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MATRIC NO:19/MHS01/057

DEPARTMENT: MBBS

COURSE CODE: BIO 102

1. In 1883 A.W. Eichler gave a system of classification for the whole plant kingdom. They are classified into two sub-kingdom; **CRYPTOGAMAE** and **PHANEROGAMAE**
CRYPTOGAMAE: They are flowerless and seedless plants. They are simple plants like algae, mosses and ferns which do not produce flowers, fruits and seeds. They are considered lower plants.
PHANEROGAMAE: They are seed bearing and flowering plants. These are the most advanced plants. They are also known as **SPERMATOPHYTES**. The word **PHANEROGAMAE** is made up of two Greek words "FANEROS" meaning "Evident" AND "GAMOS" meaning "marriage".

- 2a. It serves as food for people and livestock.
- b. Algae has high content in iodine therefore prevents goitre.
- c. The Marine algae are the richest source of vitamin especially vitamins A, B and E which are important to human beings.
- d. As a source of agar: Agar is used in several ways. It is employed in the preparation of ice creams, jellies etc.
- e. It has good medicinal value for man.

3. CHLAMYDOMONAS

Chlamydomonas is the name given to a genus of microscopic, unicellular green plants (algae) which lives in fresh water. The single-cell body is about 0.02mm across with a cell wall surrounding the cytoplasm and a central nucleus. In the chloroplast a protein region is called a Pyrenoid which involves the starch production and is surrounded by starch granules.

4. REPRODUCTION IN CHLAMYDOMONAS

In chlamydomonas, reproduction can either be vegetative(asexual) or sexual

VEGETATIVE (ASEXUAL) REPRODUCTION

This results in production of daughter cells in which the amount and quality of genetic material in the nucleus of the mother cell is maintained in the daughter cells. Thus, if the amount of genetic material in the mother cell nucleus is n , the daughter cells also have n quantity of genetic material. The kind of cell division that maintains the quantity and quality of genetic material is called mitotic division.

In chlamydomonas, a cell about to divide loses its flagella. The cell undergoes mitotic division leading to two nuclei cell walls are elaborated which delimit cytoplasm around each nucleus i.e. two daughter cells (zoospores) are released.

SEXUAL REPRODUCTION

Chlamydomonas, aggregation of cells (clumping) in a colony occurs under favourable conditions. These cells pair by their posterior (flagellated) ends. It is said to be isogamous because the pairing cells (gametes) are morphologically identical. The cytoplasm of the pairing cells fuse (plasmogamy) and the flagella are lost. The two nuclei fuse (karyogamy) this situation is essentially a fertilization process so that a zygote is formed. In other words, two cells each with n quantity of genetic material undergo karyogamy (fusion of nuclei) to produce a single cell with $2n$ (diploid) nuclear material. The zygote secretes thick cell wall called a zygospore and may remain dormant in that state for sometimes. Sometimes after the karyogamy. The zygote undergoes two successive cell divisions the first restores the haploid condition by halving the nuclear material in the two resulting nuclei while the second division each haploid nucleus undergoes a normal mitotic division. This two divisions end up with four cells and with n quantity of genetic material are together also known as meiosis.

5. VOLVOX

PANDORINA.

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| i. Sexual reproduction is oogamous. | i. Sexual reproduction is anisogamous. |
| ii. The colony consists of thousands of cells. | ii. The colony consists of 16 cells attached to one another. |
| iii. They are found in nutrient-rich water bodies.
Such as lakes, pools etc. | iii. They are found in water bloom. |
| iv. Contractile vacuoles are absent. | iv. Contractile vacuoles are present. |

6. An example of a more complex form of algae is FUCUS. A Genus of brown algae whose species are often found on rock in the intertidal zones of seashores. The plants consists of a flattened, dichotomously-branched thallus which has a small Stipe and a holdfast. The blade usually has a locally thickened area which centrally placed called MIDRIB. Various species of fucus exist; vary in size from a few centimeters to about 2 metres in length.

Type equation here.