



**PROVINCE OF KWAZULU-NATAL  
DEPARTMENT OF EDUCATION**

**SUPPORT DOCUMENT**

**GRADE 10**

**LIFE SCIENCES**

**Term 2 Revision 2020 – Activity Document**

Support and Transport in Plants

## Grade: 10

### Topic: SUPPORT AND TRANSPORT IN PLANTS

#### A. TOPIC PLAN

Lesson	Aspect	Activities
1	<ul style="list-style-type: none"><li>The need for support and transport systems in plants.</li><li>Distribution of different tissues in roots and stems</li></ul>	Tool 1 Activity 1
2	<ul style="list-style-type: none"><li>The tissues responsible for transport and support</li><li>Structure of cells in different tissues.</li></ul>	Tool 2 Activity 2
3	<ul style="list-style-type: none"><li>Secondary growth of the stem</li></ul>	Activity 3
4	<ul style="list-style-type: none"><li>Relationship between water loss and leaf structure</li><li>Factors that affect the rate of transpiration.</li></ul>	Activity 4
5	<ul style="list-style-type: none"><li>Wilting and guttation</li><li>Intake of water and minerals into the xylem in roots:<ul style="list-style-type: none"><li>✓ Transport of water and minerals to leaves</li><li>✓ Translocation of manufactured food from leaves to other parts of plants</li></ul></li></ul>	Activity 5

#### TERMINOLOGY

The following terms should be covered in this topic:

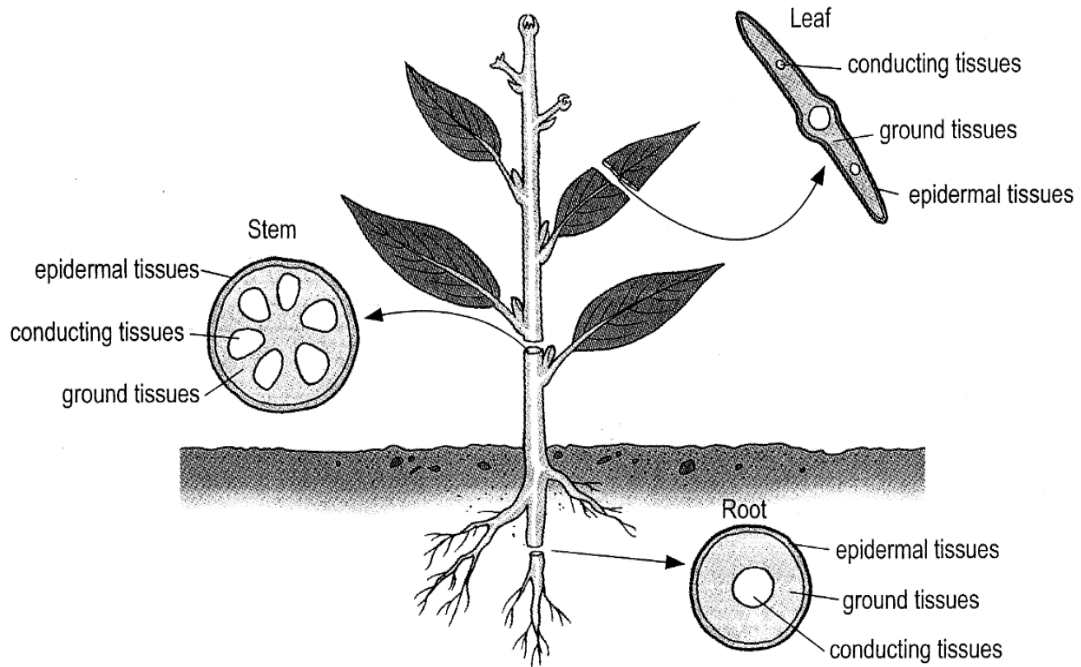
Organ	Wilting	Gaseous exchange	Stomata
Photosynthesis	Guttation	Transpiration	Guard cells
Xylem	phloem		

