The different components of xylem and their functions are:

Tracheids: Long, narrow cells with tapered ends that help in the conduction of water and provide mechanical support.

Vessels: Tube-like structures formed by vessel members joined end-to-end, primarily responsible for the efficient transport of water and minerals.

Xylem parenchyma: Living cells that store food (starch and fats) and assist in the short-distance transport of water.

Xylem fibers: Dead cells with thick walls that provide mechanical strength and support to the plant.

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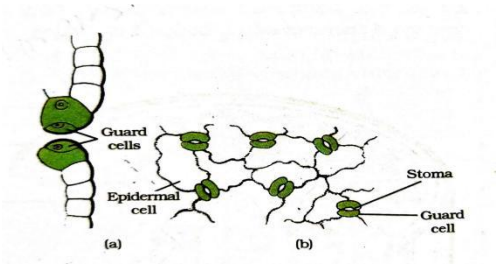
19. Draw a neat labelled diagram showing the lateral view and surface view of Guard cells and epidermal cells.

This question requires a diagram to be drawn. A neat, labeled diagram should show the following:



20. A) Write the laboratory activity to observe the epidermal tissue of a leaf.

Step 1: Materials Required

A fresh leaf (e.g., from an onion or a lily)

Microscope

Slide and coverslip

Forceps

Watch glass

Water

Stain (e.g., safranin or methylene blue)

Blotting paper

Needle

Step 2: Procedure

1. Take a fresh leaf and fold it to expose the lower epidermis.
2. Use forceps to carefully peel a thin, transparent layer from the lower surface of the leaf. This is the epidermal peel.
3. Place the epidermal peel in a watch glass containing water to prevent it from drying out.
4. Add a few drops of a stain (e.g., safranin) to the watch glass to stain the peel for better visibility.
5. After a few minutes, use a needle to transfer the stained peel onto a clean glass slide.
6. Add a drop of water to the peel on the slide.
7. Carefully place a coverslip over the peel, avoiding air bubbles. Use a blotting paper to absorb any excess water.
8. Observe the slide under a microscope, first with low power and then with high power.

Answer:

The final answer is the detailed procedure for the laboratory activity as described above.

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20. B) Compare and contrast collenchyma and sclerenchyma in terms of:

Feature	Collenchyma	Sclerenchyma
i) living / non living	Living cells	Dead cells
ii) Cell shape	Elongated cells with irregular thickening at the corners	Long, narrow cells (fibers) or short, irregular cells (sclereids)
iii) Cell wall	Unevenly thickened cell walls, primarily with pectin and cellulose	Thick, lignified cell walls
iv) Intercellular spaces	Absent or very small	Absent