

SS 2**First Term Scheme of Work****Week****Topic**

1	Classification of plants
2	Digestive system;
3	Modification in feeding habits:
4	Transport System I
5	Transport system II
6	Respiratory system
7	Mechanism of respiratory system in higher animals e.g man, lower animals e.g earthworm
****	Mechanism of gaseous exchange through stomata
8	Excretory system
9	malpighian tubules, kidney, stomata and lenticels.
10	Excretory mechanisms in earthworm, insects and mammals
11	Revision
12	Examination

WEEK 1

CLASSIFICATION OF PLANTS

Classification of plants is based on the following criteria

1. Botanical Classification
2. Agricultural classification(according to economic use)
3. Classification based on life cycles.

Botanical Classification

Plant kingdoms are divided into five groups namely,

- (a) Schizophyta e.g bacteria
- (b) Thallophyta e.g algae and fungi
- (c) Bryophyta e.g liverworts and mosses
- (d) Pteridophyta e.g ferns
- (e) Spermatophyta

(A) Schizophyta: Their characteristics are:

- i. They are microscopic and unicellular (single-celled) organism
- ii. They are prokaryotic (they have no organized nucleus)
- iii. Their cell wall does not contain cellulose. It is made up of proteins and fatty materials
- iv. Bacteria reproduce asexually by binary fission
- v. Bacteria exist in various shapes for e.g cocci (singular coccus) are rounded or spherical; bacilli (singular bacillus) are rod-shaped; spirilla are spirally twisted while the vibrios are comma shaped.

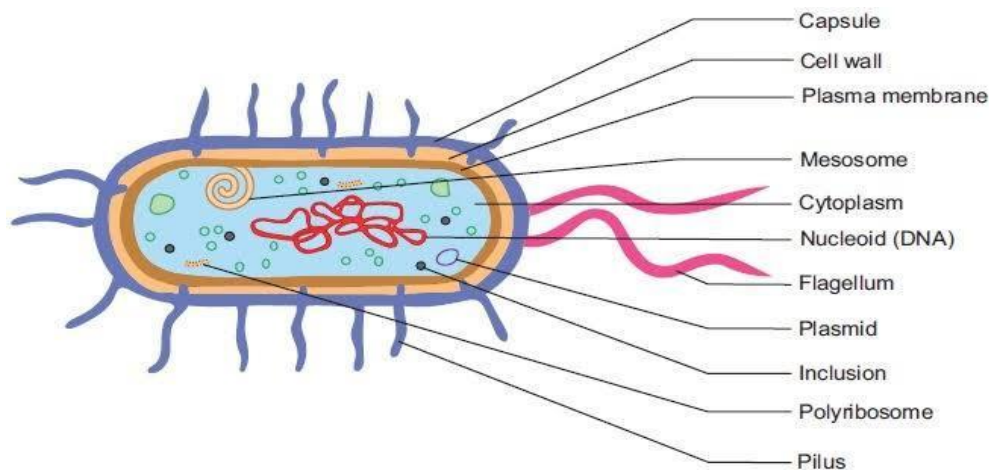


Diagram of a bacteria Figure 1.9: Ultrastructure of a bacterial cell

(B) Thalophyta: This comprises of algae and fungi.

Algae:

- i. They are simple plants without roots, stem and leaves
- ii. All algae have chlorophyll. Some have blue, yellow, brown and red pigment which mask the chlorophyll.
- iii. Majority are uni-cellular while few are multicellular. Some such as sea weed are large.
- iv. They are mainly aquatic with few on damp soils and shady places. Examples are spirogyra, anabaena etc