## TEACHING TOOLS

### Teaching Tool 1

1. The diagram below shows the cross section of the leaf, stem and root of a plant.

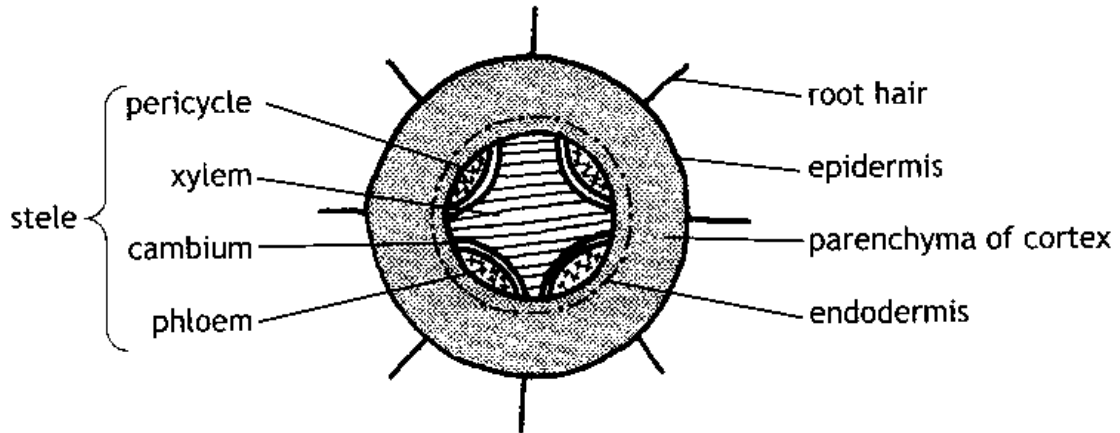
*The three groups of tissues in root, stem and leaf*



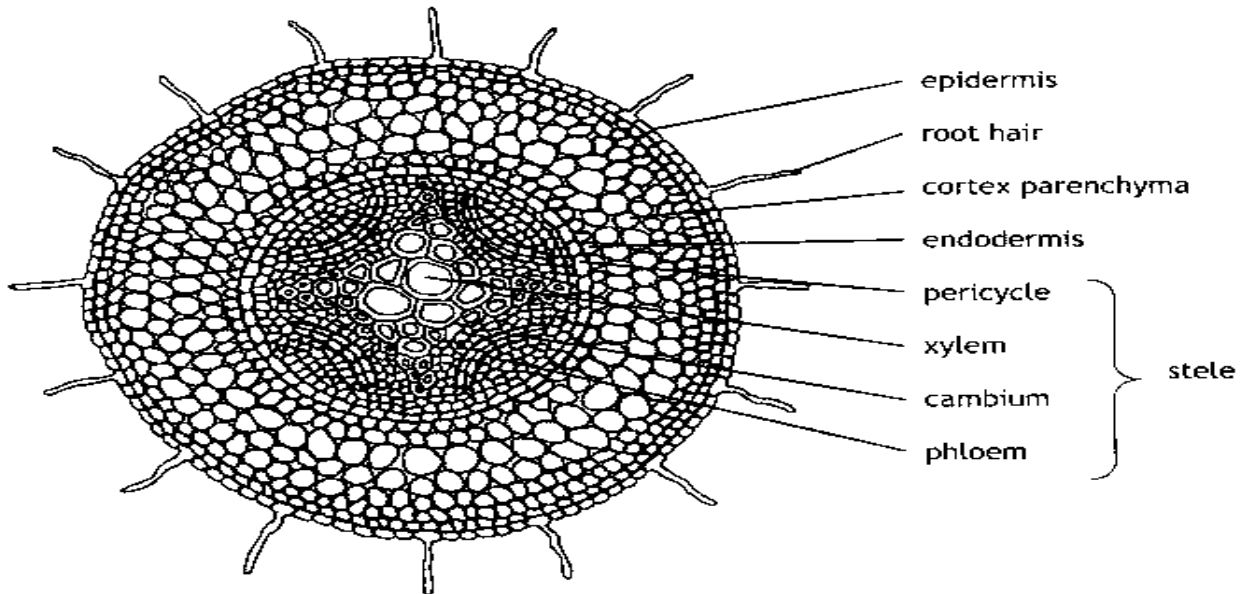
- 1.1 State TWO functions of the root. (2)
- 1.2 State TWO functions of the stem. (2)
- 1.3 Name the TWO conducting tissues found in the plant. (2)

