**NAME – YOUGHA PRAISE**

**DEPT- MBBS**

**MATRIC NO- 19/MHS01/441**

**COURSE- BIO102**

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

a. Crytogamae: flowerless and seedless plants

1. Division Thallophyta
2. Division Bryophyta
3. Division Pteridophyta

b. Phanerogamae: Plants with flowers and seeds

1. Division Gymnospermae
2. Division Angiospermae

(**2) How are algae of importance to man**

1. The seaweeds grow mostly in shallow marine waters; some are used as human food or are harvested for useful substances such as agar or fertilizer.

(2) They capture more of the sun’s energy and produce more oxygen than all plants combined.

(3) They form the foundation of most aquatic food webs, which support an abundance of animals.

(4) Algae have been used for centuries, especially in Asian countries, for their purported powers to cure

or prevent illness as varied as a cough, gout, gallstones, goitre, hypertension, and diarrhoea.

**(3) Describe a unicellular form of algae**

A **unicellular organism**, also known as a **single-celled organism**, is an organism that consists of a single cell, unlike a multicellular organism that consists of multiple cells. Unicellular organisms fall into two general categories: prokaryotic organisms and eukaryotic organisms. Prokaryotes include bacteria and archaea. Many eukaryotes are multicellular, but the group includes the protozoa, unicellular algae, and unicellular fungi. Unicellular organisms are thought to be the oldest form of life, with early protocells possibly emerging 3.8–4 billion year ago. [1][2]

*Valonia ventricosa*, a species of alga with a diameter that ranges typically from 1 to 4 centimetres (0.39 to 1.57 in) is among the largest unicellular species

Although some prokaryotes live in colonies, they are not specialised cells with differing functions. These organisms live together, and each cell must carry out all life processes to survive. In contrast, even the simplest multicellular organisms have cells that depend on each other to survive.

Most multicellular organisms have a unicellular life-cycle stage. Gametes, for example, are reproductive unicellular for multicellular organisms. [3] Additionally, multicellularity appears to have evolved independently many times in the history of life.

Some organisms are partially unicellular, like *Dictyostelium discoideum*. Additionally, unicellular organisms can be multinucleate, like *Caulerpa*, *Plasmodium*, and Myxogastria.

**(4) Reproduction in unicellular form of Algae**

Asexual reproduction is the production of progeny without the union of cells or nuclear material. Many small algae reproduce asexually by ordinary cell division or by fragmentation, whereas larger algae reproduce by spores. Some red algae produce monospores (walled, nonflagellate, spherical cells) that are carried by water currents and upon germination produce a new organism. Some green algae produce nonmotile spores called aplanospores, while others produce zoospores, which lack true cell walls and bear one or more flagella. These flagella allow zoospores to swim to a favourable environment, whereas monospores and aplanospores have to rely on passive transport by water currents.

Sexual reproduction is characterized by the process of meiosis, in which progeny cells receive half of their genetic information from each parent cell. Sexual reproduction is usually regulated by environmental events. In many species, when temperature, salinity, inorganic nutrients (e.g., phosphorus, nitrogen, and magnesium), or day length become unfavourable, sexual reproduction is induced. A sexually reproducing organism typically has two phases in its life cycle. In the first stage, each cell has a single set of chromosomes and is called haploid, whereas in the second stage each cell has two sets of chromosomes and is called diploid. When one haploid gamete fuses with another haploid gamete during fertilization, the resulting combination, with two sets of chromosomes, is called a zygote. Either immediately or at some later time, a diploid cell directly or indirectly undergoes a special reductive cell-division process (meiosis). Diploid cells in this stage are called sporophyte because they produce spores. During meiosis the chromosome number of a diploid sporophyte is halved, and the resulting daughter cells are haploid. At some time, immediately or later, haploid cells act directly as gametes. In algae, as in plants, haploid cells in this stage are called gametophytes because they produce gametes.

**(5) Differentiate between the two types of colonial form of Algae**

1. Volvox reproduces sexually and asexually while Synura reproduces just sexually.
2. Volvox have spherical colonies of up to 50,000 cells Synura have few cells in colonies.

(**6) Describe a named complex form of algae**

KELP

Kelp (Fucus vesiculosus) is a type of brown seaweed, moderate in size, that grows in regions with cold coastlines, including those of the North-Western United States and Northern Europe. Kelp anchors itself to rocky surfaces via tentacle-like roots. From these roots grows a slender stalk with long leaf-like bodies

The main constituents of Kelp include phenolic compounds, mucopolyssacharides, align, polar lipids and glycosyl ester diglycerides. Kelp also contains proteins, carbohydrates and essential fatty acids. Kelp contains approximately 30 minerals. The highest concentrations of these vitamins and minerals are found in the tissues of kelp.