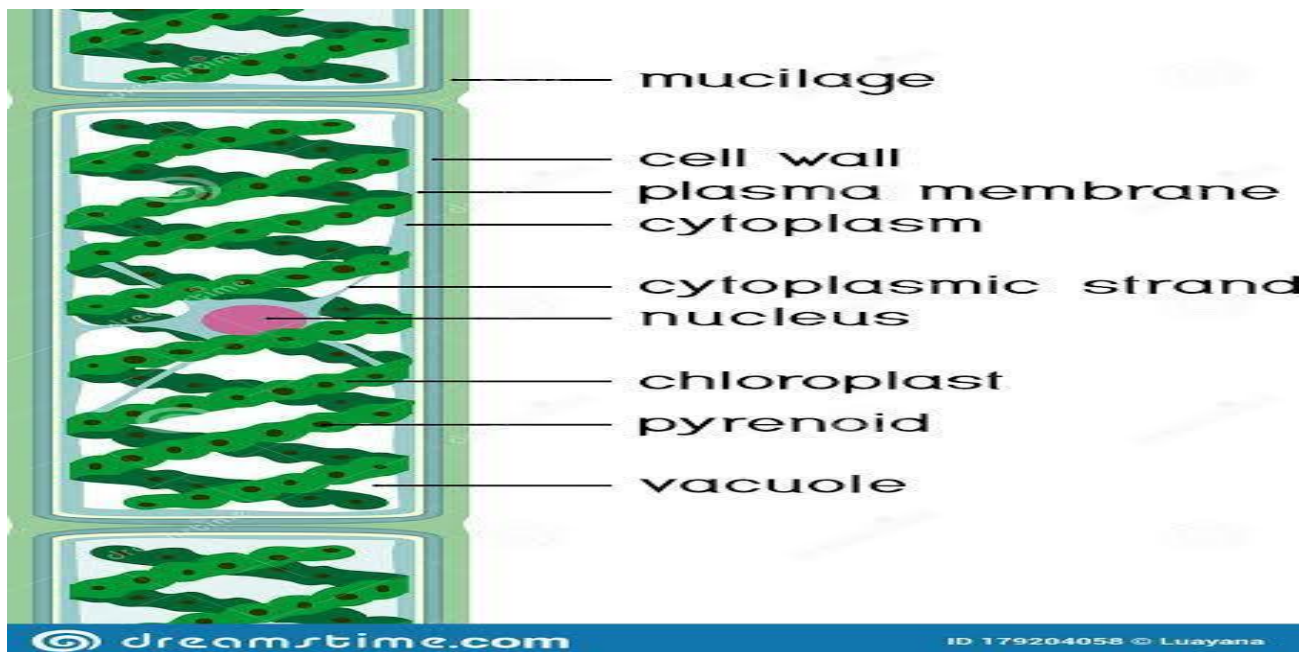


Diagram of a spirogyra

Fungi:

- i. They are non-green plants.
- ii. They are simple multicellular plants
- iii. The body are not differentiated into roots, stem and leaves.
- iv. The vegetative body (hypha) is collectively known as mycellum
- v. Reproduction is by means of spores. Spore is a special reproductive body which becomes free of parents body and grow into a new organism.
- vi. The cell wall is composed of cellulose and chitin
- vii. Carbohydrates are stored in form of glycogen as in animals.

- viii. They are either saprophytic or parasitic. E.g mucor, rhizopus, yeast and fusarium