## Teaching Tool 2

2 The following diagrams show the distribution of different tissues in the root.



*Transverse section of a young dicotyledonous root, in plan*

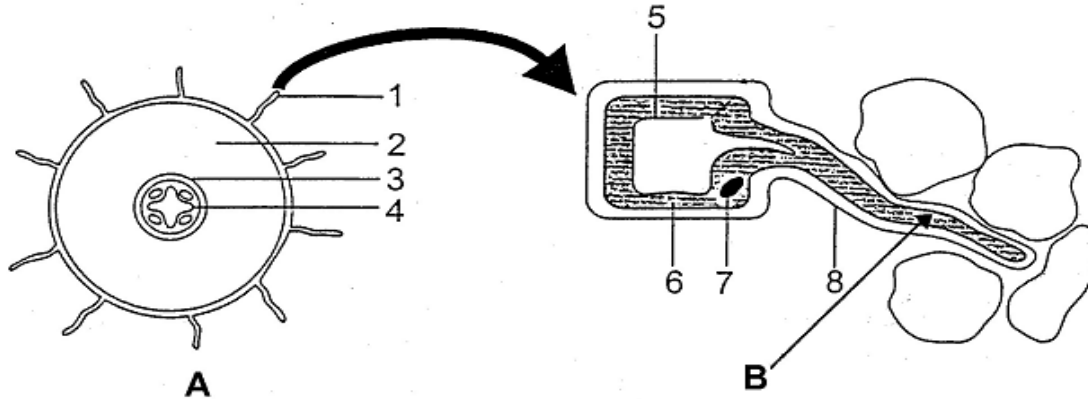


*TIS of a young dicotyledonous root, in detail*

- 2.1. List TWO ways a root can be identified from its internal structure. (2)
- 2.2. Name the finger-like outgrowth of the epidermis of roots. (1)
- 2.3. Name four tissues that make up the stele of the root. (4)

### Activity 1

1. The diagrams below represent a plant organ.

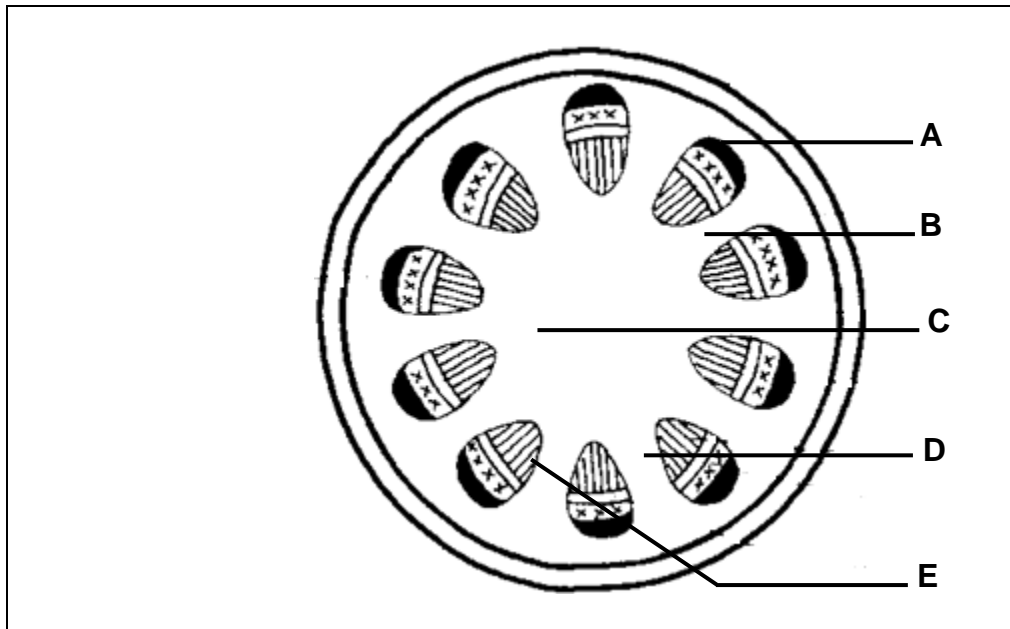


- 1.1 Which organ is represented by cross-section **A**? (1)
- 1.2 Identify parts numbered **2**, **5** and **8**. (3)
- 1.3 Give ONE function of each of the labels **3** and **4**. (2)
- 1.4 Explain TWO structural characteristics which allow effective functioning of part numbered **4**. (4)

