NAME: EKANEM, ENOABASI NKEREUWEM

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ANSWER TO GENERAL BIOLOGY II

1. Classification of Plants According to Eichler

Division	Class
- Thallophyta	Phycotinae (Algae)
	Mycotinae (Fungi)
- Bryophyta	Hepaticae (Liverworts)
	Musci (mosses)
— Pteridophyta	Psilotinate (Psilotum)
	Lycopodinae (Lycopodium, selaginella)
	Equisetinae (Horsetails)
	Filicinae (Ferns)
Spermatophyta	Gymnospermae (Gymnosperms)
	Angiospermae (Angiosperms)

2. Importance of Algae to man

1. It serves as food for people
2. It has high iodine content therefore prevent goitre
3. It is used as ~~thicking~~ thickening agents in ice ~~an~~ cream and shampoo.
4. It is used in drugs to ward off diseases
5. They contain anticancer compounds.

3. Unicellular Algae

Clamydomonas (an example of the unicellular and motile forms of green algae) is found in stagnant water. It has flagella for mobility. The cell is bounded by a cellulose cell wall, contains organelles e.g nucleus, mitochondria, stigma (eyespot), cup-shaped chloroplast, pyrenoid etc.

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A: Reproduction in chlamydomonas can be either vegetative or ~~sexu~~ sexual.

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 cell. 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 divisions.

Sexual reproduction occurs under certain environmental conditions e.g lack of nutrients or moisture may trigger 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 a diploid zygote, which contains two sets of chromosomes. After a period of dormancy the zygote undergoes meiosis, a type of cell division that reduces the genetic content of a cell by half. The cell division (meiosis) produces four genetically unique haploid cells that eventually grow into mature cells. Sexual reproduction in chlamydomonas ~~involves intone~~ involves the aggregation of cells in a colony under favourable conditions. These cells pair by their posterior (flagellated) ends. The pairing is isogamous because the pairing cells are morphologically identical. The cytoplasm of the pairing cells fuse (plasmogamy) and the flagella are lost.

The two nuclei fuse (karyogamy) to produce a single cell with diploid nuclear material. The zygote secretes a thick cell wall called a zygospore and may remain dormant in that state for some time.

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5. Differences Between Pandorina and Volvox

Pandorina	Volvox
- The colony consists of 16 cells attached to one another	There are more cells in the colony, number may run into thousands
~~- Pandorina colonies show greater levels of differentiation~~	
- Sexual reproduction is achieved by ~~is~~ anisogamous pairing	Sexual reproduction is oogamous
- All cells form new colonies	Not ~~at~~ all cells form new colonies
- Pandorina colonies show lower levels of differentiation	Volvox colonies show greater levels of differentiation

6. FUCUS

Fucus is a genus of brown algae whose species are often 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 bladders which is believed to aid the plant to float on the water.

Various species of fucus exist; vary in size from a few centimetres 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 chamber on different plant bodies