**LEBILE CELINE MOTUNROLA**

**19/MHS01/235 MBBS**

**BIO 102 ASSIGMENT ON ALGAE**

1. a. Thallophyta: Phycotinae (Algae) and Mycotinae (Fungi)

b. Bryophyta: Hepaticae (Liverworts) and Musci (Mosses)

c. Pteridophyta: Psilotinae (Psilotum), Lycopodinae (Lycopodium, Selaginella), Equisetinae (Horsetails) and Filicinae (Ferns)

d. Spermatophyta: Gymnospermae (Gymnosperms) and Angiospermae (Angiosperms)

2.) Importance of algae to man: It serves as food for people because of their high protein and mineral content, used in cosmetics, serves as thickening agents in ice cream and shampoo, they are used in production of some drugs, they prevent goiter because of their high iodine content, brown algae is used to stabilize emulsion and suspensions, species of red algae provide agar and carrageen used for preparing gels.

3.) A unicellular form of algae is Chlamydomonas. It is having the shape of a sphere with flagella attached to a small apex on the organism. It is found in stagnant water, and uses the flagella for mobility. The cell is bounded by a cellulose cell wall, which contains organelles like nucleus, mitochondria, chloroplast, stigma. Its stigma is used for photoreception and manufactured sugar is processed in the pyrenoid.

4) Algae can reproduce vegetatively by the mitosis. During this reproduction, the organism loses its flagella, and the cell divides in such a way that the daughter cells carry the same quantity of genetic material as the mother cell. The mother cell undergoes mitosis leading to two nuclei formation, cell walls are elaborated which delimit the cytoplasm around each nucleus I.e. two daughter cells (Zoospores) are released. B) Algae can also reproduce sexually under unfavorable environmental conditions like; lack of nutrients or moisture. It involves the aggregation of cells, paired by their posterior ends. During the pairing of cells, the cytoplasm fuses, causing the flagella t be lost and the nucleus of the cells are fused (Karyogamy). The zygote is produced and secretes a thick cell wall called Zygospore and may remain dormant in this state. The zygote then undergoes two divisions; the first division restores the haploid condition, while the second is a mitotic division. As a result, four haploid spores are released.

5) The colonial forms of algae are; Pandorina and volvox. The pandorina is a less complex form than volvox, having a colony that consist of 16 cells attached to one another. In order for the pandorina to reproduce vegetatively, the organism undergoes 4 successive mitotic divisions, resulting in daughter cells which are only released from the mother cell when mature, to be independent. They can reproduce sexually by the pairing of their flagella ends (Anisogamous pairing). Under favorable conditions, single cells in the colonies pair. While the volvox, a more complex form having up to thousands cells connected by cytoplasmic strands in their colonies. Unlike the Pandorina, not all cells in the volvox, form new colonies. larger cells at the posterior ends (Gonadia) are the only cells that divide to form new colonies. Sexual reproduction is oogamous i.e. the male gamete is motile, the female gamete is not motile. The volvox is said to be evolutionary more advanced the Pandorina, in terms of cell differentiation and specialization

6) A complex form of algae is Fucus (Brown algae). It is found on rocks, 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 plant is attached to rock surface. The plant body has air bladders that helps it to float on water. The different species of Fucus vary from size/length and sex. Sexual reproduction is oogamous, sex cells are produced in conceptacles which have opening (ostioles) on the surface of the thallus.