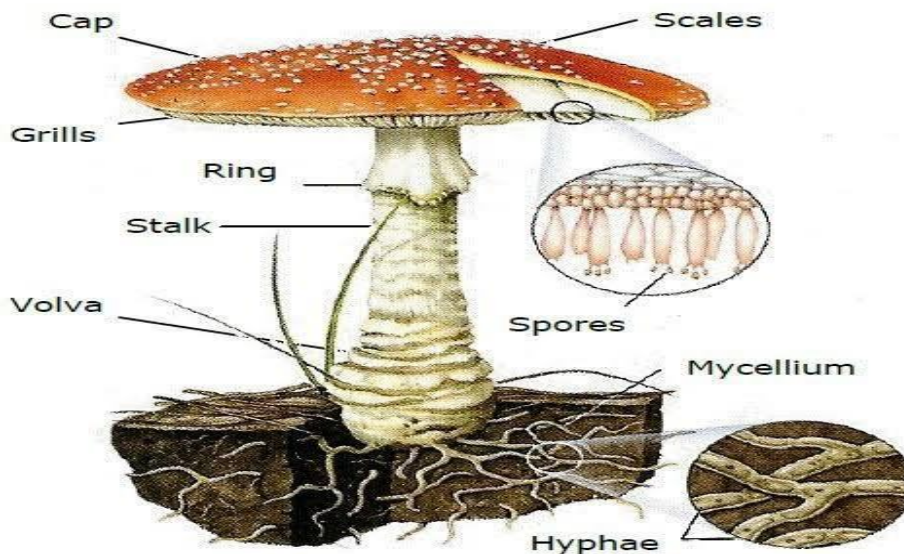


Diagram of a mushroom

(C) Bryophyta: (Mosses and liverwort)

- They are non-vascular multicellular organisms
- They have chlorophyll as the only photosynthetic pigment
- They are terrestrial but lives in moist environment
- The body is differentiated into stem-like and leaf-like structure. They lack true roots, stem and leaves. They lack vascular tissues and therefore unable to transport food and material round the body.
- The leaves of some are spirally arranged on the stem.
- Asexually reproduction is by spores while sexual reproduction is by gamete. They are regarded as amphibians of the plant kingdom because water is needed in sexual reproduction

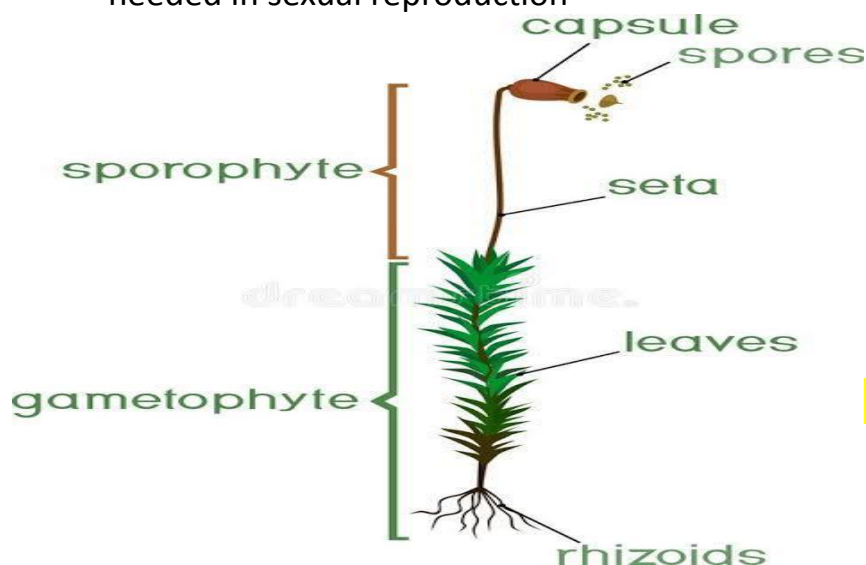


Diagram of a moss

(D) Pteridophyta (ferns):

- i. The body is differentiated into true roots, stem and leaves with well-developed vascular bundles comprising of xylem and phloem. The young leaves are coiled.
- ii. The stem is rhizome
- iii. Reproduction is by means of spores
- iv. Asexual reproduction consist of sori while sexual reproductive organ is heart shaped prothallus.
- v. Water is needed for sexual reproduction (prothallus)
- vi. They are mainly terrestrials, with a few aquatic members.