**(10)**

**Activity 2**

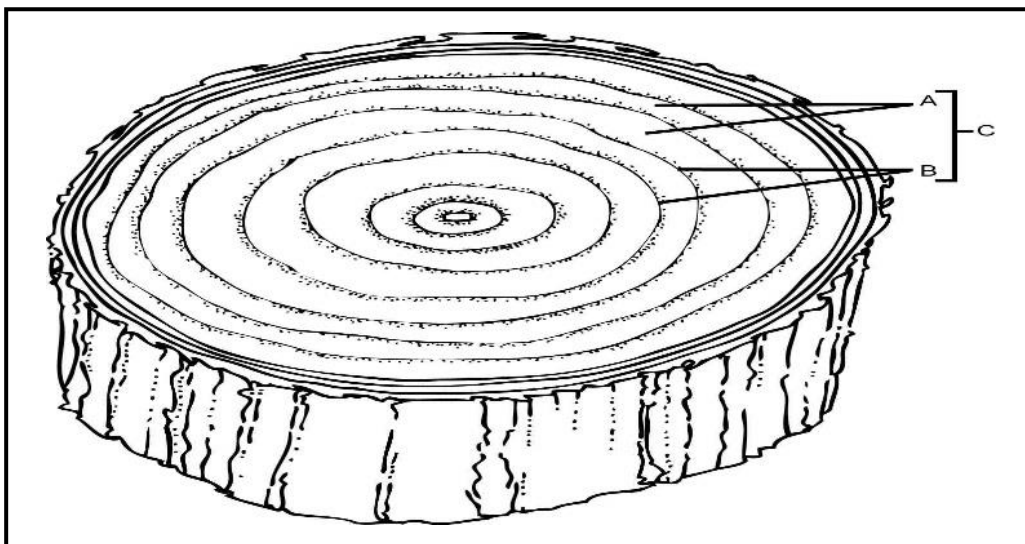
2. The following diagram represents the internal structure of stem



- 2.1 Supply labels for parts **A**, **D** and **E**. (3)
  - 2.2 State TWO ways the above diagram represents the stem and not the root. (2)
  - 2.3 State the function of **B** and **C**. (2)
- (7)

**Activity 3**

3 The diagram below represents secondary thickening in a dicot stem

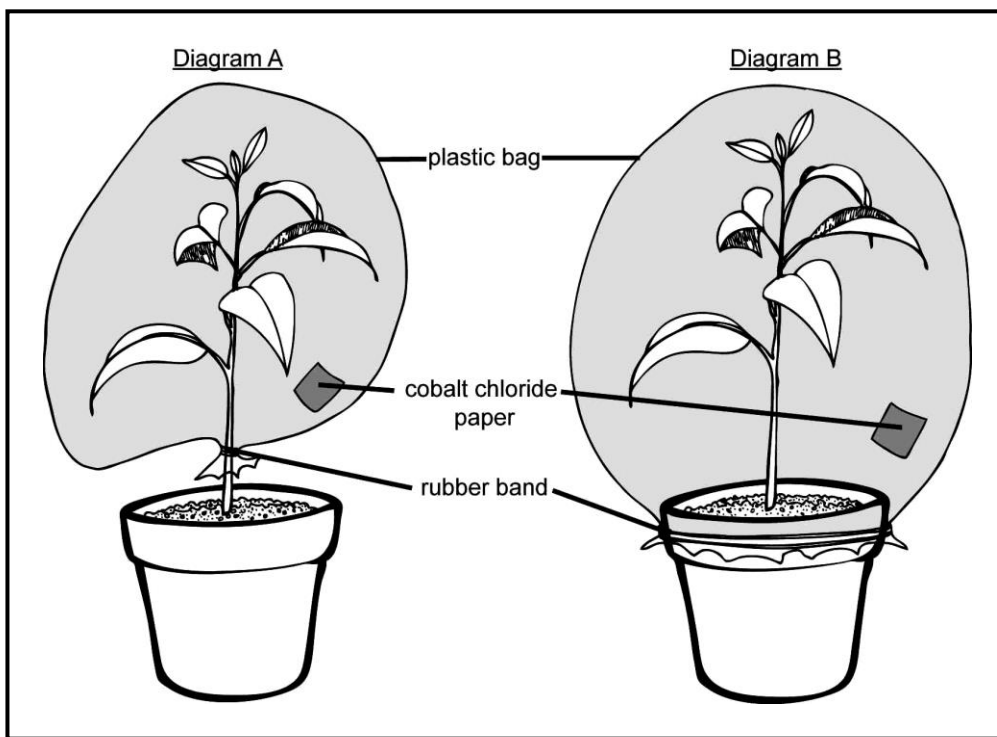


- 3.1 Provide labels for **A**, **B** and **C**. (3)

- 3.2 Explain the structural difference between the cells of A and B. (4)
  - 3.3 How old is this tree? (2)
  - 3.4 If a person were to carve his or her initials on the trunk of a tree one metre above the ground, how high above the ground would the initials be years later? Explain. (3)
  - 3.5 Secondary growth has economic importance. (3)  
Explain this statement. (3)
- (15)

**Activity 4**

Examine diagram A and diagram B.



