

## **INSTRUCTIONS**

1. Write all provided notes in your biology exercise book
2. Be careful when copying to avoid spelling errors
3. All appeared diagrams in this notes should be drawn neatly using pencil and labeled correctly using blue/black ink
4. The notes should be completed before re-opening of the school JANUARY 2021

### **NOTE;**

The notes should be written with your own hand writing, it is prohibited notes to be written by another person.

## CLASSIFICATION OF LIVING THINGS III

### KINGDOM PLANTAE

#### **DIVISION CONIFEROPHYTA**

This is a group of plants which are non-flowering but seed bearing plants. They are also known as gymnosperms.

The term gymnosperm originated from Greek words "gymnos"(naked) and "sperma"(seed), which means naked seeds i.e. the seeds are not enclosed in a fruit.

This division consists of cone-bearing plants with needle-shaped leaves.

Examples of conifers are pines, spruces, cedar, redwood, cypress and juniper.

#### **GENERAL CHARACTERISTICS OF CONIFERS**

- i. Their reproductive structures are cones.
- ii. They do not produce flowers and fruits.
- iii. Their ovules and hence the seeds are naked i.e. they are not enclosed in an ovary.
- iv. They have needle-shaped leaves.
- v. They are mostly trees and shrubs.
- vi. They are widely distributed but commonly found in areas with cool climates (low temperature).
- vii. The majority are evergreen i.e. they keep their leaves all year round.
- viii. They are vascular i.e. they have xylem and phloem tissues.
- ix. They have alternation of generation in which sporophyte generation is dominant.
- x. They are wind pollinated i.e. their pollen grains are carried by wind from male cones to female cones.

#### **DISTINCTIVE FEATURES OF CONIFERS**

- i. Their reproductive structures are cones.
- ii. Their seeds are not enclosed in an ovary, hence called naked seeds.
- iii. They do not produce flowers and fruits.

#### **THE STRUCTURE OF PINUS**

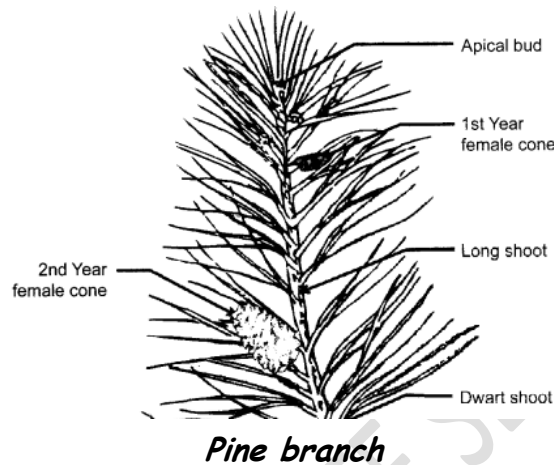
##### **PINES**

A pine is any conifer of the genus *Pinus* of the family Pinaceae. There are varieties of pines.

#### **DISTINCTIVE CHARACTERISTICS OF PINES**

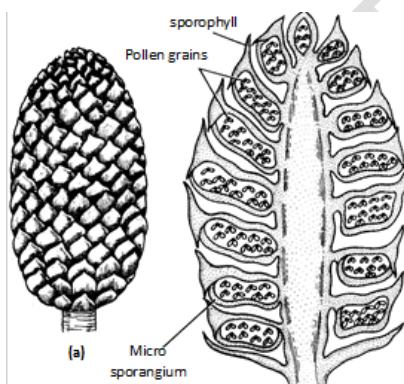
- i. They are evergreen, with needle like leaves.
- ii. Most of them are trees that grow tall.

- iii. Their branches arise from the same point on the stem.
- iv. They mostly have female and male cones on the same plant.
- v. The bark of most pines is thick and scaly.
- vi. Pines live relatively longtime than other coniferous plants. They may live between 100 and 1,000 years



### THE STRUCTURE OF CONES

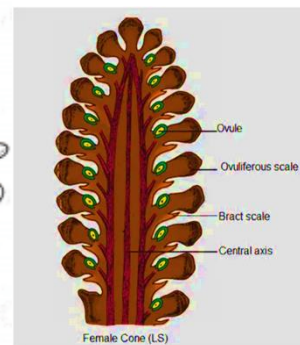
- Cones are reproductive structures in conifers.
- Male cones are smaller, usually herbaceous and produce pollen. The pollen contains male gametes.
- Female cones are larger, woody and bear small seed like structures called ovules. Ovules contain female gametes.