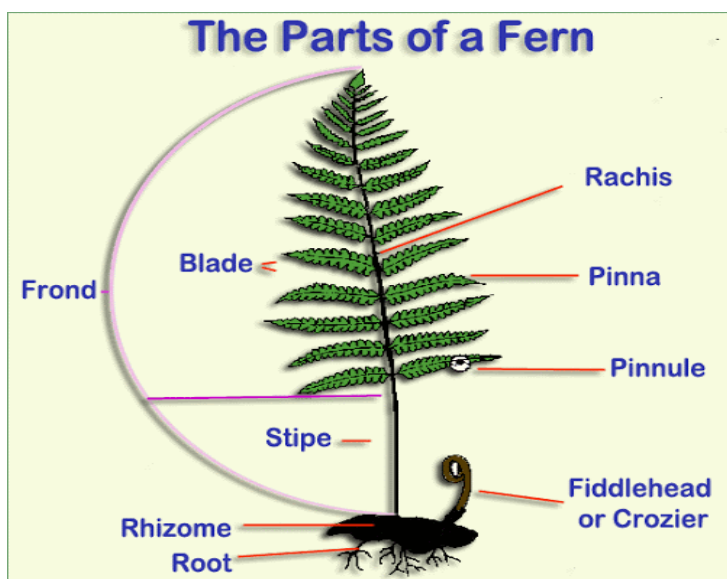


Diagram of a fern

(E) Spermatophyta: They are divided into two;
Gymnosperm and angiosperms

Gymnosperm: (non-flowering plant)

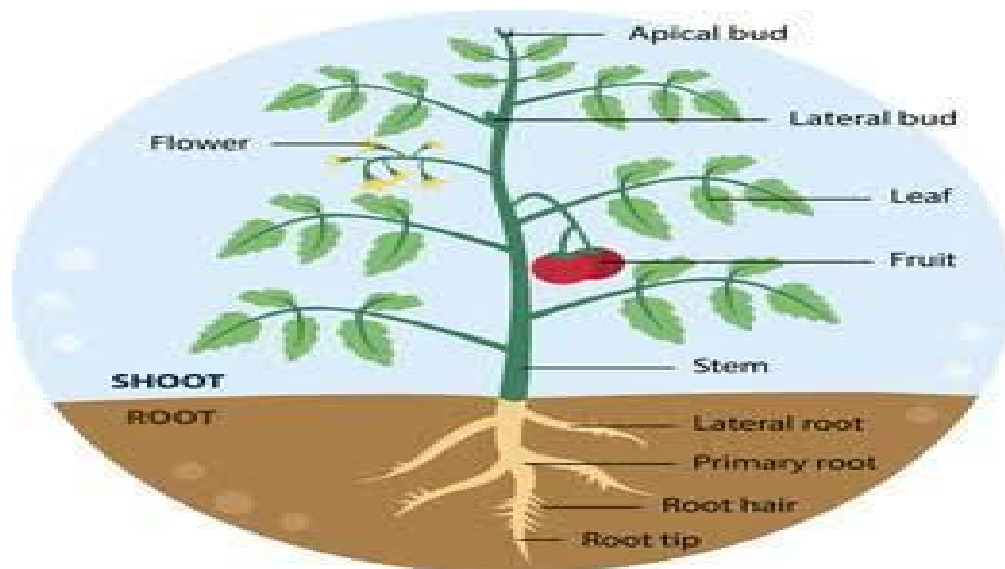
- i. Large plants with well-developed vascular bundles with true roots, stem and leaves.
- ii. The leaves are green in colour, small scaly and needle like.
- iii. They have cones where naked seeds are formed. Due to the absence of ovaries, fruits are not formed.
- iv. They are terrestrial in habitat. Examples are whistling pine and cypariss

Angiosperm (flowering plants):

- i. They possess true flowers for sexual reproduction
- ii. Well-developed true roots, stem and leaves are present.
- iii. Seeds and fruits are produced after fertilization. Seeds are enclosed in ovary.
- iv. They are terrestrial but few are aquatic. Examples are oil palm tree, goat weed, mango tree, maize etc.

