NAME: AKINOLA OLUWAKEMISOLA SHARON.

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MHS/MBBS.

BIOLOGY ASSIGNMENT.

COURSE CODE: BIO 102.

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

A system of plant taxonomy, the Eichler’s system was the first phylogenic or evolutionary system. Eichler classified the plant kingdom into two sub-kingdoms. They are cryptogamae and phanerogamae.

(1). Crpytogamae are flowerless and seedless plants. They are simple and flowerless plants like algae, mosses and ferns which do not produce flowers, fruits, and seeds. Cryptograms are considered as lower plants.

(2). Phanerogamae are seed bearing plants. So, they are also known as spermatophytes. They are higher plants. The plant body is differentiated into roots, stems and leaves with well-developed vascular system. examples are angiosperms and gymnosperms.

**2.** How are algae of importance to man?

1. They have high iodine content which helps to reduce goitre.

2. They are important as food to fish.

3. It serves as thickening agent for ice cream and shampoo.

4. Brown algae is used to stabilize emulsion and suspension.

5. Agar from red algae is used to preserve canned foods.

6. Algae also serve as food to man and livestock.

7. Seaweed is used in the pharmaceutical, textile, cosmetic and food industries.

8. Algae has also been used to cure or prevent illnesses.

**3.** Describe a unicellular form of algae.

CHLAMYDOMONAS.

It is a microscopic, unicellular algae which lives in fresh water. Typically, their single-cell body is approximately spherical, about 0.02mm across, with a cell wall surrounding the cytoplasm and a central nucleus. Two filaments of cytoplasm, flagella, (sing. Flagellum), extends from one end, and their whip-like lashings pull the Chlamydomonas through the water and rotate it at the same time. A single, cup-shaped chloroplast occupies the greater part of the cell. In this chloroplast is a protein region called a pyrenoid, which is involved in starch production and is often surrounded by starch granules. A region around the Chlamydomonas is sensitive to light, and associated with this is a red pigment spot whose shadow when cast on the sensitive area is thought to cause turning movements of the organism and so bring It in to the region where the light is most suitable for it.

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

REPRODUCTION IN CHLAMYDOMONAS.

VEGETATIVE REPRODUCTION: 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 which maintains the quantity of genetic material is called mitotic divisions. It is responsible for increase in number of cells in unicellular organisms and for increase in size in multicellular organisms. 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. Increase in the population of cells in a colony is achieved by repeated mitotic division.

SEXUAL REPRODUCTION: under unfavourable conditions instead of spore formation, 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 diploid zygotes, 2n which contains two sets of chromosomes. Plasmogamy and karyogamy occur in this type of reproduction.

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

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| VOLVOX. | SYNURA. |
| 1.Reproductionn is both sexual and asexual.  2. Volvox have spherical colonies of up to 50,000 cells. | 1.Reproduction is sexual.  2. Fewer cells in colonies. |

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 rocky 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 *fucus* exist; vary in size from the centimeters to about 2 metres 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.