*Male cones*



*Female cones*



### ADVANTAGES OF CONIFERS

- i. Many conifers are source of timber.
- ii. They are source of wood pulp used in manufacture of papers.
- iii. Some conifers such as cycads are used as decorations such as Christmas trees.

- iv. Pine leaves are a source of food for some insects.
- v. Their trunks are used as telegraph poles because they grow tall and straight.
- vi. They produce chemical substance called resins that is important source of turpentine used as solvent for thinning oil and vanishes.
- vii. Like other plant they produce oxygen which is useful in animals.
- viii. They prevent soil erosion.
- ix. They add fertility to the soil when they decay.
- x. They provide shade and shelter to animals.
- xi. They are source of fuel e.g. charcoal and firewood.
- xii. Thick forest of conifers forms green belt that modifies the climate.

### **DISADVANTAGES OF CONIFERS**

- i. They produce soft wood that needs more use of preservative to prevent them from being damaged by fungi and insects.
- ii. They colonize an area and displace other communities of plants.
- iii. Pines have high concentration of resins that tend to spread forest fire.

### **DIVISION ANGIOSPERMOPHYTA**

This division includes all flowering plants.

It is the largest division of plants such that angiosperms are more abundant on land.

### **GENERAL CHARACTERISTICS OF ANGIOSPERMS**

- i. Their reproductive structures are flowers.
- ii. They produce fruits.
- iii. The ovules are enclosed in an ovary and hence the seeds are enclosed in a fruit.
- iv. They are vascular plants as they have xylem and phloem tissue.
- v. They have alternation of generation in which sporophyte generation is dominant.

### **DISTINCTIVE FEATURES OF ANGIOSPERMS**

- i. Their reproductive structures are flowers.
- ii. They produce seeds enclosed in the fruit. Seeds are fertilized ovules.
- iii. They undergo double fertilization.

### **CLASSES OF DIVISION ANGIOSPERMOPHYTA**

There are two classes:

- (i) Class monocotyledonae
- (ii) Class dicotyledonae

## CLASS MONOCOTYLEDONAE

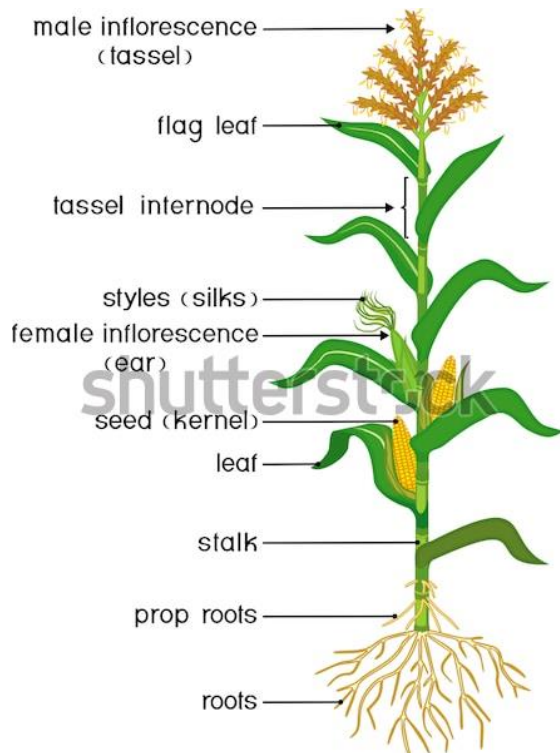
- They are commonly called monocots.
- Their seeds have one cotyledon (one seed leaf)

Examples of monocots are coconut, sugar cane, grasses, palm tree, maize, wheat, millet, rice, sorghum e.t.c.

### CHARACTERISTICS OF MONOCOTS

- Their seeds have one cotyledon.
- Their floral parts are in three or multiples of three.
- They have fibrous root system.
- Their leaves have parallel veins (parallel venation).
- Their vascular bundles in the stem are scattered.

#### **Structure of a maize plant (monocot)**



## CLASS DICOTYLEDONAE

Their seeds have two cotyledons (two seed leaves).