Angiosperm can be sub-divided into two classes according to the number of seed leaves they bear. These are Monocotyledonous plants and Dicotyledonous plants.

- Monocotyledonous plants: These plants bear seeds which have only one seed leaf (cotyledon). Examples are maize, rice, oil palm, etc
- Dicotyledonous plants: They bear seeds which have two seed leaves or cotyledon. Examples are mango, beans, orange, cowpea, groundnut, etc .



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Diagram of a plant

Agricultural Classification

Agricultural classification of plants is based on:

- i. The product obtained from the plants
- ii. The parts of the plant that is useful
- iii. The economic importance of the plants

Plants are therefore classified agriculturally into the following

1. **CROPS AND WEEDS:** - plants that are needed on the farm are called crops while other unwanted are called weeds.
2. **FOOD CROPS AND CASH CROPS:** - crops grown mainly for human consumption are called food crops e.g. maize, yam etc. Those grown mainly to earn money are cash crops e.g. cocoa, coffee
3. **ROOT CROPS:** - are plants which store mainly starch in edible underground stems or roots. Majority of them are very rich in carbohydrates e.g. yam, cassava etc.
4. **CEREAL CROPS:** - these are monocotyledonous plants of grass family. They are grown mainly for their seeds which are eaten e.g. maize, millet, guinea corn, rice, wheat, etc. They are rich in carbohydrates.
5. **FRUITS CROPS:-** are rich in vitamins and minerals. Fruits are also rich in sugar. These include oranges, mangoes, avocado peers, cashew etc. whose fruits are eaten
6. **VEGETABLE CROPS:** - are herbaceous plants whose vegetable (leafy) parts are eaten. They include spinach, lettuce, carrots, cabbage, okro, tomato, onion, pepper etc. They are also rich in vitamins and minerals.
7. **LEGUMES:** - are plants of beans family such as cowpea and groundnuts whose seeds are eaten. They are rich in proteins. These crops are capable of converting atmospheric nitrogen to nitrates which they absorb.
8. **SPICES:** Are plants whose parts are used for seasoning or flavouring food such as pepper, curry, thyme and ginger.
9. **LATEX PLANTS:** Are plants that are grown for their useful latex (a milky fluid) e.g. rubber plants used for making natural rubber in the tropical countries
10. **FIBRE PLANTS:** Are plants which produce fibre for the purpose of rope making, textile and bags production e.g. cotton, hemp etc.

11. **BEVERAGE AND DRUG PLANTS:** - Are plants whose parts are taken as stimulants, refreshment or drugs e.g. tea, coffee, cocoa and kola nut, quinine tree for medicine.
12. **OIL PLANT:** - Produce oil of economic value e.g. oil palm, sheanut, groundnut, coconut, castor oil plant and melon.

PLANT CLASSIFICATION BASED ON LIFE CYCLE AND SIZE

Based on life cycle (period or existence) plant can be classified as

- a. **ANNUALS:** - These are plants which complete their life cycle within one growing season or within a year e.g. Maize, Yam, Melon, cowpea, tomato etc.
- b. **BIENIALS:** - These complete their life cycle within two years e.g. Banana, plantain, pineapple etc.
- c. **PERENNIALS:** - These persist over (more than) two years producing their yields every season e.g. orange, mango, oil palm cocoa etc.

Plant based on size fall into three categories

1. Herbs are small plants with fleshy stem e.g. Spinach, waterleaf etc.
2. Shrubs are medium – sized plants with woody stem branch very close to the ground (soil) e.g. hibiscus
3. Trees are big plants with woody trunk, which branch at the top e.g. Iroko, Mahogany, Cashew, and Coffee etc.

EVALUATION

1. Classify the following plants based on their life cycle (a) Vegetable (b) Pineapple (c) almond tree
2. Give two examples each of herbs, shrubs and tree crops
3. Write three differences between monocotyledonous plants and dicotyledonous plants.
4. Mention three difference between angiosperm and gymnosperm.