- 4.1 Why does the blue cobalt chloride paper turn pink in both diagram A and diagram B? (2)
  - 4.2 In which diagram will the blue cobalt chloride paper turn pink the quickest? (1)
  - 4.3 Explain your answer in QUESTION 4.2. (2)
  - 4.4 What is the aim of the experiment in **diagram A**? (2)
  - 4.5 How should a control for the experiment be set up? (2)
  - 4.6 If cobalt chloride paper were not used, what would be observed after the experiment had been set up for a while? (1)
  - 4.7 Name **FOUR** external factors that affect the rate of transpiration. (4)
- (14)**

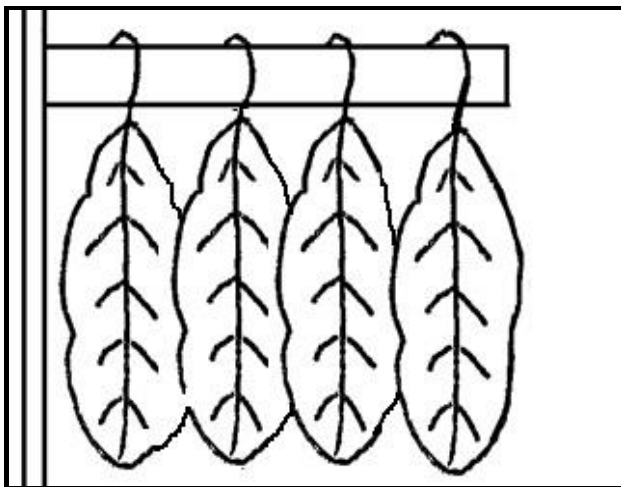
## Activity 5

### The wilting of leaves

#### Method

Use four fresh leaves of equal size from the same mesophytic plant and treat them as follows:

- Leaf 1: covered both surfaces with petroleum jelly
- Leaf 2: covered only upper surface with petroleum jelly
- Leaf 3: covered only lower surface with petroleum jelly
- Leaf 4: do NOT treated with petroleum jelly



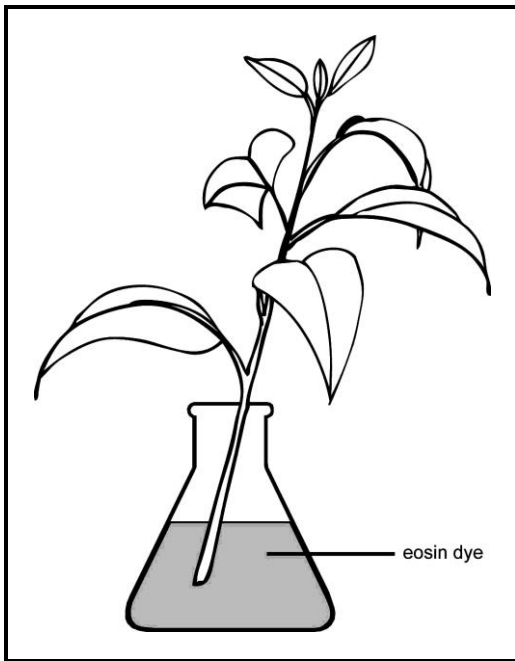
1 2 3 4

- 5.1 Write a hypothesis for this investigation (2)
  - 5.2 What is the function of the petroleum jelly in this investigation? (3)
  - 5.3 List your observations of this investigation (4)
  - 5.4 Which one of these leaves will serve as a control? (1)
  - 5.5 Mention THREE ways to improve the investigation to get more accurate results (3)
  - 5.6 Write a conclusion for your investigation. (2)
- (15)**



## Activity 6

6 Examine the diagram below and answer the questions that follow:



- 6.1 What is the aim of this experiment?  
6.2 Give the results of the experiment.  
6.3 How would the results compare if the leaves were cut off the plant?

(2)  
(1)  
(2)  
[5]