### **Examples**

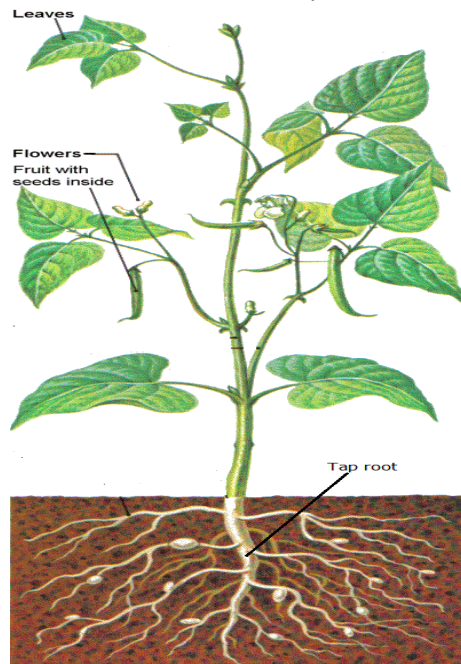
Beans, coffee, cotton, cassava, sunflower, orange, hibiscus plants e.t.c.

### CHARACTERISTICS OF DICOTS





- Their seeds have two cotyledons.
- Their floral parts are in four or five or multiples of four or five.
- They have tap root system.





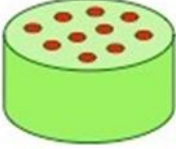
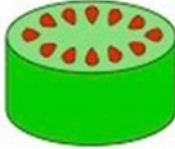
- iv. Their leaves have reticulate or net venation.
- v. Their vascular bundles in stems are arranged in a ring.
- vi. They have vascular cambium between xylem and phloem that brings about secondary growth.

**Structure of a bean plant (dicot)**



**DIFFERENCES BETWEEN MONOCOTS AND DICOTS**

MONOCOTS	DICOTS
(i) Their seeds have one cotyledon 	Their seeds have two cotyledons 
(ii) They have fibrous root system 	They have tap root system 
(iii) They have leaves with parallel veins	They have leaves with network of veins

	
<p>(iv) Their floral parts are in three or multiples of three</p> 	<p>Their floral parts are in four or five or multiples of four or five</p> 
<p>(v) Their vascular bundles are scattered in stem</p> 	<p>Their vascular bundles form ring in a stem</p> 
<p>(vi) They have no cambium</p>	<p>They have cambium</p>

### **ADVANTAGES OF ANGIOSPERMS**

- i. Some angiosperms are source of timber.
- ii. Some are source of medicine e.g. neem, cinchona (its bark contain quinine), aloevera, e.t.c.
- iii. Some produce wood pulp for paper making.
- iv. Some are source of raw materials for making cloth e.g. cotton.
- v. Some are source of food. Most of the food comes from angiosperms e.g. cereals, fruits, vegetables and animal feeds like grasses.
- vi. They prevent soil erosion. Their roots hold soil particles together hence preventing the soil from being carried by wind and rain water.
- vii. Some are used for decoration e.g. hibiscus plant produce flowers that makes garden look beautiful.
- viii. Sisal fibres are used for making baskets and mats.
- ix. Used as a source of charcoal and firewood.
- x. They are source of manure when they decay.

### **DISADVANTAGES OF ANGIOSPERMS**

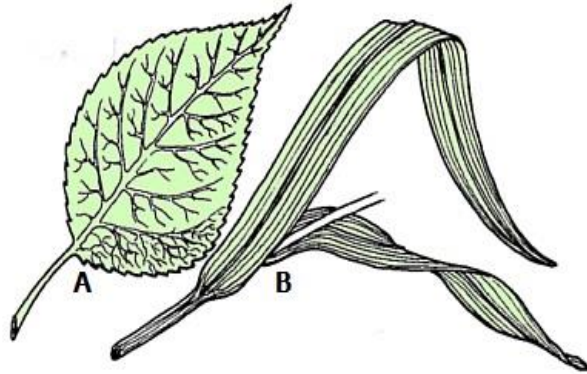
- i. Some are poisonous such that when their products are eaten can cause death.

- ii. Some grow as weeds in the farm and interfere with growth of targeted crops.
- iii. They may provide shelter for harmful animals like snakes.
- iv. Some flowers may be allergic to man.
- v. Some have thorns which can cause injury to animals.

### EXERCISE

*(Should be done in the assignment books)*

1. List down ten economic importance of kingdom plantae.
2. How conifers differ from angiosperms (3points).
3. How conifers similar to angiosperms (3 points).
4. List down three distinctive features of conifers.
5. Study the diagrams below then answer the questions that follow.



- (a) Identify A and B.
- (b) Classify A and B up to class level.
- (c) Give two observable differences between A and B.
- (d) Write three differences between the classes in which A and B belong.