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Department : MEDICINE AND SURGERY

Course: BIO 102 ASSIGNMENT

ANSWERS TO ASSIGNMENT

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

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

2. Importance of Algae to man include :

i. It serves as food for People and livestock.

ii. Used as thickening agent in ice cream and shampoo.

iii. Algae have high Iodine content therefore prevents goitre.

iv. Seaweeds are source of three chemical extracts used extensively in the Food ,Pharmaceutical ,Textile and Cosmetic Industries.

v. Brown Algae yield Alginic acid which is used to stabilize Emulsions and Suspensions.

vi. Species of red algae provide agar and carrageen used for preparation of various gels used in scientific research.

3. Unicellular form of Algae to be discussed is Chlamydomonas

Chlamydomonas represents the unicellular and motile form of green algae. Found in stagnant water usually along with other forms. Flagella are the structures for mobility. The cell is bounded by a cellulose cell wall; contains organelles e.g nucleus, mitochondria, stigma (eyespot),cup shaped chloroplast, pyrenoid e.t.c. the nucleus carries the genetic programme of the cell. The stigma is for photoreception. The mitochondria mediate the elaboration of energy molecules. Manufactured sugar is processed into energy by the pyrenoid.

4. Reproduction in chlamydomonas is either Vegetative (asexual) or Sexual.

5. Pandorina colony consists of 16 cells attached to one another and is not so complex while Volvox 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. Volvox is concluded to be evolutionarily more advanced than Pandorina with the departures in them that shows greater level of differentiation and specialization.

6. Fucus is a genus of brown algae that is classified as a complex form of algae. The species are 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 bladder 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.

Sexual reproduction is oogamous ,sex cells are produced in conceptacles which have openings(ostioles) on the surface of the thallus. In the male conceptacles ,one of the diploid cells from outgrowth of the wall of the conceptacles undergoes meiosis, the meiotic product undergo many mitotic divisions to produce antheridium having 64 cells of which each cell develops into a biflagellate sperm that swims out of the conceptacle through the ostiole.

In the female conceptacle , similar to the situation in the male conceptacle, leads to the production of an 8 cell oogonium –each becomes an egg which is the female sex cell.

Motile sperm cell from the antheridium move through the ostiole into the female conceptacle where the eggs are fertilized and diploid zygote are produced. Apart from the antheridia and oogonia, sterile multicellular filaments (Paraphyses) are also produced in the conceptacles which are dispersed among the antheridial and oogonial outgrowths and at the entrance into the conceptacles. The diploid zygote germinates into a new diploid Fucus plant making the diploid the dominant generation.