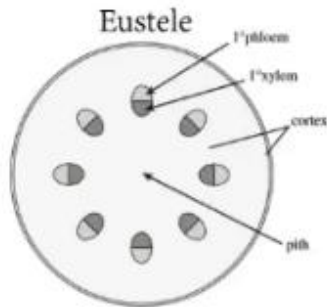


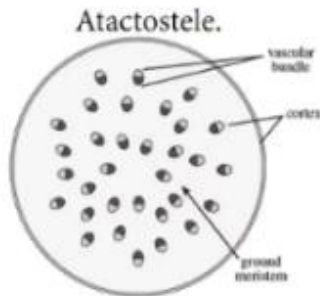
- 5) Describe with illustration the following terminologies: (a) eusteles (b) atactostele (c) siphonostele (d) dictyostele.

Answer

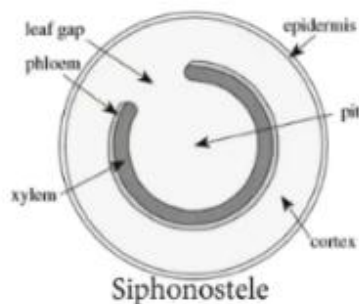
a) Eusteles: refer to a type of siphonostele, in which the vascular tissue in the stem forms a central ring of bundles around a pith. The vascular bundles are discrete, concentric collateral bundles of xylem and phloem. No true leaf gap e.g. roots of monocot plants.



b) Atactostele: a type of eustele, found in monocots, in which the vascular tissue in the stem exists as scattered bundles. It has no true leaf gap. E.g. maize, rye.



c) Siphonostele: a stele in which the vascular tissue is in form of a cylinder surrounding the pith, as in the stems of most ferns and other seedless vascular plants.



3) Outline the sexual reproduction in a typical filamentous form of fungi.

Answer

Sexual reproduction occurs when two mating types of hyphae grow in the same medium. Chemical interaction in the two mating types of hyphae induces growths are delimited by a wall such that many nuclei are isolated in what is called a gametangium.

The two zygote germinates under favourable conditions to produce a fruiting which at maturity liberates the haploid spores.

Relatives of rhizopus in similar circumstances are many. *MUCOR* spp are a group which lack rhizoids.

The genus *Pilobolus* is usually found growing on cow/horse dung. Species called black mould belong to *Aspergillus*; the spores are many in the air and germinate readily on exposed food and fruits, while some species of *Aspergillus* e.g. *A. niger* and *A. fumigatus* cause certain lung diseases (aspergillosis) in man and other animals, some are used in food processing. The hyphae are coenocytic and the nuclei are haploid.

A multinucleate foot cell is delimited on coenocytic horizontal hyphae in favourable environments. A vertical hypha (pl. sterigmata) produced conidiophores with characteristic branching patterns. Apart from the species that produces antibiotics, other species are used in food processing. Sexual reproduction is rare in *Aspergillus* and *Penicillium*, though it occurs. Plasmogamy and Karyogamy are involved.

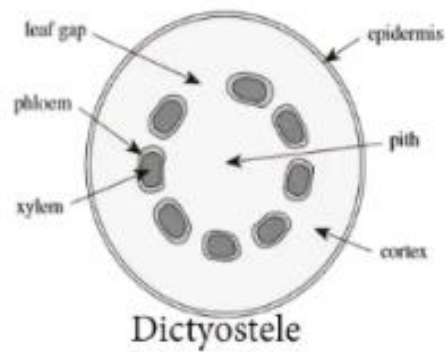
These processes lead to meiosis and production of spores (ascospores) in special structures (asci; sing. ascus) which are in turn contained in a fruiting body which may be completely closed (mycelia phase) is the dominant generation in both *Aspergillus* and *Penicillium*.

4) How do Bryophytes adapt to their environment?

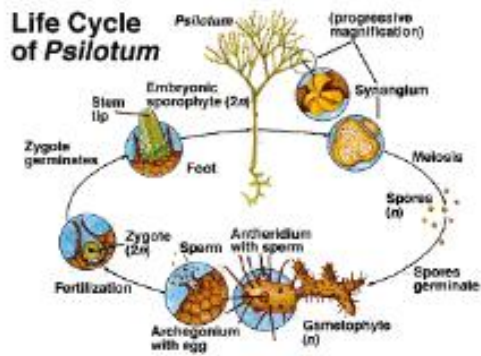
Answer

- a) They have definite structures for water and nutrient absorption from the soil; therefore the plant body is divided into two (an aerial portion and a subterranean portion). The subterranean portion is the rhizoid and not a true root as the case of land plants are advanced.
- b) The aerial portion being exposed to the atmosphere demands some modifications that prevents excessive loss of water through the body surface (ie. Desiccation) and
- c) Some other modifications that permit elimination of excess water from the plant body and not only exchange of gases between the internal parts of the plant and the atmosphere therefore openings are available on the aerial parts of the plant.

- d) **Dictyostele:** This type of stele has multiple gaps in the vascular cylinder which can be seen in the transverse section. E.g. Fern stem.



6) Illustrate the life cycle of a primitive vascular plant



1) How are Fungi important to mankind?

Answer

Fungi are responsible for the mediation of decay of organic matter. Without fungi and other microbes, the surface of the earth would have been clogged up with all the various elements locked up in them instead of turning into various cycles.

Fungi eg. yeast (*saccharomyces cerevisiae*) are important in food industry . Mushrooms are eaten by many human societies. Species e.g *Penicillium notatum* produce important antibiotics.

Many fungi species mediate the spoilage of wood ,food, clothes and paper. Many are plants pathogens causing blights and smuts in cereal(*Heminthosporium maydis* and *Ustilago zeae* respiration).

Some fungi are parasites to some certain horrible obnoxious(offensive, unbearable) pests e.g houseflies, grasshoppers and therefore constitute important biological control agents in regard to such pests.

Medical and veterinary mycology deals with fungi diseases and infections in human beings and animals. Skin diseases e.g ringworm and dermatitis are caused by fungal agents.

2) Illustrate the cell structure of a unicellular fungus with a well labeled diagram.

Answer

