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BIO102 ASSIGNMENT

(PLANT DIVERSITY)

1. Classify plants according to Eichler’s grouping of 1883.

In 1883, A.W. Eichler gave a system of classification for the plant kingdom. Eichler classified the plant kingdom into two sub-kingdom namely: Cryptogamae (hidden reproduction) and Phanerogamae (visible reproduction). Cryptogamae include division Thallophyta, Bryophyta and Pteridophyta.

Eichler’s grouping of 1883 will be used as below:

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| division | Class |
| Thallophyta | Phycotinae(Algae), Mycotinae(Fungi). |
| Bryophyta | Hepaticae(liverworts), Musci(mosses) |
| Pteridophyta | Psilotinae(psilotum), Lycopodinate (lycopodium, Selaginella), Equisetime(horsetails), Filicanae(ferns). |
| Spermatophyta | Gymnospermae(gymnosperms), Angiosoermae(angiosperms). |
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1. How are algae of importance to man?

Algae are important to man because:

i. It serves as food for people

ii. It serves as thickening agent in ice-cream and shampoo.

iii. It serves as drugs to ward off diseases.

iv. It has high iodine content therefore prevents goitre.

1. Describe a unicellular form of algae.

Chlamydomonas; represents the unicellular and motile forms of green algae.

Characteristics

1. They can be found in stagnant waters.
2. Flagella are structures for mobility.
3. The nucleus carries the genetic programme of the cell.

Reproduction

Reproduction in Chlamydomonas can either be vegetative(asexual) or sexual.

1. The vegetative reproduction:

It represents mitosis, meaning that the amount of genetic material in the mother cell nucleus in n, the daughter cells also have n quantity of genetic material. In Chlamydomonas, the cell about to divide losses its flagella then undergo mitotic division and 2 daughter cells(zoospores) are released. Increase in the population of cells in a colony is achieved by repeated mitotic divisions.

1. Sexual reproduction:

Opposite mating strains fuse in a process called **isogamy** to form a diploid zygote, which contains two sets of chromosomes. After a period of dormancy, meiosis occurs in the zygote which reduces the genetic content of a cell by half. This cell division produces four genetically unique haploid cells that eventually grow into mature cells. Sexual reproduction involves union of sex cells, in Chlamydomonas aggregation of cells(clumping) in a colony occurs under favorable conditions.

4.How does this unicellular alga described in question 3 carry out its reproduction?

It carries out reproduction by vegetative{asexual} or sexual reproduction.

5.Differentiate between the two types of colonial form of algae.

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| Pandorina | Volvox |
| Occurs in water bloom, colony consists of 16 cells attached to one another, each cell is attached by cytoplasmic strands, each cell has many features in common in Chlamydomonas. | Shows more complex form than Pandorina, there are more cells in the colony number may run into thousands and connected with cytoplasmic strands that run through the cells. |

6. Describe a named complex form of alga.

Fucus: a genus of brown algae whose species are often found on rocks in the intertidal zones of the sea shores. The plant body is flattened, dichotomously-branched thallus with a mid-rib, a vegetative apex, a reproductive apex at maturity and a multicellular disk [hold fast] with which plant is attached to rock surface. The plant body also has air bladders which is believed to aid the plant to float on the water. Various species of focus exist, vary in size from a few centimeters to about 2metres in length. They also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chambers on different plant bodies.