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MATRIC NUMBER; 19/MHS01/042

DEPARTMENT; Medicine and Surgery

COURSE; Biology 102

ASSIGNMENT

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

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| **DIVISION** | **CLASS** |
| Thallophyta | Phycotinae (Algae)  Mycotinae (Fungi) |
| Bryophyta | Hepaticae (Liverworts)  Musci (Mosses) |
| Pteridophyta | Psilotinate (Psilotum)  Lycopodinae (Lycopodium, Selaginella)  Equisetinae (Horsetails)  Filicinae (Ferns) |
| Spermatophyta | Gymnospermae (Gymnosperms)  Angiospermae (Angiosperms) |

1. Algae has proven to be useful to man over the centuries, and some of the ways it is useful is given below;
2. It serves as food for man
3. It serves as thickening agents in ice cream and shampoo
4. It serves as drugs to prevent diseases like goitre because of their high iodine content
5. Brown Algae yield Alginic acid used in stabilizing emulsions and suspension
6. Different species of red algae provide agar and carrageen used for the preparation of various gels used in scientific research
7. Chlamydomonas is a unicellular form of green algae. It is found in stagnant water along with other forms. It has flagella that helps it move and a stigma for photoreception. The cell is bounded by a cellulose cell wall and contains organelles like the nucleus which carries the genetic programme of the cell and the mitochondria which the energy centre of the cell.
8. Chlamydomonas carries out two types of reproduction; sexual and asexual reproduction
9. Sexual reproduction; certain environmental conditions e.g. lack of nutrients or moisture may trigger the haploid daughter cells to undergo sexual reproduction instead of forming into spores, the haploid daughter cells form gametes that have two different mating strains which are structurally similar and are positive and negative strains. 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, the zygote undergoes meiosis, a type of cell division that reduces the genetic content of a cell by half. This cell division (i.e. meiosis) produces four genetically unique haploid cells that eventually grow into mature cells. It involves union of sex cells which usually occurs in unfavorable conditions. These cells pair their posterior ends in a process called isogamous pairing. The cytoplasm of the pairing cells fuse and the flagella are lost. The two nuclei also fuse so that a zygote is formed. The zygote secretes a thick cell wall and may remain domant for some time. After this period, the zygote undergoes two successive divisions in a process of meiosis andfour products known as haploid zoospores are released
10. Asexual Reproduction; this leads to the production of daughter cells with the same quantity of genetic material as the mother cell. The increase in population of cells in a colony is guaranteed by this means of reproduction. And the whole process is carried out in what is referred to as mitotic division. The cell that is about to divide loses its flagella then undergoes the mitotic division resulting in the formation of two daughter cells (zoospores).
11. The two colonial forms of algae are Pandorina and Volvox. Their differences are shown below;
12. Pandorina is made up of 16 cells attached to one another while Volvox has more cells in their colony connected with cytoplasmic strands that run through the cells.
13. Pandorina is relatively simpler on form than Volvox.
14. Sexual reproduction in Pandorina is anisogamous (pairing by flagella ends) while sexual reproduction in Volvox is oogamous (sperm and egg cells are involved).
15. Volvox is evolutionarily more advanced than Pandorina.
16. In Pandorina all cells form new colonies, but in Volvox on some cells form new colonies.
17. Fucus is a complex form of algae. It is a genus of brown algae whose species are often found on rocks in intertidal zones of the sea shore. The plant body is flattened, dichotomously-branched thallus with a mid-rib, a vegetative apex, a reproductive apex at maturity and a multicellular disk with which the plant attaches itself to rock surfaces. The plant body also has air bladders which are believed to aid the plant to float on water. Various species of Fucus exist and they differ from each other in terms of size and position of sex cells.